JAIPUR NATIONAL UNIVERSITY, JAIPUR

BOARD OF STUDIES

2016-17

SCHOOL OF ALLIED HEALTH SCIENCES

Additional Registrar
Jaipur National University
Jaipur

BOARD OF STUDIES IN SCHOOL OF ALLIED HEALTH SCIENCES

AGENDA

The meeting of the Board of Studies in for the year 2016-17, will be held on 16th April, 2016 at 4:30 pm in Conference Room (First Floor), JNU Hospital, Jaipur National University.

The following agenda will be discussed in the meeting:

1. To offer a graduate programme Bachelor of Physiotherapy (**BPT**) that prepares students to learn the various rehabilitation process in health and Medical science.

2. To discuss and approve the curriculum of BPT (Bachelor of Physiotherapy)

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BOARD OF STUDIES IN SCHOOL OF ALLIED HEALTH SCIENCES

Minutes of the meeting held on April 16th , 2016

04:30 PM: Welcome of the delegates
04:35 PM: Introduction and Current Status of the Graduation Courses of physiotherapy by Dr. Atul Singh (HoD – Physiotherapy)
04:40 PM: Introductory note by Dr. A.S. Bapna Sir, Hon'ble Principal, JNU-IMSRC
04:45 PM: Introductory note by Dr. Jaswant Goyal Sir, Hon'ble Medical Advisor, JNU-IMSRC
04:48 PM: Panel Discussion (Points Discussed)

The meeting of the Board of Studies for the year 2016-2017, was held on 16th April 2016 at 04:30 pm in Conference Room (First Floor), JNU Hospital, Jaipur National University.

The following members attended the meeting:

S.No.	Name	Designation
1.	Dr. Ajeet Bapna	Chairperson
2.	Dr. Jaswant Goyal	Expert
3.	Dr. Sunita Sharma	External Industry Expert
4.	Dr. John Davis	External Subject Expert
5.	Dr. Vikas Mathur	Special Invitee
6.	Dr. Atul Singh	HOD, Dept. of Physiotherapy
7.	Dr. Himanshu Mathur	Faculty Member

Chairman of the Board, addressed the members and introduced external BOS Members to the board and further internal members introduced themselves

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Item No. 1

Discussion on the Planning to offer an graduate programme Bachelor of Physiotherapy (BPT) that prepare students to learn the various rehabilitation process in health and Medical science and for interested students who want to become a physical therapists.

Dr. Jaswant briefed about the ongoing status and demand of physiotherapy graduation programme in society to be in accordance with the MOHFW (Ministry of Health and Family Welfare) other nationalized universities across the country.

All the members discussed on the requirement of physiotherapy graduation course bachelor of physiotherapy (BPT).

RESOLUTION
[No.: BOS/PHY/2016/1]

UNANIMOUSLY RESOLVED THAT need of Physiotherapy graduation programme, BPT (Bachelor of Physiotherapy) according to suggestions is approved subject to the approval of council.

Item No. 2

Discussion on the curriculum of BPT (Bachelor of Physiotherapy)

Dr. Jaswant briefed about various Course objective and Subject Objectives.

The members suggested the following changes:

All the members agreed to the curriculum of BPT (Bachelor of Physiotherapy) and approved.

RESOLUTION
[No.: BOS/PHY/2016/2]

UNANIMOUSLY RESOLVED THAT regular conduction of Physiotherapy graduation programme, BPT (Bachelor of Physiotherapy) and the curriculum of BPT approved.

Board of Studies recommended the above resolutions to be presented in the Academic Council for further final approval

The meeting ended with the vote of thanks to the Chair

Chairperson

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JAIPUR NATIONAL UNIVERSITY, JAIPUR

BOARD OF STUDIES

2016-17

SCHOOL OF ALLIED HEALTH SCIENCES

Assistant Registrar
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BOARD OF STUDIES IN SCHOOL OF ALLIED HEALTH SCIENCES

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All the members discussed on the requirement of physiotherapy graduation course bachelor of physiotherapy (BPT).

RESOLUTION
[No.: BOS/PHY/2016/1]

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Item No. 2

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The members suggested the following changes:

All the members agreed to the curriculum of BPT (Bachelor of Physiotherapy) and approved.

RESOLUTION
[No.: BOS/PHY/2016/2]

UNANIMOUSLY RESOLVED THAT regular conduction of Physiotherapy graduation programme, BPT (Bachelor of Physiotherapy) and the curriculum of BPT approved.

Board of Studies recommended the above resolutions to be presented in the Academic Council for further final approval

The meeting ended with the vote of thanks to the Chair

Chairperson

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S.No.	Course Code	Title of Course/Module
1.	BPTEA804	• **Subject Name: Eclectic Approaches in Physiotherapy** • **Course Content**: Diet & Nutrition: i) Basic Food Science: a) Dietary Fiber b) Minerals & Trace Elements c) Vitamins d) Water ii) Diet therapy: a) Pregnancy b) Obesity and Underweight c) Diabetes mellitus d) Hypertension e) Atherosclerosis iii) Diet in Musculoskeletal, Neurological & Cardiopulmonary Conditions iv) Sports Specific Diet

Semester –I		**Semester - II**	
Code	**Theory**	**Code**	**Theory**
BPTHA101	Human Anatomy I	BPTHA201	Human Anatomy II
BPTHP102	Human Physiology I	BPTHP202	Human Physiology II
BPTBC103	Biochemistry	BPTET203	Exercise Therapy-I
BPTFB104	Fundamental of Biomechanics & Exercise Therapy	BPTET204	Electrotherapy-I
BPTFP105	Fundamental of Biomedical Physics	BPTSP205	Sociology & Psychology
Practical		**Practical**	
BPTHA101P	Human Anatomy I	BPTHA201P	Human Anatomy II
BPTHP102P	Human Physiology I	BPTHP202P	Human Physiology II
BPTFB104P	Fundamental of Biomechanics & Exercise Therapy	BPTET203P	Exercise Therapy-I
BPTFP105P	Fundamental of Biomedical Physics	BPTET204P	Electrotherapy-I
Semester –III		**Semester - IV**	

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Code	Theory	Code	Theory
BPTPC301	Pharmacology	BPTGM401	General Medicine
BPTPM302	Pathology & Microbiology	BPTGS402	General Surgery
BPTET303	Exercise Therapy II	BPTCM403	Community Medicine
BPTET304	Electrotherapy II	BPTBK404	Biomechanics & Kinesiology
BPTFC305	Basics Of First Aid & Critical Care	BPTEA405	Ethics & Administration
Practical		**Practical**	
BPTET303P	Exercise Therapy II	BPTBK404P	Biomechanics & Kinesiology
BPTET304P	Electrotherapy II		
BPTFC305P	Basics Of First Aid & Critical Care		

Semester –V		**Semester - VI**	
Code	**Theory**	**Code**	**Theory**
BPTCO501	Clinical Orthopedics	BPTOG601	Clinical Obstretics, Gynaecology & Paediatrics
BPTNP502	Clinical Neurology & Psychiatry	BPTSH602	Physiotherapy In Surgery & Hand
BPTCC503	Clinical Cardiorespiratory Conditions	BPTBE603	Bioengineering
BPTBK504	Biomechanics & Kinesiology-Ii	BPTMG604	Physiotherapy In Medicine & Geriatric Conditions
BPTCB505	Community Based Rehabilitation	BPTSF605	Physiotherapy In Sports Fitness And Allied Therapeutics
Practical		**Practical**	
BPTBK504P	Biomechanics & Kinesiology-Ii	BPTSH602P	Physiotherapy In Surgery & Hand
		BPTMG604P	Physiotherapy In Medicine & Geriatric Conditions
		BPTSF605P	Physiotherapy In Sports Fitness And Allied Therapeutics

Semester –VII		**Semester - VIII**	
Code	**Theory**	**Code**	**Theory**
BPTOC701	Physiotherapy in Orthopedic Conditions-I	BPTOC801	Physiotherapy in Orthopedic Conditions-II
BPTNC702	Physiotherapy in Neurological Conditions-I	BPTNC802	Physiotherapy in Neurological Conditions-II
BPTOG703	Physiotherapy In Obstetrics, Gynecology & Pediatrics	BPTCC803	Physiotherapy in Cardiorespiratory Conditions

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BPTPF704	Advanced Physical & Functional Diagnosis	BPTEA804	Eclectic Approaches in Physiotherapy
BPTBR705	Biostatistics And Research Methodology		
Practical		**Practical**	
BPTOC701P	Physiotherapy in Orthopedic Conditions-I	BPTOC801P	Physiotherapy in Orthopedic Conditions-II
BPTNC702P	Physiotherapy in Neurological Conditions-I	BPTNC802P	Physiotherapy in Neurological Conditions-II
BPTOG703P	Physiotherapy In Obstetrics, Gynecology & Pediatrics	BPTCC803P	Physiotherapy in Cardiorespiratory Conditions
		BPTEA804P	Eclectic Approaches in Physiotherapy
		BPTPJ805D	Dissertation Project

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JAIPUR NATIONAL UNIVERSITY, JAIPUR

BOARD OF STUDIES

2016-17

SCHOOL OF BUSINESS AND MANAGEMENT

Additional Registrar
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BOARD OF STUDIES IN THE SCHOOL OF BUSINESS AND MANAGEMENT

AGENDA

The meeting of the Board of Studies in **School of Business and Management For the year 2016-2017, will be held on 27th April 2016 at 11:00 AM in the Board Room, Jaipur National University.**

The following agenda will be discussed in the meeting:

- Confirmation of the minutes of the meeting held on 24th April 2015.
- Action taken report
- To discuss and approve proposed changes in the various courses of MBA(Dual Specialization)
- To discuss and approve proposed changes in the various courses of MBA
- To discuss and approve introduction of new subject in MBA
- To discuss and approve the proposed Syllabus of New courses in MBA
- To discuss and approve proposed changes in the various courses of BBA
- To discuss and approve proposed changes in the various courses of B.Com
- To discuss and approve Value Added Courses on Introduction To Human Biology and Writing and Presentation Skills for PG Program and Logical Reasoning and Career Guidance, Statistics to Excel, Digital Marketing and Business Models for UG Program.
- To discuss and approve the proposed Syllabus of Value Added Courses on Introduction To Human Biology and Writing and Presentation Skills, Logical Reasoning and Career Guidance, Statistics to Excel, Digital Marketing and Business Models
- To discuss and approve the feedback on Curriculum from stakeholders
- To confirm and approve regarding "No Change" proposed for Ph.D. and MBA (HHM) program for the session 2016-2017.
- Any other matter with the permission of Chair

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BOARD OF STUDIES IN THE SCHOOL OF BUSINESS AND MANAGEMENT

Minutes of the meeting held on 27th April 2016

The meeting of the Board of Studies in School of Business & Management, for the year 2015-2016, was held on 27th April 2016 at **11:00 AM in the Board Room (Main Campus), Jaipur National University.**

The following members attended the meeting:

S.No.	Name	Designation
1	Prof. H.N. Verma	Chairperson
2	Prof. A.K. Sharma	External Subject Expert
3	Prof. B.L. Gupta	External Subject Expert
4	Prof. P.K. Jain	External Subject Expert
5	Dr. Ramesh Mittal	External Subject Expert
6	Prof. Rajesh Mehrotra	Director
7	Prof. J.K. Tandon	Research Advisor
8	Dr. Shreya Bhargav	Coordinator
9	Dr. Jyotsana Khandelwal	Coordinator
10	Mr. Muktak Vyas	Assistant Professor

Chairman of the Board, addressed the members and introduced external BOS Members to the board and further internal members introduced themselves

Item No. 1

1. Confirmation of the minutes of the meeting held on 24th April 2015.

The minutes of the meeting held on 24th April 2015 were read and confirmed unanimously by all the members

RESOLUTION
[No.: BOS/SBM/2016/1]

UNANIMOUSLY RESOLVED THAT the minutes of BOS Meeting held on 24th April 2015 was confirmed.

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Item No. 2

2. **Action Taken Report**

(i) Implementation of new courses in MBA (Dual), MBA and MBA (Hospital & Healthcare Management)

The new course were introduced and approved vide Resolution no. BOS/SBM/2015/3 with suggestions have been implemented from July 2015 for the following courses

S.No.	Course	Course Code	Semester	Title of Courses
1	MBA(Hospital & Healthcare Management)	MBA(HHM)-101	I	Business Communication
2	MBA(Hospital & Healthcare Management)	MBA(HHM)-102	I	Computer Applications
3	MBA(Hospital & Healthcare Management)	MBA(HHM)-103	I	Principles of Management
4	MBA(Hospital & Healthcare Management)	MBA(HHM)-104	I	Organization Behavior
5	MBA(Hospital & Healthcare Management)	MBA(HHM)-105	I	Financial Management
6	MBA(Hospital & Healthcare Management)	MBA(HHM)-106	I	Essentials of Biostatistics
7	MBA(Hospital & Healthcare Management)	MBA(HHM)-107	I	Human Resource Management
8	MBA(Hospital & Healthcare Management)	MBA(HHM)-108	I	Marketing Management
9	MBA(Hospital & Healthcare Management)	MBA(HHM)-201	II	Organizational Management of Clinical & Superspeciality Services
10	MBA(Hospital & Healthcare Management)	MBA(HHM)-202	II	Research Methodology
11	MBA(Hospital & Healthcare Management)	MBA(HHM)-203	II	Essentials of Health Economics
12	MBA(Hospital & Healthcare	MBA(HHM)-204	II	Essentials of Demography

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	Management)			
13	MBA(Hospital & Healthcare Management)	MBA(HHM)-205	II	Strategic Management
14	MBA(Hospital & Healthcare Management)	MBA(HHM)-206	II	Program Planning, Implementation, Monitoring and Evaluation
15	MBA(Hospital & Healthcare Management)	MBA(HHM)-207	II	Diagnostic, Support &Utility Services
16	MBA(Hospital & Healthcare Management)	MBA(HHM)-208	II	Hospital Materials, Equipment & Supply Chain Management
17	MBA(Hospital & Healthcare Management)	MBA(HHM)-209	II	Comprehensive Viva
18	MBA(Hospital & Healthcare Management)	MBA(HHM)-301	III	1st Project Work Presentation
19	MBA(Hospital & Healthcare Management)	MBA(HHM)-302	III	Health Care Delivery System & Policy
20	MBA(Hospital & Healthcare Management)	MBA(HHM)-303	III	Hospital facility, safety and risk management
21	MBA(Hospital & Healthcare Management)	MBA(HHM)-304	III	Health and Development
22	MBA(Hospital & Healthcare Management)	MBA(HHM)-305	III	Hospital Management Information System
23	MBA(Hospital & Healthcare Management)	MBA(HHM)-306	III	Quality & Accreditation in Healthcare
24	MBA(Hospital & Healthcare Management)	MBA(HHM)-401	IV	Health Legislation and Legal Issues
25	MBA(Hospital & Healthcare Management)	MBA(HHM)-402	IV	Introduction to Epidemiology
26	MBA(Hospital & Healthcare Management)	MBA(HHM)-403	IV	2nd Project Work Presentation

(ii) Implementation of Value Added Course on "Financial Modelling"

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The revised curriculum discussed and approved with suggestions have been implemented for MBA (Hospital & Healthcare Management)

School of Business and Management has started Value Added Course "Financial Modelling" as discussed in the BOS Meeting.

(iii) Implementation of value added courses as follows:

The proposed value added courses have been approved in BOS vide Resolution no. **BOS/SBM/2015/4** and implemented in Academic session 2015-16.

Value Added courses are as follows:

S. No.	Course Duration	Title of Courses
1.	30 hours	Logical Reasoning and Career Guidance
2	30 hours	Digital Marketing
3	30 hours	Human Values
4	30 hours	Business Models

Item No. 3

Discussion and approval of proposed changes in the various courses of MBA (Dual Specialization)

Course Code	Course Name	Addition	Removal
MBA(D)-101	**Management Accounting**	**Module I:** **Added to the title** Preparation of Final Accounts **Module V:** Interpretation of ratios	--
MBA (D) -102	**Management Process And Organizational Behaviour**	**Module IV:** Motivation & theories of motivation	Module: V Group Dynamics & Motivation Formal and Informal group Motivation & theories

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			of motivation
MBA (D)-103	**Marketing Management**	**Module I :** Relationship marketing and E-marketing **Module II :** Understanding consumer and industrial markets **Module IV:** Packaging and Labeling decisions,	**Module I :** Marketing- Definition and Relationship marketing and CRM. Developing marketing strategies and Elements of marketing plan **Module V:** the choice of, establishing channel objectives, Evaluating the effectiveness of channels of distribution
MBA (D) -106	**Business Communication**	**Module I:** Introduction of Business Communication **Module II:** Types of Communication should be specific and added upward, downward, horizontal, verbal, non verbal, formal and informal, Silence as a mode of communication **Module III:** The heading of the module is replaced with **Communication models** : Aristole's model, Claude Shannon and Warren Weaver model, David Berlo's S-M-C-R model, Lasswell's model **Module IV:** Office	**Module I:** Concept, meaning, objectives, significance, scope and functions of Business Communication **Module II:** organizational pattern in firm **Module III:** communication model Rogers's model Models of Communication: Aristoler, Shannon and Weaner, David Berlol, Lasswell **Module IV:** Order, Agenda and Minutes

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		order, Agenda and Minutes of Meeting **Module V:** Heading should include **and written business** correspondence Enquiry letter, order letter, sales letter and c complaint letter	
MBA(D)-107	**Information Technology In Management**	--	**Module-I:** definition
MBA(D)-201	**Human Resource Management**	**Module I:** HRM v/s. Personnel Management **Module II:** Job Design: Job Rotation, Job Enlargement and Job Enrichment Job Analysis is added Internal mobility-promotion and transfer, Job evaluation **Module IV:** Compensation Management:, process of determining compensation, Fringe benefits, Wage and Salary Administration: factors affecting wages, wage payment methods, wage related laws **Module V:** Grievance Handling	**Module IV:** Overview of performance & financial incentives negotiation wage related laws. Human Resource Accounting and Auditing System
MBA(D)-202	**Financial Management**	**Module** II: Theories of Capital Structure decisions, Leverage Analysis	**Module** II: Concept and approaches of capital structure decision **Module** III:

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			Leverage analysis-financing, operating and combined leverage and its implications. **Module IV:** Working Capital Financing: Sources of short term financing (A brief introduction of Role of commercial bank in working capital management; Commercial paper; Factoring and other tools of working capital)
MBA(D)-203	**Operations And Production Management**	--	**Module V: Removed** Networking Techniques – PERT/CPM
MBA(D)-204	**Research Methodology**	--	**Module I:** Definition; Nature and Scope of Business Research
MBA(D)-206	**Data Communication And Networking**	**Module IV:** and various technologies	**Module I:** Signals should be removed
MBA(D)-207	**Entrepreneurship And Small Business Management**	**Module II:** An overview of start-up policy and incubation centre **Module III:** and Formulation of Project Plan and Business Plan. **Module IV:** Project Formulation	**Module V:** Reservation of Spheres and Concessions for Small Units
MBA (D)-301	**Strategic Management**	**Module I:** Introduction of Strategic Management and Business Policy	**Module I:** Definition, nature, scope and importance of Strategic Management, A brief introduction of business policy,

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			Difference between business policy and strategic management
MBA (D)-302	**Economic And Legal Environment Of Business**	**Module IV:** A brief introduction of Company, Kinds of Companies, Registration and Incorporation, Memorandum of Association, Articles of Association, Prospectus, Directors: Powers and duties, Meetings, Winding up. An overview of Companies Act 1956	**Module II:** Introduction to some important business laws **Module IV:** Provisions related to Incorporation of a Company, Prospectus & Allotment of Securities, and Procedures for Issue of Share capital, Appointment of Auditors, Secretarial Standards, and Appointment of Directors & Shareholders' Meetings. Provisions related to registration of charges, corporate social responsibility, mergers and amalgamations & rehabilitation of sick companies. An overview of Companies Act 1956
MBA(D) M001	**Consumer Behaviour**	**Module III :** Impact of Regulatory Bodies on Consumer Behaviour should be added	**Module I:** Introduction to consumer behavior- Definitions of Consumer behavior
MBA(D) M003	**Retail Management**	**Module I:** Factors for growth of organized retail in India, Evolution and benefits to consumers and retailers, **Module II:** Criteria for selection of	**Module V:** Introduction, Retail Sales process

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		location, Types of location **Module III :-** Importance, Programs and strategies **Module V:** Retail Audit- Objectives	
MBA(D) M004	**Marketing Of Services**	**Module I:** Concept, Services Characteristics and Issues, Goods v/s service marketing	**Module I: Marketing of Services: Evolution of Services Marketing, Concept, Services Characteristics and Issues, Goods v/s service marketing** **Module II:** Understanding Services and their
MBA(D) M005	**Sales and Distribution Management**	**Module I:** Selling as a part of marketing; Sales management and salesmanship; Role of sales manager; Theories of personal selling; Concept & Process of personal selling, various types of sales jobs	--
MBA(D) M006	**Customer Relationship Management**	**Module I:** CRM- Definition, Evolution and Benefits, CRM as a business strategy, Levels of CRM, CRM framework **Module II:** Customer Satisfaction and Profit Chain, Managing Customer Life Cycle, **Customer Value Creation,**	

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		Module III: Conceptual and theoretical foundations of R.M. Process, Programs and strategies for RM, Extending the concept of Relationship to achieve competitive advantage- Customer loyalty management, Service quality management, Relationship Quality, Managing Service recovery programs and Complaint Handling, Customer Retention Strategy. **Module IV:** Role of Technology in CRM, Introduction to e-CRM : Components, features, functions and difference between CRM & e-CRM. e-CRM strategy	
MBA (D)-H002	**Human Resource Planning**	**Module I:** Conceptual Framework (Heading) Overview of Human resource planning **Module II:** Human Resource**(Heading)** Concept of career management, Career Planning: meaning, characteristics,	**Module I:** Nature and importance: objectives, need, and benefits of human resource planning **Module II:** Process, forecasting staffing requirements, managerial judgment, ratio-trend analysis, regression Analysis, Delphi technique, flow models etc.

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		objectives, need , process, models, benefits and limitations, Succession planning- meaning, features, objectives, significance and process, Internal mobility- promotion and transfer. **Module III:** Career Development and Management- Concept of career management, Career Planning: meaning, characteristics, objectives, need, process, models, benefits and limitations, Succession planning- meaning, features, objectives, significance and process, Internal mobility- promotion and transfer. **Module V:** Human Resource Records and Research: meaning, objectives, significance, types and techniques, Human Resource Accounting and Auditing: meaning, objectives, significance, types and techniques, Human Resource Information System: meaning, need,	**Module III:** Concept of career management, characteristics, stages, objectives, benefits, need, model and limitation of career planning, succession planning- meaning, features and steps, internal mobility- promotion and transfer. **Module V:** Human Resource Records, research and audit- objectives, significance, type and techniques, HR Accounting and information system- meaning, advantages, limitations and need

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		advantages and limitations.	
MBA(D)-H003	**Training And Development**	**Module I:** Training need Assessment: concept, **Module V :** Brief Introduction of Skill Councils under Skill Development program of India	**Module I:** Definition, scope, objectives and benefits as already included I n Introduction part
MBA (D)-H004	**International HR & Cross Cultural Management**	**Module I:** Introduction of international human resource management, Domestic and International Human Resource Management, different approaches to International Human Resource Management, control mechanisms and mode of operations of International Human Resource Management. **Module II:** Approaches to international staffing: recruitment and selection of home, host and third country nationals Transferring staff for international business activities and assignments, **Module III:** Factors affecting international compensation plan	**Module I:** Defining IHRM, Broad overview of IHRM-features, elements, benefits and limitation, Domestic and international HRM, control mechanisms and mode of operations. **Module II:** Approaches to international staffing, transferring staff for international business activities **Module V**: and promotion, relationship marketing in

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		Module IV: meaning, significance, benefits and limitations, **Module V**: Cross and Behavior,are added	
MBA (D) - H006	**Strategic Compensation Management**	**Module II**: An overview of National Pension Scheme should be added.	NIL
MBA (D) - H007	**Industrial Relations**	**Module IV:** Collective Bargaining **Module V:** "Workers Participation in Management"	NIL
MBA (D) - H009	**Strategic Human Resource Management**	**Module IV:** HRM Accounting: Approaches, Objectives and Benefits	**Module V:** Accounting for HRM Purpose of measuring cost and benefits of HRM approaches
MBA (D)-F001	**Financial Restructuring**	**Module II:** Financial restructuring through contraction and Expansion **Module III:** Post-Merger Issues and Demerger **Module IV** : Companies Act, 2013 and Competition Act 2002 for Merger & Acquisition, **Module V:** Accounting entry for Merger & Acquisitions, Methods of accounting for Mergers &	**Module I:** and need of financial Restructuring Is removed from title Fundamental concept of financial restructuring, different forms, motives & applications of financial restructuring, Mergers & acquisitions concept, process **Module II:** Financial restructuring & divestiture **Module III:** Contracting

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		Acquisitions, Computation of Purchase Consideration	Managing Post-Merger Issues **Module IV:** Legalities Involved in Merger, Acquisition and Take-over, Ethical Issues of Merger and Take-over Company Law & Competition Act for M&A **Module V:** Accounting and financing for Merger, Acquisition and Takeovers Financial Restructuring, Divestment and Abandonment should be removed
MBA(D) F002	**Management Of Financial Services & Institutions**	Module III & Module IV heading is renamed as Financial Services I and Financial Services II.	**Module III:** Leasing, Hire Purchase and Consumer Credit **Module IV:** Venture Capital Financing, Investment Banking & Mutual Funds
MBA(D) F003	**Security Analysis And Portfolio Management**	**Module I:** An overview of security and security analysis, Introduction of stock exchange: BSE, NSE & OTCEI, Role of SEBI, Depositories: CDSL & NSDL, Trading mechanism of security, Investment alternatives, Valuation theories of Fixed and Variable Income Securities: Bond returns, Holding period	**Module I:** Securities – Concept, Types and functions. Introduction of stock exchange, Objectives of security analysis; and trading mechanism of security Investment alternatives; Valuation theories of fixed and variable income securities. **Module III:** Bar Charts, **Module IV:** Markowitz's Risk-Return Optimization,

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		return, Current yield, Yield-to-Maturity, Valuation of preference shares, Valuation of equity shares: Present value of returns, Constant Growth model, Two-Stage Growth model, Three-Phase Model **Module II:** APT model, AP Equation, Factors affecting return **Module III:** Elliot Wave Theory, Chart Patterns **Module IV:** Basics of portfolio management, Markowitz's Model: Assumptions, Risk and return optimization, Efficient frontier, Leveraged portfolios, Corner portfolios, Single-Index Model, Risk less Lending & Borrowing	Basics of portfolio management, Generating the Efficient Frontier, Single-Index Model, Risk less Lending & Borrowing
MBA(D) F004	**Financial Derivatives**	**Module I:** Participants of Derivative market, Mortgage-Backed Securities, Derivative Market in India - L. C. Gupta Committee Report on Derivatives. Derivatives as a tool for Risk Management.	**Module I**: Changing Environment and Increasing Price Risks, Financial Engineering as a response to Increased Risks, Tools of Risk Management Participants of Derivative market, Mortgage-Backed Securities, Derivative Market in India - L. C. Gupta Committee

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		Module IV Advanced Option Strategies.	Report on Derivatives. as Risk and its management is there in FM Syllabus already. **Module III:** Management of Market Risk
MBA(D)-F006	**International Financial Management**	--	**Module V** Capital budgeting
MBA (D)-F007	**Corporate Tax Management**	**Module I:** and House Property **Module II: Business & Profession & Other Sources** **Module III: General Deductions & Set off and carry forward of losses** Exempted incomes U/s 10, General Deductions of Section 80 & Set off and carry forward of losses. **Module IV: Assessment of Companies & Co-operative Societies** Computation of taxable Income-Deductions from Gross Total Income (applicable to companies). Advance payment of tax. Minimum Alternate Tax. Computation of taxable income of co-operative societies, tax rates	**Module I:** and Business & Professions removed from title Income from Business & Profession **Module II:** Exempted incomes U/s 10, General Deductions of Section 80. **Module III:** Assessment of Companies & Co-operative Societies **Module IV:** Wealth Tax Introduction and Important Definitions, charge and scope of wealth tax, Deemed and Exempted assets, computation of net-wealth and wealth tax

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		and tax liabilities.	
MBA(D)-F010	**Strategic Cost Management And Control**	**Module II:** Just-in-Time (JIT) should be added in Cost Management Tools. **Module III:** and effectiveness; budgeting cycle	NIL
MBA(D)-F011	**Management Control System**	**Module I :** Organizational structure, organizational goals, organizational climate, strategic planning **Module IV** Role of an Auditor should be added. **Module V** The topics Motivation and Morale and Management Reporting System	NIL

RESOLUTION
[No.: BOS/SBM/2016/2]

UNANIMOUSLY RESOLVED THAT the proposed changes in various courses in MBA Dual Specialization are accepted and approved by Board members with subject to the final approval of Academic Council.

Item No. 4

Discussion and approval of proposed changes in various courses of MBA

Course Code	Course Name	Addition	Removal
MBA-101	**Management Accounting**	**Module I: Basics of Accounts** **Module II: Preparation of Financial Statements** **Module III:** Management Accounting and Cost Accounting	**Module III: :** Management Accounting: Introduction, scope, functions, principles, advantages and limitation. Analysis of financial statement: Comparative and

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		Introduction of Management Accounting, Marginal costing and absorption costing, Cost volume profit analysis and break-even analysis, Framework for Budgeting: Installation of Budget, Types and Uses of Budgets. Standard Costing and Variance Analysis should be added **Module IV:** Techniques of Analyzing Financial Statements Comparative and common size financial statements, Trend analysis, Ratio analysis-types, uses and interpretation, Funds Flow and Cash Flow Statement. should be added	common size financial statements, Trend analysis. Ratio analysis-types, uses and interpretation be deleted **Module IV:** Preparation and uses of Fund Flow and Cash Flow statement as per AS-3. Cost volume profit analysis and break-even analysis, Marginal costing and absorption costing. Framework for Budgeting: Meaning, Types and Uses of Budgets. Standard Costing and Variance Analysis
MBA-102	**Principles And Practices of Management**	**Module I:** Introduction **Module II: Planning** **Module III:** Direction & Leadership **Module IV: Motivation & Control** Corporate Social Responsibility of Business	**Module II:** Meaning **Module IV:** Motivation, concept
MBA-103	**Organizational Behaviour**	**Module I: Introduction** **Module II: Individual Behavior** Factors & theories of personality development. Perception – meaning	**Module I:** Concept of Workforce Diversity. **Module II:** Cognitive Dissonance theory, Personality Development: meaning & theories of personality

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		and definition, perceptual process and errors. **Module III: Group Behavior** Group Cohesiveness **Module IV: Other Organizational Issues** Work Stressors, Prevention and Management of Stress. Organizational Change: Concept, Nature, Resistance to Change, Managing resistance to change, Implementing Change, and Organization Development	development **Module III:** Perception – meaning and definition, perceptual process and errors. Group Behavior: **Module IV:** A brief overview of Change Management
MBA-105	**Managerial Economics**	**Module I:** Elasticity of supply **Module II** Long run and short run, Revenue analysis	**Module II:** Analysis and costs estimation-Economic
MBA-106	**Business Communication**	**Module I:** An overview of Business Communication. Types of Communication should be specific and upward, downward, horizontal, verbal, non verbal, formal and informal communication should be added **Module II:** The heading of the module is replaced with Communication models Claude Shannon, S-M-C-R model, added **Module III:** Office order , Agenda and Minutes of	**Module I:** Concept, Objectives, Scope and Function of Business Communication organizational pattern in firm- **Module II:** Rogers model

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		Meeting should be added **Module IV:** Heading should include written business correspondence enquiry letter, order letter, sales letter and complaint letter	
MBA-107	**Computer Application In Management**	NIL	**Module I:** Introduction to computers- definition **Module II:** MS Office and its application **Module III:** Advantage and Disadvantage of
MBA-201	**Human Resource Management**	NIL	**Module I:** Job Description and Job Specification
MBA-203	**Marketing Management**	**Module I:** Functions, Societal marketing **Module II: and STP added to title** **Module III: Decisions related to Product, Price & Place** Packaging and labeling decisions should be added. Factors affecting each stage and strategies **Module IV:** **and Recent trends i Marketing** E-Marketing should b included in this module.	**Module III:** of a product **Module IV:** Societal marketing.
MBA-206	**International Business Management**	**Module II:** Cultural Environment Political Legal Environment & Legal Environment.	**Module II:** Socio cultural environment –Elements of culture, culture analysis; Political & Legal Environment – Embargoes & sanctions, Political risk, legal factors, legal

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			differences.
MBA-207	**Management Information Systems**	**'Module I: Introduction to Information System and its role** Components 'of MIS, Decision Making Process: Programmed and Non- Programmed decisions. **Module II: Types of Networks in Organization** Factors of success and failure, Risks to Information system. **Module III: System Development and Tools of Business Support System** Development and maintenance of Information Systems. 'Optimization analysis' Role and advantages of Transaction Processing System **Module IV: Applications of Information Systems** 'Application of Artificial Intelligence'	**Module II:** Role and advantages of Transaction Processing System, Application of Artificial Intelligence. Development and maintenance of Information Systems, **Module III:** Goal achieving analysis. Decision Making Process: Programmed and Non- Programmed decisions. **Module IV:** 'Networking the enterprise – Enterprise communication and collaboration'
MBA-208	**Business Ethics And Values**	**Module IV**: Ethical Issues in different functional areas of management	NIL
MBA-301	**Strategic Management**	NIL	**Module I:** Business policy-evolution of the concept. Difference between business policy and strategic management

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MBA-302	**Entrepreneurship & Small Business Management**	**Module I: Entrepreneurship: Introduction** Competencies of Entrepreneurs is included **Module III: Small & Medium Scale Industries in India**: Project Formulation, Status and Outcome of Incubation Centre and start-up policy to be included	**Module II:** Network- marketing, franchising & BPO
MBA-401	**Project Management**	NIL	**Module I:** Project Formulation, Project Feasibility, analysis- Market, and Technical. **Module: IV:** Forms of Project Organizations
MBA-402	**Legal Aspects Of Business**	**Module IV**: A brief introduction of Company, Kinds of Companies, Registration and Incorporation, Memorandum of Association, Articles of Association, Prospectus, Directors: Powers and duties, Meetings, Winding up	**Module III:** Meaning Definition Kinds of Negotiable Instruments **Module IV:** Provisions related to Incorporation of a Company, Prospectus & Allotment of Securities, and Procedures for Issue of Share capital, Directors and Shareholders' Meetings. Provisions related to corporate social responsibility & rehabilitation of sick companies.
MBA-M001	**Consumer Behavior**	**Module II**: and Impact of regulatory bodies on consumer behaviour	--
MBA-M006	**Sales And Distribution Management**	**Module I:** An overview of wholesale and retailing	--

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MBA-M007	**Customer Relationship Management**	**Module I:** CRM- Definition, Evolution and Benefits, Levels of CRM, Emerging issues and future trends of CRM. Customer relationship framework, Customer Satisfaction and Profit chain, CRM Model, Managing Customer Life Cycle, Customer Retention – Strategies and Sequences in Retention Process. **Module II:** Conceptual and theoretical foundations of Relationship Marketing, Extending the concept of Relationship to achieve competitive advantage, Customer Value Creation, Customer loyalty management, Service quality management, Relationship Quality, Managing Service recovery programs and Complaint Handling. **Module III:** CRM project Planning and Implementation, Components, functions. E CRM strategy.	**Module I:** Definition of CRM, elements of CRM, Rationale and Benefits of CRM, Types of CRM, Emerging issues and future trends of CRM. CRM Model, Building Customer Relationship Management by Customer Retention; Stages of Retention; Sequences in Retention Process, The CRM cycle i.e. Assessment Phase; Planning Phase; The Executive Phase. **Module II:** Evolution and Growth of R.M., Conceptual and theoretical foundations of R.M. Process, Programs and strategies for RM, Extending the concept of Relationship to achieve competitive advantage. Managing Service Recovery and Complaint Handling, Customer Retention Strategy
MBA-H001	**Human Resource Development System And Strategies**	NIL	**Module I:** Field of HRD- Concept, Goals should be replaced **Module IV:** Skills and technical training
MBA-H002	**Manpower Planning & Management**	**Module II:** An overview of manpower planning **Module II:**	**Module: I** Manpower planning: Introduction, Objectives, need and benefits of manpower

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		Human Resource Forecasting: meaning, process, benefits and limitations, Human Resource Forecasting Techniques: quantitative and qualitative techniques/demand forecasting and supply forecasting techniques with their benefits and limitations **Module III:** Objectives, significance and process, internal mobility- promotion and transfer. **Module IV:** Auditing, Human Resource Information System	planning, **Module: II** Forecasting Manpower Needs, the Forecasting Process, Inventorying available talent, Projecting Future Talent Supply, forecasting Staffing Requirements **Module III:** and steps, internal mobility- promotion and transfer. **Module: IV** and audit- objectives, significance, type and techniques,
MBA-H003	**Training And Development**	**Module IV:** Brief Introduction of Skill Councils under Skill Development program of India is added.	**Module I:** Definition, scope, objectives and benefits should be removed
MBA- H004	**International HR And Cross Cultural Management**	**Module I:** international staffing: recruitment and selection of home, host and third country nationals, different approaches to International Human Resource Management, **Module II:** Factors affecting international compensation plan, need to be added **Module III:** and its significance **Module IV:** Cross Behavior, Cross-	**Module I:** Defining IHRM, -features, elements, benefits and limitation, **Module IV:** and promotion, relationship marketing in cross-cultural contexts

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		Cultural Negotiation	
MBA-H006	**Compensation And Performance Management**	**Module II:** An Overview of National Pension Scheme.	NIL
MBA-F001	**Financial Restructuring**	**Module I:** various forms of financial restructuring, and Ethical issues of Mergers and Takeovers. Recent Trends in Financial Restructuring. **Module II:** and Demerger **Module IV:** Accounting entry for Merger & Acquisitions, Methods of accounting for Mergers & Acquisitions, Computation of Purchase Consideration	**Module I:** different forms, motives & applications of financial restructuring, **Module II:** Contracting **Module III:** Legalities Involved in Merger, Acquisition and Take-over, Ethical Issues of Merger and Take-over, Company Law & Module IV: Accounting and financing for Merger, Acquisition and Takeovers, financial Restructuring, Divestment and Abandonment
MBA-F003	**Security Analysis And Portfolio Management**	**Module II** Economic, Industry and Company Analysis,: Tools of technical analysis, chart formations or price patterns and technical indicators, Measuring risk and historical & expected return of a single security and portfolio. **Module III:** security market line Assumptions, APT model, AP Equation, Factors affecting return. **Module IV:** by Sharpe's, Treynor's	**Module I** Online v/s offline trading, types of orders, **Module II:** Measuring Historical return and risk; measuring expected return and risk. Calculation of portfolio return and risk

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		and Jensen's Index.	
MBA-F005	**Management Control System**	**MANAGEMENT CONTROL SYSTEM Is added** **Module I: Conceptual Framework** Nature & Purpose of Control System-The new paradigms of management control system, Elements of Control, Relating system to organizational objectives - Strategic Planning, Management Control and Operational Control, Functions of the Controller. **Module II: Responsibility Centers & Accounting** Responsibility Centers –Types of Responsibility centers-Expense Centers, Profit Centers & Investment Centers-Measures used to evaluate their performances-ROI, EVA, MVA, ROA DuPont Analysis, Responsibility Accounting and Activity Based Costing. **Module III: Budgetary Control and Audit** Budgeting as a tool for Management Control. Types of Budgets-Flexible budget, Zero Base Budget, Master	**INTERNATIONAL ACCOUNTING is removed** **Module I** Meaning, Nature, Importance and Scope of International Accounting, Comparative Development Patterns of International Accounting, Currency Transactions. **Module II** Managing International Information System, International Perspective on Inflation Accounting, Financial Reporting and Disclosure. **Module III** Analysis and Interpretation of Foreign Financial Statements, Accounting Practices of Multinational Entities. **Module IV** Transfer Pricing and International Accounting, International Accounting Standards, Multinational Corporations and International Accounting Standards.

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		budget. Performance Budgeting and Variance analysis. Financial Audit, Internal Audit, Cost Audit and Management Audit – Principles & Objectives, Role of an Auditor. **Module IV: Behavioral Aspects and Applications of Management Control System** Motivation and Morale, Goal Congruence, Management Reporting System, Management Control system in Different Sectors-Banking Insurance, BPO, Concept and types of Transfer Pricing and Performance Evaluation through Balanced Score Card.	
MBA-F006	**International Financial Management**	**Module I**: and its approaches **Module II:** Return and Risk in International Capital Market Eurocurrency market, Return and Risk in International Investments	**Module I**: Return and Risk in International Investments. and Policies. **Module II:** International Capital Market-
MBA-IT001	**E- Business**	NIL	**Module 1:**: Overview of E-business: Definition
MBA-IT002	**Data Communication And Networking**	**Module III:** Circuit Switching should be added in this module	NIL

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RESOLUTION
[No.: BOS/SBM/2016/3]

UNANIMOUSLY RESOLVED THAT the proposed Changes in various courses in MBA are accepted and approved with subject to the final approval of Academic Council

Item No. 5

Discussion and approval of New proposed course in MBA

School of Business and Management has decided to introduce new course "Management Control System" to ensure efficiency by monitoring the allocation and use of resources.

RESOLUTION
[No.: BOS/SBM/2016/4]

UNANIMOUSLY RESOLVED THAT the International Accounting should be replaced by Management Control System in **MBA** and approved with subject to the final approval of Academic Council

Item No. 6

Discussion and approval of the proposed Syllabus of Management Control System in MBA

RESOLUTION
[No.: BOS/SBM/2016/5]

UNANIMOUSLY RESOLVED THAT the syllabus of Management Control System is accepted and approved as presented with changes and subject to the final approval of the Academic Council.

Item No. 7

Discuss and approve proposed minimum modifications in course structure

The chair presented the revised curriculum of BBA in front of the board.

Proposed Revisions in curriculum of BBA for academic session 2016-19

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Course Code	Course Name	Addition	Removal
BBA -101	**BUSINESS ORGANISATION**	Module I: Types of Business Organisation as it is imperative to study the classification of Business Organisation Module III: Online trading is the linked topic should be added Module IV: Overview of Marketing and its role as it is essential while understanding Advertising should be added. Module V: Industrial Relations is to be for better understanding with concept of welfare state should be added	NIL
BBA -103	**PRINCIPLES OF MANAGEMENT**	Module V: Change Management -Management of change: concept, forces of change, resistance to change should be included.	**NIL**
BBA -105	**FUNDAMENTAL OF ACCOUNTING**	Module I: Accounting Terminology Module IV: Balance Sheet as Per Schedule VI as latest format of Balance Sheet should be added.	**NIL**
BBA 301	**BUSINESS STATISTICS**	Module III: Measures of Dispersion should be clubbed with Module II Measures of Central tendency should be added. Module V: Analysis of time series- meaning and significance and simple numerical and Association of Attributes meaning and significance and simple numerical essentially taught in Statistics should be added.	**NIL**
BBA -303	**COST ACCOUNTING**	Module V: Meaning, Advantages, Limitations of CVP Analysis &Marginal Costing	**NIL**

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		With Key Factor And Make Or Buy Decision Making should be added as it is essentially taught in costing hence should be added	
BBA -304	**FINANCIAL MANAGEMENT**	Module III: Theories of Capital Structure should be added	**NIL**
BBA -306	**MANAGEMENT OF HUMAN RESOURCE**	Module IV: Evaluation and Effectiveness of Training Programmes	**NIL**
BBA -401	**RESEARCH METHODOLOGY**	Module IV: Chi Square Test, One Way And Two Way ANOVA	**NIL**
BBA -404	**PROJECT MANAGEMENT**	Module I: Meaning& Concept Of PM , Features, Scope And Importance, Classification Of Project, PLC should be added as introductory framework Module II: Overview Of SCBA, Various Financial. Instt. To Finance Project	**NIL**
BBA -406	**MANAGEMENT ACCOUNTING**	Module I: Tools And Techniques Of MA, HRA & Social Accounting Module III: Preparing Balance Sheet with Ratio & Du Pont	**NIL**
BBA -501	**BUSINESS BUDGETING**	Module I: Concept Of Surplus, Deficit And Balance Budget Module II: Master Budget	**NIL**
BBA -502	**ORGANISATION BEHAVIOUR**	Module I: Attitude and Its Theories, Theories of Personality should be part of behavioral theories. Module III: Transformational Leadership	**NIL**
BBA -602	**MANAGEMENT OF SERVICES**	Module I: Consumer Behaviour, Expectation in Services is needed for service behavior should be added. Module III: Gap Analysis	**NIL**
BBA -606	**ENVIRONMENTAL MANAGEMENT**	Module I: A Brief overview of Disaster Management. Module IV is merged with Module III. Module IV: **Environment and**	**NIL**

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		Fireworks its content is as follows- Overview of fireworks, types of fireworks, impact of fireworks on global warming and environment, various hazards pertaining through fireworks- physical, environmental and society. Ill effects and remedial measures of fireworks. Role of COP21 for preservation of environment.	

RESOLUTION

[No.: BOS/SBM/UG/2016/6]

UNANIMOUSLY RESOLVED THAT the Changes in course structure of BBA with minimum modifications are accepted and approved with subject to the final approval of Academic Council

Item No. 8

Discuss and approve proposed minimum modifications in course structure of B.Com.

School of Business and Management has decided to introduce new course "Quantitative Techniques" in place of Cost and management Audit.

The chair presented the revised curriculum of B.Com in front of the board.

Proposed Revisions in curriculum of B.Com for academic session 2016-19

Course Code	Course Name	Addition	Removal
B.Com -101	**BUSINESS ORGANISATION**	Module I: Types of Business Organisation as it is imperative to study the classification of Business Organisation Module III: Online trading is the linked topic should be added Module IV: Overview of Marketing and its role as it is essential while understanding Advertising should be added. Module V: Industrial Relations is to be for better understanding with concept of welfare state should be added	**NIL**
B.Com -102	**PRINCIPLES OF**	Module V: Change	**NIL**

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	MANAGEMENT	Management -Management of change: concept, forces of change, resistance to change should be included.	
B.Com -104	**FUNDAMENTAL OF ACCOUNTING**	Module I: Accounting Terminology Module IV: Balance Sheet as Per Schedule VI as latest format of Balance Sheet should be added.	**NIL**
B.Com 302	**BUSINESS STATISTICS**	Module III: Measures of Dispersion should be clubbed with Module II Measures of Central tendency should be added. Module V: Analysis of time series- meaning and significance and simple numerical and Association of Attributes meaning and significance and simple numerical essentially taught in Statistics should be added.	**NIL**
B.Com -205	**COST ACCOUNTING**	Module V : Meaning, Advantages, Limitations of CVP Analysis &Marginal Costing With Key Factor And Make Or Buy Decision Making should be added as it is essentially taught in costing hence should be added	**NIL**
B.Com -403	**FINANCIAL MANAGEMENT**	Module III: Theories of Capital Structure should be added	**NIL**
B.Com -504	**MANAGEMENT OF HUMAN RESOURCE**	Module IV: Evaluation and Effectiveness of Training Programmes	**NIL**
B.Com -601	**PROJECT MANAGEMENT**	Module I: Meaning& Concept Of PM , Features, Scope And Importance, Classification Of Project, PLC should be added as introductory framework Module II: Overview Of SCBA,Various Financial. Instt. To Finance Project	**NIL**

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B.Com -602	**ENVIRONMENTAL MANAGEMENT**	Module I: A Brief overview of Disaster Management Module IV is merged with Module III Module IV : **Environment and Fireworks its content is as follows-** Overview of fireworks, types of fireworks, impact of fireworks on global warming and environment, various hazards pertaining through fireworks- physical, environmental and society. Ill effects and remedial measures of fireworks. Role of COP21 for preservation of environment	**NIL**
B.Com -105	**ECONOMIC ENVIRONMENT OF BUSINESS**	Module I: Classification Of Economic Environment should be added as it is imperative to study the classification should be added. Module II: Second Gen Reforms & MSME Module IV: Current Industrial Policy	**NIL**
B.Com -605	**BANKING &FINANCE**	Module I: Introduction to NBFC, SEBI, IPO, KYC Module V: Types Of Modern Banking, Technology Up gradation, CRM In Banking	**NIL**
B.Com -606	**COST & MANAGEMENT AUDIT**	Replaced by New Subject: QUANTITATIVE TECHNIQUES	

RESOLUTION
[No.: BOS/SBM/2016/7]

UNANIMOUSLY RESOLVED THAT the Changes in course structure of B.Com with minimum modifications are accepted and approved with subject to the final approval of Academic Council

Item No. 9

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Discussion and approval on introduction of new Value Added Courses on **"Introduction to Human Biology"** and **"Writing and Presentation Skills" for PG programme and Logical Reasoning and Career Guidance, Statistics to Excel, Digital Marketing, Business Models for UG programme**

Prof. Rajesh Mehrotra briefed about the rationale behind introducing Value Added courses on **"Introduction to Human Biology"** and **"Writing and Presentation Skills"** for the Academic Session 2016-2017. He briefed about the rationale behind introducing Value Added courses on **Logical Reasoning and Career Guidance, Statistics to Excel, Digital Marketing, and Business Models** for the Academic Session 2016-17

The members suggested the following changes:

- More focus on practical applications of excel
- Special attention to writing skills
- Improvement of reasoning skills

RESOLUTION
[No.: BOS/SBM/2016/8]

UNANIMOUSLY RESOLVED THAT the courses on **"Introduction to Human Biology"** and **"Writing and Presentation Skills"** in PG and **Logical Reasoning and Career guidance" ,"Digital Marketing", "Statistics to excel Business models** in UG are extremely appreciated and approved with subject to the final approval of Academic Council

Item No. 10

Discussion and approval of the proposed Syllabus of Value Added Course on **"Introduction to Human Biology"** and **"Writing and Presentation Skills" for PG programme and Logical Reasoning and Career Guidance, Statistics to Excel, Digital Marketing, Business Models for UG programme**

RESOLUTION
[No.: BOS/SBM/2016/9]

UNANIMOUSLY RESOLVED THAT the course content of all the courses ""**Introduction to Human Biology"** and **"Writing and Presentation Skills"** for PG students and **Logical Reasoning and Career guidance" ,"Digital Marketing", "Statistics to excel Business models"** for UG Students are oriented towards practical aspects of industry and approved with the suggested changes subject to the final approval of Academic Council.

The members suggested the following changes:

- More focus on Hospital visit to understand the practical functioning.
- Special attention to Group discussions and Mock interviews
- Improving the art of public speaking

The revised curriculum is attached as Annexure 1

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Item No. 11

Discuss and approve the feedback collected for Curriculum from stakeholders

RESOLUTION

[No.: BOS/SBM/2016/10]

UNANIMOUSLY RESOLVED THAT the Remedial classes should be organized after 3:30 for the weak and average students so that they can also perform well during regular classes as well as in end-semester examinations.

Item No. 12

Confirmation and approve regarding "No Change" proposed for Ph.D and MBA (HHM) program.

RESOLUTION
[No.: BOS/SBM/2016/11]

UNANIMOUSLY RESOLVED THAT the program outline of Ph.D and MBA (HHM) program are accepted as same as earlier and approved with subject to the final approval of the Academic Council

Any other matter with the permission of the Chair.

No other points were suggested & discussed.

Board of Studies recommended the above resolutions to be presented in the Academic Council for further final approval.

The meeting ended with the vote of thanks to the Chair.

Authorised Signatory

Additional Registrar
Jaipur National University
Jaipur

JAIPUR NATIONAL UNIVERSITY, JAIPUR

BOARD OF STUDIES

2016-2017

(Prof. D K Mathur)
Registrar
Jaipur National University
Jaipur

SCHOOL OF COMPUTER AND SYSTEMS SCIENCES

BOARD OF STUDIES IN THE SCHOOL OF COMPUTER AND SYSTEMS SCIENCES

AGENDA

The meeting of the Board of Studies in the School of Computer & Systems Sciences for the year 2016-17, will be held on 4th May 2016 at 2:30 pm in GL-1 Lab, MCA Block, SADTM Campus, Jaipur National University
The following agenda will be discussed in the meeting:

- Confirmation of the minutes of the meeting held on 20th May2015
- Action taken report
- To discuss and approve the revised curriculum/scheme of the following courses of MCA and BCA
  - Basic Digital Electronics (BCA-104)
  - Basic Digital Electronics Lab (BCA-153)
  - Computer Organization (BCA-203)
  - Internet Technologies and Web Designing (BCA-204)
  - Web Programming Lab (BCA-252)
  - Soft skills (BCA-305)
  - Soft Skills Lab (BCA-353)
  - Advanced Internet Technologies Lab(452)
  - .Net Programming (BCA-602)
  - Graphics & Multimedia (BCA-603)← New Introduction
  - Graphics & Multimedia Lab(BCA-652)← New Introduction
  - Mathematical Foundation of Computer Science(MCA-101/PGDCA-101))← Content Revision
  - Computer and 'C' Programming(MCA-102/PGDCA-102)←)← Content Revision
  - Computer Organization & Architecture(MCA-103/PGDCA-103)← Content Revision
  - Database Management System(MCA-104/PGDCA-104)← Content Revision
  - Accounting and Financial Management (MCA-105/PGDCA-105))← Content Revision
  - 'C' Programming Lab(MCA-152/PGDCA-152)← Content Revision
  - Data Structure Using C(MCA-201/ PGDCA-201) ← Content Revision
  - Computer Oriented Numerical and Statistical Techniques(MCA-202/PGDCA-202) ← Content Revision
  - Data Communication & Computer Networks(MCA-204/PGDCA-204) ← Content Revision
  - Object Oriented Lab with C++ (MCA-301) ← Content Revision
  - Object Oriented Programming with C++ Lab (MCA-351) ← Content Revision
  - Software Engineering (MCA-401) ← Subject Shifting
  - Java Programming (MCA-402)← Replacement of subject with Elective Adv. Java Programming
  - Compiler Design (MCA-403) ← Subject Shifting
  - Software Engineering Lab (MCA-451) ← Subject Shifting
  - Java Programming Lab (MCA-452))← Replacement of subject with Elective Adv. Java Programming Lab
  - Web Technology (MCA-501) ← Content Revision and shifting
  - .Net Framework & ASP.Net (MCA-503) ← Content Revision
  - Management Information System (MCA-504) ← Subject Shifting
  - Cloud Computing (MCA-505.3) ← New Introduction
  - .Net Lab(MCA-553) ← Content Revision
  - Data Warehousing and Data Mining (MCA-502.2) ← Content Revision
  - Data Warehousing and Data Mining Lab(MCA-552.2) ← New Introduction

(Prof. D K Mathur)
Registrar
Jaipur National University
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BOARD OF STUDIES

School of Computer & Systems Sciences

Minutes of the meeting held on 4th May 2016

The meeting of the Board of Studies in the School of Computer & Systems Sciences, for the year 2016-17, was held on 4th May 2016 at 2:30 pm in GL-1 Lab, MCA Block, SADTM Campus, and Jaipur National University.
The following members attended the meeting:

S.No.	Name	Designation	Association
1.	Prof. H.N Verma	Chairperson	Chairperson , Vice Chancellor, Jaipur National University
2.	Mr. Devesh K Gupta	External Industry Expert	Director, Knowledge Paint Infotech Pvt. Ltd.
3.	Prof. M P Singh	External Subject Expert	Professor, Dr. B R Ambedkar University, Agra
4.	Prof. PrashantRana	External Subject Expert	Associate Professor, Department of Computer Science & Engineering, Thapar University, Patiala
5.	Dr. PrashantSahaiSaxena	Joint Director	School of Computer & Systems Sciences, Jaipur National University
6.	Ms. SumanBhatnagar	Assistant Director	School of Computer & Systems Sciences, Jaipur National University
7.	Mr. MuditKhetan	Faculty Member	Assistant Professor, School of Computer & Systems Sciences, Jaipur National University
8.	Ms. BlessyThankachan	Faculty Member	Assistant Professor, School of Computer & Systems Sciences, Jaipur National University
9.	Ms. AnjuGautam	Faculty Member	Assistant Professor, School of Computer & Systems Sciences, Jaipur National University

Chairperson of the Board addressed the members and introduced external BOS Members to the board and further internal members introduced themselves.

I. Confirmation of the minutes of the meeting held on 20th May 2015

RESOLUTION
[No.: BOS/SCSS/2016/1]

(Prof. D K Mathur)
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Jaipur National University
Jaipur

The Board of Members unanimously resolved that the minutes of BOS Meeting held on 20th May 2015 were confirmed.

II. Action Taken Report

The revised curriculum was discussed and approved and the following changes have been implemented from July 2015, for the following courses:

S. No.	Course Code	Subject Name	Revision
1.	BCA-153	Basic Digital Electronics Lab	Lab Hours were increased from two to three.
2.	BCA-203	Computer Organization	Contents were revised
3.	MCA-502.4	System Simulation and Modeling	New Course was added in the curriculum of MCA

III. To discuss and approve the revised curriculum of the following courses of PGDCA, MCA and BCA

- Basic Digital Electronics (BCA-104)
- Basic Digital Electronics Lab (BCA-153)
- Computer Organization (BCA-203)
- Internet Technologies and Web Designing (BCA-204)
- Web Programming Lab (BCA-252)
- Soft skills (BCA-305)
- Soft Skills Lab (BCA-353)
- Advanced Internet Technologies Lab(452)
- .Net Programming (BCA-602)
- Graphics & Multimedia (BCA-603) ← New Introduction
- Graphics & Multimedia Lab(BCA-652) ← New Introduction
- Mathematical Foundation of Computer Science(MCA-101/PGDCA-101))← Content Revision
- Computer and 'C' Programming(MCA-102/PGDCA-102)←)← Content Revision
- Computer Organization & Architecture(MCA-103/PGDCA-103)← Content Revision
- Database Management System(MCA-104/PGDCA-104)← Content Revision
- Accounting and Financial Management (MCA-105/PGDCA-105))← Content Revision
- 'C' Programming Lab(MCA-152/PGDCA-152)← Content Revision
- Data Structure Using C(MCA-201/ PGDCA-201) ← Content Revision
- Computer Oriented Numerical and Statistical Techniques(MCA-202/PGDCA-202) ← Content Revision
- Data Communication & Computer Networks(MCA-204/PGDCA-204) ← Content Revision
- Object Oriented Lab with C++ (MCA-301) ← Content Revision
- Object Oriented Programming with C++ Lab (MCA-351) ← Content Revision
- Software Engineering (MCA-401) ← Subject Shifting
- Java Programming (MCA-402)← Replacement of subject with Elective Adv. Java Programming
- Compiler Design (MCA-403) ← Subject Shifting
- Software Engineering Lab (MCA-451) ← Subject Shifting
- Java Programming Lab (MCA-452))← Replacement of subject with Elective Adv. Java Programming Lab
- Web Technology (MCA-501) ← Content Revision and shifting
- .Net Framework & ASP.Net (MCA-503) ← Content Revision
- Management Information System (MCA-504) ← Subject Shifting
- Cloud Computing (MCA-505.3) ← New Introduction
- .Net Lab(MCA-553) ← Content Revision
- Data Warehousing and Data Mining (MCA-502.2) ← Content Revision
- Data Warehousing and Data Mining Lab(MCA-552.2) ← New Introduction

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RESOLUTION
[No.: BOS/SCSS/2016/2]

The Board unanimously resolved that the revised structure of the above mentioned courses is appreciated and approved with the suggested changes, subject to the final approval of the Academic Council. The following changes were suggested in the courses.

S. No.	Course Code	Subject Name	Suggested Changes
1.	BCA-101	Basic Digital Electronics (BCA-101)	Contents of the subject should be revised, as majority of the contents include concepts of Basic Electronics instead of Digital Electronics
2.	BCA-153	Basic Digital Electronics	The Basic Electronics practical exercises should be replaced with Basic Digital Electronics practical exercises
3.	BCA-203	Computer Organization	The contents should be revised as most of the content is related to Organization.
4.	BCA-204	Internet Technology and Web Designing	Contents of the subject should be revised to match Industry requirements.
5.	BCA-252	Web Programming Lab	Contents of the subject should be revised to match Industry requirements.
6.	BCA-305	Soft Skills	It was suggested to replace with Communication and Soft Skills to include more practical approach to the subject.
7.	BCA- 353	Soft Skills Lab	It was suggested to change the subject title and replace it with Communication and Soft Skill Lab to make it more specific.
8.	BCA- 452	Advanced Internet Technologies Lab	It was suggested to revise the content of all the units to enhance the knowledge of website building.
9.	BCA – 602	.NET Programming	It was suggested to remove some of the topics from the contents those are obsolete, to make it more specific.
10.	BCA -603	Introduction to ICT resources	It was suggested to replace this subject with Computer Graphics and Multimedia, as the subject content is not up to the level of BCA graduate.
11.	BCA – 652	ICT Resources Lab	It was suggested to replace this subject with Computer Graphics and Multimedia Lab.
12.	PGDCA/MCA-101	Mathematical Foundation of Computer Science	It was suggested to revise the content of the course.
13.	PGDCA/MCA-102	Computer and 'C' programming	It was suggested to revise the content and all File Handling operations in the Syllabus.
14.	PGDCA/MCA-103	Computer Organization and Architecture	It was suggested to revise the content of the course.
15.	PGDCA/MCA-104	Database Management System	It was suggested to revise the content of the course.
16	PGDCA /MCA-105	Accounting and Financial Management	It was suggested to revise the content of the course.
17	PGDCA/MCA-152	'C' Programming Lab	It was suggested to revise the content of the course.
18	PGDCA/MCA-201	Data Structure Using C	It was suggested to revise the content of the course.
19.	PGDCA/MCA-202	Computer Oriented Numerical and Statistical Techniques	It was suggested to revise the content of the course.
20	PGDCA/MCA-204	Data Communication & Computer Networks	It was suggested to revise the content of the course.

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21	MCA-301	Object Oriented Programming	It was suggested to revise the contents and add C++ and JAVA both for this course.
22	MCA-351	Object Oriented Programming	It was suggested to revise the contents of the lab manual and add C++ and JAVA Program.
23	MCA-401	Software Engineering	It was suggested replace this course with Management Information System.
24	MCA-402	Java Programming	It was suggested to replace this course with Advance JAVA Programming to provide in-depth knowledge.
25	MCA-403	Compiler Design	It was suggested to shift the course to V semester
26	MCA-451	Software Engineering Lab	It was suggested toreplace this course with Advance JAVA Programming Lab
27	MCA-452	JAVA Programming Lab	It was suggested to replace this course with revised content of Web Technology Lab
28	MCA-501	Web Technology Lab	It was suggested to shift this course to IV Semester, which is replaced by revised Software Engineering Lab.
29	MCA-502.2	Elective 1 Advance JAVA Programming	It was suggested to shift this course to IV Semester which is replaced by Data Warehousing and Data Mining.
30	MCA-503	.Net Framework and ASP.NET	It was suggested to revise the contents of the existing syllabus.
31	MCA-504	Management Information System	It was suggested to shift the course to IV semester which is replaced by Compiler Design.
32	MCA-502.2	Data Warehousing and Data Mining	It was suggested shift the course to V semester Elective-II to Elective -I
33	MCA-505.3	Cloud Computing	It was suggested to introduce a new elective subject as elective 2
34	MCA-553	.Net Lab	It was suggested to revise the contents of the existing syllabus.
35	MCA-552.2	Data Warehousing and Data Mining Lab	It was suggested to introduce a new elective Lab as elective 1

Chairperson

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Master of Computer Applications
(MCA)
Duration – 3 Years Full Time

Programme Structure and Curriculum &

Scheme of Examination

SCHOOL OF COMPUTER& SYSTEMS SCIENCES

JAIPUR NATIONAL UNIVERSITY JAGATPURA, JAIPUR

2016-17

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JAIPUR NATIONAL UNIVERSITY, JAIPUR

Jagatpura, JAIPUR

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COURSE OUTLINE FOR MCA

Semester – I

S.No.	Course Code	Subject	Periods			Evaluation Scheme				
						Sessional Exams			ESE	Subject Total
			L	T	P	CT	TA	Total		
1.	MCA-101	MathematicalFoundationof Computer Science	3	1		20	10	30	70	100
2.	MCA-102	Computer and 'C' Programming	3	1		20	10	30	70	100
3.	MCA-103	Computer Organization & Architecture	3	1		20	10	30	70	100
4.	MCA-104	Data Base Management System	3	1		20	10	30	70	100
5.	MCA-105	Accounting and Financial Management	3	1		20	10	30	70	100
PRACTICALS										
1.	MCA-151	Office ManagementLab			2	20	10	30	70	100
2.	MCA-152	Programming in Clab			4	20	10	30	70	100
3.	MCA-153	DBMSLab			3	20	10	30	70	100
4.	MCA-154	Communication& Soft Skills -I			2	10	10	20	30	50

Semester – II

S.No.	Course Code	Subject	Periods			Evaluation Scheme				
						Sessional Exams			ESE	Subject Total
			L	T	P	CT	TA	Total		
1.	MCA-201	Data Structure Using C	3	1		20	10	30	70	100
2.	MCA-202	Computer Oriented Numerical and Statistical Techniques	3	1		20	10	30	70	100
3.	MCA-203	Operating System	3	1		20	10	30	70	100
4.	MCA-204	Data Communication & Computer Networks	3	1		20	10	30	70	100
5.	MCA-205	Environmental Science	3	1		20	10	30	70	100
PRACTICALS										
1.	MCA-251	Data Structures Using C Language Lab			4	20	10	30	70	100
2.	MCA-252	Numerical & Statistical Techniques Lab			3	20	10	30	70	100
3.	MCA-253	Unix &Shell programming Lab			2	20	10	30	70	100
4.	MCA-254	Communication & Soft Skills -II			2	10	10	20	30	50

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Semester – III

S.No.	Course Code	Subject	Periods			Evaluation Scheme				
						Sessional Exams			ESE	Subject Total
			L	T	P	CT	TA	Total		
1.	MCA-301	Object Oriented Programming	3	1		20	10	30	70	100
2.	MCA-302	System AnalysisandDesign	3	1		20	10	30	70	100
3.	MCA-303	Computer Graphics	3	1		20	10	30	70	100
4.	MCA-304	Artificial Intelligence	3	1		20	10	30	70	100
5.	MCA-305	Design and Analysis of Algorithm	3	1		20	10	30	70	100
PRACTICALS										
1.	MCA-351	Object OrientedProgramming Lab			4	20	10	30	70	100
2.	MCA-352	Computer Graphics Lab			3	20	10	30	70	100
3.	MCA-353	DAA Lab Communication			2	20	10	30	70	100
4.	MCA-354	& Soft Skills - III			2	10	10	20	30	50

Semester – IV

S.No.	Course Code	Subject	Periods			Evaluation Scheme				
						Sessional Exams			ESE	Subject Total
			L	T	P	CT	TA	Total		
1.	MCA-401	Management Information System	3	1		20	10	30	70	100
2.	MCA-402	Advanced Java Programming		1		20	10	30	70	100
3.	MCA-403	WEB Technology	3	1		20	10	30	70	100
4.	MCA-404	Computer Based Optimization Techniques	3	1		20	10	30	70	100
5.	MCA-405	Microprocessor Design and Assembly Language	3	1		20	10	30	70	100
PRACTICALS										
1.	MCA-451	Advanced Java Programming Lab			2	20	10	30	70	100
2.	MCA-452	Web Technology Lab			4	20	10	30	70	100
3.	MCA-453	Microprocessor Lab			3	20	10	30	70	100
4.	MCA-454	Communication & Soft Skills -IV			2	10	10	20	30	50

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After completion of Semester – IV, students are required to undergo for " Oracle Certified

Associate Developer". Duration:

3 Weeks

S.No.	Course Code	Subject	Periods		Evaluation Scheme
			L	P	
1.	MCA-406	RDBMSConceptsandintroductionto SQL	3		50
2.	MCA-455	Database 10G Administration Workshop I Release-2-WDP (D17092GC31S)		12	100
3.	MCA-456	Oracle Database 10G Administration Workshop II Release-2-WDP (D17090GC31S)		12	100
				TotalMarks:	**250**

Semester – V

S.No.	Course Code	Subject	Periods			Evaluation Scheme				
						Exams				
			L	T	P	CT	TA	Total	ESE	Subject Total
1.	MCA-501	Software Engineering	3	1		20	10	30	70	100
2.	MCA-502	*Elective I	3	1		20	10	30	70	100
3.	MCA-503	.NET Framework and ASP.NET	3	1		20	10	30	70	100
4.	MCA-504	Compiler Design	3	1		20	10	30	70	100
5.	MCA-505	*ElectiveII	3	1		20	10	30	70	100
PRACTICALS										
1.	MCA-551	Software Engineering Lab			2	20	10	30	70	100
2.	MCA-552	*Elective I Lab			4	20	10	30	70	100
3.	MCA-553	.NET Lab			3	20	10	30	70	100
4.	MCA-554	Communication & Soft Skills -V			2	10	10	20	30	50

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***Elective I select any one along with corresponding Lab:**

502.1	Advanced Database Concepts
502.2	Data Warehousing & Data Mining
502.3	Android Programming

***Elective II Select any one**

505.1	Parallel Processing
505.2	Mobile Computing
505.3	Cloud Computing
505.4	Real Time Systems

Semester – VI

S.No.	Course Code	Subject	Evaluation Scheme				
			Sessional Exams				Subject Total
			C T	TA	Total	ESE	
1.	MCA-651	Industrial Project	-	200	200	300	500

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Scheme of Examination (MCA) (Sem. I to Sem VI)

1.) Each theory paper shall carry 100 marks (70 marks for written sem. Examination and 30 marks for internal assessment), the sem. Examination will be of 3 hrs. Students have to pass the internal and external examinationseparately.

2.) The pattern of examination includes:

- Question No. 1 should be compulsory and cover the entire syllabus and carrying 20 marks. This question should have 14 short answer type questions. Students are required to attempt any 10 question out of14.
- Apart from Question No. 1, rest of the paper shall consist of five units as per the syllabus. Every unit should have two questions. However, students have to attempt only 1 question from each unit. Each question will be carrying 10marks.

3.) Dissertation (Sem VI) - 500 marks.

4.) Internal Assessment will be based on class test, assignments, presentations, midterm examination performance and attendance.

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Semester – I

MCA-101: Mathematical Foundation of Computer Science

Periods/week: 3L, 1T
Max. Marks: 100

Course Objective

The aim of the course is to introduce the mathematical foundations of theoretical computer science and the theory of computation. Fundamental concepts in discrete mathematics with emphasis on their applications to computer science will be taught. This course also provides introduction to theory ofcomputation.

Course Contents Unit – I

Set Theory: Definition of sets, countable and uncountable sets, Venn diagrams, proofs of some general identities on sets.

Relation: Relations, properties of binary relation, matrix representation of relations, closures of relations, equivalence relations, partial order relation. Function: Types, composition of function, recursively defined function.

Unit – II

Algebraic Structures: Properties, semi group, monoid, group, abelian group, subgroup, cyclic group, cosets, normal subgroups, lagrange's theorem, permutation groups.

Unit – III

Propositional Logic: Boolean algebra, prepositions, logical operations, tautologies, contradictions, logical implication, logical equivalence, normal forms, theory of inference and deduction. Predicate calculus: predicates and quantifiers, mathematical induction.

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Unit IV

Graphs and Combinatorics: Simple graph, multi graph, graph terminology, representation of graphs, bipartite, regular, planar and connected graphs, connected components in a graph, euler graphs, hamiltonian path and circuits, graph coloring, chromatic number, isomorphism and homomorphism of graphs. Basic

countingtechnique, pigeon-hole principle, recurrence relation, generating function, polya's counting theorem.

Unit –V

Introduction to defining language, kleene closure, arithmetic expressions, Chomsky hierarchy, regular expressions, generalization transition graph, conversion of regular expression to finite automata, NFA, DFA, conversion of NFA to DFA, optimizing DFA, FA with output moore machine, mealy machine, conversions.

Non-regular language: Pumping lemma, pushdown automata and introduction to turing machine and elementary applications to recognition of a language and computation of functions.

Books

Recommended:

1. Lipschutz, Seymour, "Discrete Mathematics",(Schaum'sSeries)
2. Trembley, J.P & R. Manohar, "Discrete Mathematical Structurewith Application to Computer Science",TMH
3. Kenneth H. Rosen, " Discrete Mathematics and its applications",TMH
4. Doerr Alan &Levasseur Kenneth, "Applied Discrete Structuresfor Computer Science", Galgotia Pub. Pvt.Ltd
5. Hopcroft J.E. Ullman J.D., "Introduction to Automata theory, Language and Computation", Narosa Publishing House, NewDelhi.
6. Gersting,"Mathematical Structure for Computer Science",WHFreeman &Macmillan.
7. C.L.Liu, "Elements of Discrete Mathematics", McGrawHill"

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MCA-102: Computer and 'C' Programming

Periods/week: 3L, 1T

Max. Marks: 100

Course Objective:

This course provides a fundamental understanding of computer and its components, basic operating system concepts and functional knowledge of MS-DOS. It also provides introduction to ANCI C, focusing on the C programming. Feature, syntax, structure and implementation will be covered. Functions, array, pointer, structure, unions and file system are the important contents of the syllabus.

Course Contents

Unit– I

Introduction to Computers: Introduction to computers, characteristics and limitations of computer, Block diagram of computer, types of computers, uses of computers, computer generations. Input and output devices: Keyboard and mouse, inputting data in other ways, Types of Software: system software, Application software, commercial, open source, domain and free ware software, Memories: primary, secondary and cache memory. Windows basics: desktop, start menu, icons.

Basic Operating System Concept: Functional knowledge of MS-DOS, WINDOWS, and basic commands of MS-DOS, managing file and directories in Ms-DOS, WINDOWS Introduction to Internet, basic terms related with Internet.

Unit – II

Introduction to C: Introduction –Algorithms, Flowcharts- Structure of C Program – Writing the first C Program – File used in C Program – Compiling and Executing C Programs – Using Comments – Keywords – Identifiers–

Basic Data Types in C – Variables – Constants – I/O Statements in C-

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Operators in C- Programming Examples – Type Conversion and Type Casting- enumerations, command line parameters, macros, The C preprocessor, C standard library and header files.

Decision Control and Looping Statements: Introduction to Decision Control Statements – Conditional Branching Statements – Iterative Statements – Nested Loops – Break and Continue Statement – GotoStatement.

Unit – III

Functions: Introduction – using functions – Function declaration/ prototype – Function definition – function call – return statement – Passing parameters – Scope of variables – Storage Classes – Recursive function.

Arrays: Introduction – Declaration of Arrays – Accessing elements of the Array – Storing Values in Array – Calculating the length of the Array – Operations on Array – one dimensional array for inter-function communication – Two dimensional Arrays – Operations on Two Dimensional Arrays

Unit – IV

Strings: Introduction String and Character functions

Pointers: Understanding Computer Memory – Introduction to Pointers – declaring Pointer Variables – Pointer Expressions and Pointer Arithmetic – Null Pointers – Generic Pointers - Passing Arguments to Functions using Pointer – Pointer and Arrays – Passing Array to Function

Unit – V

Structure, Union, and Enumerated Data Types: Introduction – Nested Structures – Arrays of Structures – Structures and Functions - Unions – Enumerated Data Types.

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Files: Introduction to Files – Using Files in C – Reading Data from Files – Writing Data from Files – Detecting the End-of-file –Close a file – Random Access Files – Binary Files – Command line arguments

Books Recommended:

1. V. Rajaraman, "Fundamentals of Computers",PHI
2. YashavantKanetkar, "Let us C",BPB
3. Gottfried, "Programming in C", Schaum's Series, Tata McGrawHill
4. E. Balagurusamy, "Programming in ANSI C",TMH
5. Peter Norton's, "Introduction to Computers",TMH
6. Hahn, "The Internet complete reference",TMH
7. Peter Norton's, "DOS Guide", Prentice Hall ofIndia
8. Kernighan, Ritchie, "The C Programming Language",PHI
9. YashwantKanetkar, "Working with C",BPB

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MCA-103: Computer Organization & Architecture

Periods/week: 3L, 1T

Max. Marks: 100

Course Objective:

This course provides an introduction to computer architecture and organization. It will provide review of modern computer architecture, digital logic fundamentals, and cover architectural configuration of CPU, I/O devices, memory and some topics from advanced architecture.

Course Contents

Unit-I

A Brief History of computers, Von Neumann Architecture, Hardware architecture, Computer Components, Interconnection Structures, Bus Interconnection, memory hierarchy, types of computers.

Digital Logic Fundamentals: Logic gates, Minimization of Boolean Expressions, basic Functions, basic combinational logic: adder/subtractor, decoders, encoders, multiplexers, basic sequential circuits: flip-flops, registers, counters.

Unit- II:

Basic Arithmetic Operations: Integer Addition and Subtraction , Fixed and Floating point numbers, Floating point representation., Signed numbers, Binary Arithmetic, 1's and 2's Complements Arithmetic, 2's Complement method for multiplication, Hardware Implementation, IEEE Standards, Floating Point Arithmetic.

Input-Output Organization: I/O devices: Accessing, I/O interfaces, asynchronous data transfer: Strobe control, handshaking, modes of transfer: programmed I/O, Interrupt-initiated I/O, DMA, interrupts: types interrupt hardware and priority I/O processors.

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Unit III:

CPU Organization: Register organization: General register organization, stack organization, programmer visible register, status and control Register.

Micro operations: Register transfer, bus and memory transfer, arithmetic, logic and shift micro operation. Instruction Sets - RISC - CISC - Instruction pipeline, Addressing modes andformats.

Control Unit: Structure of CU, hardwired control unit, micro programmed control Unit. Case study: 8085 microprocessor.

Unit-IV

Memory Organization: Memory hierarchy, Comparison of different types of memories, main memory: RAM and ROM, memory address map, auxiliary memory: magnetic tape, magnetic disk, RAID, Optical memory, CDROM, DVD.

Cache memory organization: Locality of reference, Hit ratio, Mapping process. Virtual memory organization: Mapping addresses space into memory space, page replacement.

Unit- V

Processors: Introduction to Parallel Processing, Concept and Block Diagram, Types (SISD, SIMD, Interconnect network, MIMD, MISD), Future Directions for Parallel Processors, Performance of Processors, Multi-core Processing, Mobile Computing, Embedded Systems and Cloud computing.

Books Recommended:

1. Patterson, Computer Organization and Design, Elsevier Pub.2009
2. William Stalling, "Computer Organization",PHI.
3. Vravice,Hamacher&Zaky, "Computer Organization",TMH.
4. Mano," Computer System Architecture",PHI.
5. John P Hays, "Computer Organization", McGrawHill.
6. Tannenbaum," Structured Computer Organization',PHI.

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MCA-104: Database Management System

Periods/week: 3L, 1T

Max. Marks: 100

Course Objective

The basic purpose of the subject is to provide the students a deeper understanding of the relational database model by exposing the students to a variety of important issues of data base management, e.g., database design, physical storage, normalization, SQL, transaction processing and concurrency control techniques.

Course Contents

Unit- I

Database Management System Concepts: Introduction and applications of DBMS, Purpose of data base, Data, Independence, Advantages and Disadvantages of Database Management System, DBMS Vs RDBMS.

Database System Architecture: Three Level Architecture of DBMS, The External Level or Subschema, The Conceptual Level or Conceptual Schema, The Internal Level or Physical Schema, Mapping, Database Management System Structure, Database Manager, Database Administrator, Data Dictionary; Client / ServerArchitecture.

Unit – II

Database Models and Implementation: Data Model and Types of Data Model, Relational Data Model, Hierarchical Model, Network Data Model, Object/Relational Model, Object-Oriented Model; Entity-RelationshipModel.

Relational data Model and Language: Relational data model concepts, integrity constraints: entity integrity, referential integrity, keys constraints,

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domain constraints, relational algebra, relational calculus, tuple and domain calculus. Data base design & normalization: Functional Dependency – definition, trivial and non-trivial FD, closure of FD set, closure of attributes, Normalization – 1Nf, 2NF, 3NF, Decomposition using FD- dependency preservation, BCNF, Multi- valued dependency, 4NF, Join dependency and 5NF.

UnitIII

Introduction to SQL: Characteristics of SQL, advantages of SQL, SQL data types and literals. Typesof SQL commands, SQL operators and their procedure, Tables, views and Indexes, queries and sub queries, aggregate functions, Insert, update and delete operations, Joins, unions, intersection, minus.

Unit - IV

Transaction Processing Concepts: Transaction concepts, properties of transactions, serializability of transactions, testing for serializability, System recovery, Two- Phase Commit protocol, Recovery and Atomicity, Log-based recovery, concurrent executions of transactions and related problems, Locking mechanism, solution to concurrency related problems, deadlock, , two-phase locking protocol, Isolation, Intent locking.

Unit - V

Concurrency Control Techniques: Concurrency control, locking techniques for concurrency control, time stamping protocols for concurrency control, validation based protocol, multiple granularity, multi-version schemes, recovery with concurrent transaction. Introduction to distributed databases and object orienteddatabases.

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Books Recommended:

1. Date C J, "An Introduction To Database System",AddisionWesley
2. Korth, Silbertz, Sudarshan, "Database Concepts", McGrawHill
3. Elmasri, Navathe, "Fundamentals Of Database Systems", Addision Wesley
4. Paul Beynon Davies, "Database Systems", Palgrave Macmillan
5. Bipin C. Desai, "An introduction to Database Systems",Galgotia Publication
6. Ramakrishnan, Gehrke, "Database Management System", McGrawHill

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MCA-105: Accounting and Financial Management

Periods/week: 3L, 1T

Max. Marks: 100

Course Objective:

This course is designed to provide a basic understanding of financial accounting, including introductory accounting theory, concepts, principles and procedures. Specific attention will be devoted to the capital budgeting, costing and computerized accounting system.

Course Contents

Unit - I

Accounting: Principles, concepts and conventions, double entry system of accounting, ledger posting and trial balance. Final accounts: Trading, profit and loss accounts and balance sheet of sole proprietary concern with normal closing entries. Introduction to manufacturing account, final account of partnership firms, limitedcompany.

Unit - II

Financial Management: Meaning, role and scope of financial management. Basic Financial concepts: Time value of money, present value, future value of a series of cash flows, annuity. Practical applications of compounding and present value techniques long-term sources of finance: Introduction to shares, debentures, preferenceshares.

Unit - III

Capital Budgeting: Meaning, importance, difficulties. Introduction to evaluation techniques – Traditional techniques (ARR Payback method).Discounting cash flow techniques (Present value, NPV, IRR). Ratio Analysis:Meaning,

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advantages, limitations of ratio analysis, types of ratios and their usefulness.

Unit - IV

Costing: Nature, importance and types of cost. Marginal costing: Nature, scope and importance of marginal costing. Break-even analysis, its uses and limitations, construction of break-even charts. Practical applications of marginal costing. Inventory control system: The need cost of inventory, methods of inventorycosting.

Unit – V

Introduction to Computerized Accounting System:

Meaning & advantages, limitations of computerized accounting, manual accounting verses computerized accounting, source documents, balancing accounts, trial balance & final A/Cs in computerized ,generic considerations before sourcing an accounting software. Introduction to accounting software – Tally.

Books Recommended:

1. S.N. Maheswari& S. K. Maheswari, "Introduction toFinancial Accountancy", VikasPublication.
2. S.N. Maheswari& S. K. Maheswari, "Advanced Accountancy", Vikas Publication.
3. S.N. Maheswari& S. K. Maheswari, "Financial Management",Viaks Publication.
4. JawaharLal, "Financial Accounting", WheelerPublishing.
5. Khan & Jain, "Management Accounting", Tata McGraw HillPublication.
6. K.S. Sastry&NandDhamesa, "The Practices ofManagement Accounting", WheelerPublishing.
7. I.M. Pandey, "Financial Management", VikasPublications.
8. J Khan & Jain, "Financial Management", Tata McGraw HillPublication.

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MCA-151: Office Management Lab

Max. Marks: 100

1. **Operating Systems:** DOS andWindows
2. **Word Processor**: Features of Word processors, working with formatted text, shortcut keys, formatting documents: selecting text, copying & moving data. Formatting characters, Changing cases, paragraph formatting, indents, drop caps, using format painter. Page formatting, header & footer, bullets & numbering, Tabs, forming tables. Finding & replacing text, go to (F5) command, proofing text (Spell check, Auto correct), reversing actions, macros, inserting pictures, hyperlinks, mail merging, printingdocuments.
3. **Spreadsheets**: Workbooks, creating, saving & editing a workbook, renaming sheet, cell entries (numbers, labels, and formulas), spell check, find and replace; Adding and deleting rows and columns, filling series, fill with drag, data sort, formatting worksheet, functions and its parts, Some useful functions in excel (SUM, AVERAGE, COUNT, MAX, MIN, IF); Cell referencing (Relative, Absolute, Mixed), what-if analysis. Introduction to charts: Types of charts, creation of chart from adjacent data/ nonadjacent data, printing a chart, printingworksheet.
4. **Presentation Software:** Uses, Presentation tips, components of slide, templates and wizards, using template, choosing an auto layout, using outlines, adding subheadings, editing text, formatting text, using master slide; adding slides, changing color scheme, changing background and shading, adding header and footer, adding clip arts and auto shapes. Various presentation, working in slide sorter view (deleting, duplicating, rearranging slides), adding transition and animations to slide show,inserting

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music or sound on a slide, Inserting action buttons or hyperlinks for a presentation, set and rehearse slide timings, viewing slide show and printing slides.

5. **Database management system**; An overview of Access, Access tables, data types, Access query, Access reports, creating relationships, OLE (importing & exportingdata).

Books Recommended:

1. Courter, "Mastering Office 2000", BPBPublications.
2. Robbins, "Mastering DOS", BPBPublications.
3. Content Development Group, "Working with MS Office 2000", TMH.
4. Mansfield & Olsen, "Mastering Word 2000", BPBPublications

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MCA-152: 'C' Programming Lab

Max. Marks: 100

1 Write a program to read 3 numbers x, y, z. Use conditional statement and evaluate values of variables a, b and c. Perform the sum with 2 set of variable. Check the sum for equality and print the sum.

2. Write a program to shift input data by 2 bits left andright.
3. Write a program to use bitwise "&" operator between 2 integer and display the result.
4. Write a program to input 6 numbers and find the biggest and smallestusing nestedif.
5. Write a program to enter a year and find the numberof:

a. Minutes

b. Hours

c. Days

d. Months

e. Seconds

6. Write a program to find the sum of even and odd numbers using switch,if, if else, nested if between 1 and20.
7. Write a program to find the numbers between 1 and 100 that arenot divisible by 2 and3.
8. Write a program to enter a character (alphabetical) and displayits position and its corresponding ASCIIvalue.
9. Write a program to simulate a digitalclock.
10. Write a program to find the sum of its digits till the result is in singledigit.
11. Write a program to print theseries:

a. x – x3/3! + X5/5!–x7/7!.....an/n!

b. 1 + x2/2! – x3/3!+x4/4! .....xn/n!

12. Write a program to generate the followingfigures:

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a.
```
    *
  * *
* * *
  * *
    *
```

b.
```
    *
  * *
* * * *
  * *
    *
```

c.
```
1
12
123
1234
12345
```

d.
```
1
121
12321
1234321
123454321
```

e.
```
1
12
123
1234
12345
1234
123
12
1
```

f.
```
654321
54321
4321
321
21
1
```

g.
```
543212345
5432 2345
543  345
54    45
5      5
```

h.
```
z
yzy
xyzyx
yzy
z
```

i. Aa Bb Cc Dd Ee Ff Gg Hh Ii Jj Kk Ll.....

13. Write a program to find the factorial of a givennumber.
14. Write a program to obtain the sum of the diagonal elements ofmatrices.
15. Write function to add, subtract, multiply & divide two complex numbers
    (x+iy) & (a+ib).
16. Write a program to find the roots of a quadratic equation witheach condition.
17. Write a program to find numbers between 7 and 100 which isexactly divisible by 4 and is divisible by either 5 or6.
18. Write a program toconvert:
    a. Binary toDecimal
    b. Decimal toBinary
    c. Binary toHexadecimal

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19. Write a program to perform Arithmetic operation on an array i.e. Addition, Subtraction, Multiplication and Division and store the result in another array.
20. Write a program to perform following string operation: with stringfunctions without stringfunctions
    a. Reversea string
    c. Compare 2 string – strcmp(), strcmpi ()

b. Concatenate 2 string –strcat()

21. Write a program to detect the occurrence of a number in astring.
22. Write a program to accept a string up to 15 character, and displaythe position of a character in a separateline.
23. Write a program to display and count the number of vowels in astring.
24. Write a program to generate apalindrome.
25. Write a program to add to pointer addresses of a pointervariable.
26. Write a program to find the factorial of a number usingrecursion.
27. Write a program to perform different arithmetic operations usingpointers
28. Write a program to obtain prime factors of any integer number using functions i.e. 24 -> 2, 2, 2, &3.
29. Write a program to find the sum of 5 digitnumber:
    a. Without usingrecursion
    b. With usingrecursion.
30. Write a program to obtain Fibonacci series by usingrecursion.
31. Write a program to create, display, modify and append a file (sequential file).
32. Write a program to copy the content of one file toanother.
33. Write a program to calculate space in a file (number of blank spacesand not the filesize).
34. Write a program to print out the lines from a file that have 50 ormore characters inthem.
35. Write a program to extract the content from a file and print them. Theuser should be able to specify the starting position from where the extraction should begin and the number of characters to be extracted.
36. Write a program to create a structure to accept First name,
    Middle name, Last name of aperson.
    Display the initials of first and the middle name separated by "." i.e. Input –
    Krishna Kumar Singh
    Output – K.K. Singh
    Now create a main structure that will contain name, age, salary of an employee.

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37. Write a program to call sum () function recursively and perform sum of 1 to 5 numbers. (Instead of using the sum() function use the main() function itself to perform the aboveoperation)
38. Write a program to find the larger of the two numbers using macro with argument.
39. Write a program to count the number of character, word and lines in atext file whose name is supplied in the commandline.
40. Write a program to arrange a list by using any sortingmethod.
41. Write a program in C to create and store information in a text file.
42. Write a program in C to read an existing file.
43. Write a program in C to write multiple lines in a text file.
44. Write a program in C to count a number of words and characters in a file.
45. Write a program in C to replace a specific line with another text in a file.
46. Write a program in C to copy a file in another name.
47. Write a program in C to merge two files and write it in a new file.

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MCA-153: RDBMS Lab

Max. Marks: 100

1. Create the following(s)table
   Salespeople with fields sum, same, city,
   commission Orders table with fields onum, odate,
   snum, amt
   Customers table with fields cnum, cname, city, rating, snum
2. Display name & city of salesman where city is"Pune.
3. Display the numbers of sales persons, with orders currently in theorders table without
   any repeats.
4. Display all customers where city is „Mumbai" rating is more than100.
5. Display all customers where city is either „Pune" or„Mumbai"
6. List all customers not having city „Pune" or rating more than100
7. Display all customers excluding those, with rating less than equal to100, unless they are located in„Nagar"
8. Display all sales persons names starting with character „G", the4th character is „A" & the rest of characters will beany.
9. Find all records from customers table where city is not known i.e.NULL.
10. Assume each salesperson has a 12% commission on order amt. Display order no, snum, commission for thatorder.
11. Display the count of snum in order table without duplication ofsnum.
12. Display the counts of all orders forFeb05.
13. Display the maximum outstanding amount asblnc+amt.
14. Exercise on Joins (single-table or multi-table) and using normalization.Display customer no, name, city and orderamount.
15. Display salesman details with their orderdetails.
16. Display customer info of salesman S102 andS105.

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17. List the salesmen details along with customers names associated with them.
18. Exercise on different functions (aggregate, math and string). Countthe total number oforders.
19. Count the number of salesmen whose commission is greater than500.
20. Find average order amount of eachsalesman.
21. Find minimum order amount placed by asalesman.
22. Find out the orders whose order amount is more than 12000 andalso find the new order amount as original order amount *5.
23. Determine the minimum and maximum salary of the salesman andrename the title as "min_sal" and "max_sal"respectively.
24. Show the use of right and left justify stringfunction.
25. Show use of floor and ceilingfunction.
26. Display details of orders order number & datewise
27. Display customers' highest ratings in eachcity.
28. Write a query that totals the orders for each day & places the results in descendingorder.
29. Add a column curr_bal in orders table for currentbalance
30. Increase commission of all sales persons by200.
31. Display each order number followed by the name of customer who madeit.
32. Calculate the amount of salespersons commissions on each order bya customer with a rating above100.
33. Write a query that uses a sub-query to obtain all orders for thecustomer named,,Gopal".
34. Write a query that produces the names & ratings of all customers whohave above-averageorders.
35. Create a union of two queries that shows the names, cities 7 ratings of all customers. Those with a rating of 200 or greater will also have ratings "high rating", while the others will have the words "lowrating".
36. Write a command that produces the name & number of each salesperson & each customer with more than one current order. Put results in alphabeticalorder.

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37. Create an index that would permit each salesperson to retrieve his orher orders grouped by datequickly.

38. Create a view that shows all of the customers who have highestratings.

39. Create a view which shows the detail of salesman with hissalary. (Salesmanname,salary).

40. Create a view that shows number of salespeople in eachcity.

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MCA/PGDCA-154: Communication & Soft Skills-I

Max. Marks: 50

1. **Bulding AdvancedVocabulary**
   a. Synonyms
   b. Antonyms
   c. Learning words throughsituation
   d. Homonyms andHomophones
   e. Words OftenConfused
   f. One WordSubstitution
   g. Developing TechnicalVocabulary
2. **Paralinguistic Features**
   a. Rate
   b. Pauses
   c. Volume
   d. Pitch/Intonation/ VoiceModulation
   e. Pronunciation andArticulation
3. **Listening exercises**
   a. Listening with a focus on pronunciation (ear-training) :segmental sounds
   b. Stress,
   c. Weakforms,
   d. Intonation
   e. Listening for meaning (oral comprehension): listening totalks, lectures, conversations, discussions, jokes, riddlesetc.
4. **Speaking exercises**
   a. Pronunciation practice (for accentneutralization)
   b. particularly of problem sounds, in isolated words as wellas sentences
   c. Practicing wordstress
   d. Rhythm insentences
   e. Weak forms,intonation

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f. Reading aloud of dialogues, poems, excerpts from plays, speeches etc. for practice inpronunciation

3. Reading exercises

a. Reading and comprehension of the texts supported bysuitable exercises.

b. Use ofDictionary

c. Note making after reading atext

d. Showing the main idea and supporting ideas and therelationships betweenthem

4. Writing exercises

a. Practice in writingparagraphs

b. short essays andsummaries

5. Activities

a. News reading

b. Picturereading

c. Moviemagic

d. Announcements.

6. Self-Esteem

a. Meaning and Nature of SelfEsteem

b. Characteristics of High and Low SelfEsteem

c. Importance & need of SelfEsteem

d. Self Esteem atwork

e. Steps to enhance SelfEsteem.

7. Emotional Intelligence & BrainPower:

a. Introduction to EI

b. Difference between IQ, EQ andSQ

c. Relevance of EI atworkplace,

d. Self assessment, analysis and actionplan.

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Books Recommended:

1. Balasubramaniam, T. *A Textbook of Phonetics for Indian Students*. New Delhi: Macmillan India,2000.
2. Kumar, Sanjay &Pushpalata. *Communication Skills*. New Delhi: Oxford University Press,2012.
3. Mitra, Barun Kumar. Personality Development and Soft Skills.New Delhi: Oxford University Press,2011.
4. Raman, Meenakshi& Prakash Singh. *Business Communications*. New Delhi: Oxford University Press,2006.
5. Weisinger, Hendrie. *Emotional Intelligence at Work*. Delhi: Jossey-bass, 1997.

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MCA-201: Data Structure Using C

Periods/week: 3L, 1T

Max. Marks: 100

Course Objective

This course gives the in-depth knowledge to the use, design, and analysis of data structures in computer programs. The very commonly used data structures like arrays, stacks, queues, lists, trees, hashing and graphs will be discussed in detail. Sorting and hashing are important topics in the study of data structures.

Course Contents

Unit - I

Introduction: Basic terminology, data structure operations, algorithm writing and convention, analysis of algorithm, time and space complexity. **Arrays**: Array definition, representation and analysis, single and multidimensional arrays, address calculation, application of arrays, character string in C, character string operation, array as parameters, ordered list, sparse matrices, and vectors. **Linked list**: Representation and implementation of singly linked lists, traversing and searching of linked list, overflow and underflow, insertion and deletion to/from linked lists, doubly linked list, linked list in array, linked representation of sparse matrices, polynomial representation and addition, garbage collection andcompaction.

Unit - II

Stacks: Array and linked representation, implementation of stack, operations on stacks: push & pop, operations associated with stacks. Application of stack: Conversion of infix to prefix and postfix expressions, evaluation of postfix expression using stack.

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Recursion: Recursive definition and processes, recursion in C, example of recursion, Tower of Hanoi Problem, simulating recursion, recursive algorithms, principles of recursion, tail recursion, removal of recursion.

Queues: Array and linked representation and implementation of queues, operations on Queue: Create, add, delete, full and empty. Circular queue, deque and priority queue.

Unit - III

Trees: Basic terminology, binary trees, binary tree representation, algebraic expressions, complete binary tree. Extended binary trees, array and linked representation of binary trees, traversing binary trees, threaded binary trees. Traversing threaded binary trees,

Binary Search Trees: Binary search tree (BST), insertion and deletion in BST, complexity of search algorithm, path length, AVL trees, B-trees.

Unit - IV

Graphs: Terminology & representations, graphs, directed graphs, sequential representations of graphs, adjacency matrices, traversal, connected component and spanning trees, minimum cost spanning trees.

Unit -V

Sequential files, indexing and hashing, primary indices, secondary indices, B+ tree index files, B tree index files, indexing and hashing comparisons sorting and searching: insertion sort, selection, bubble sort, quick sort, merge sort, heap sort. Searching: sequential search, binary search, comparison and analysis

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Books Recommended:

1. S. Lipschutz, "Data Structures", Schaum's outline series, Tata McGraw Hill Edition,2002
2. A M Tenenbaumetal, "Data Structures using C & C++",PHI
3. Horowitz and Sahani, "Fundamentals of data Structures",Galgotia
4. R. Kruse etal, "Data Structures and Program Design in C"Pearson Education
5. Lipschutz, "Data Structure",TMH.
6. K Loudon, "Mastering Algorithms With C", Shroff Publisher &Distributors
7. Bruno R Preiss, "Data Structures and Algorithms with ObjectOriented Design Pattern in C++", Jhon Wiley & Sons,Inc.
8. Adam Drozdek, "Data Structures and Algorithms in C++", ThomsonAsia

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MCA-202: Computer Oriented Numerical and Statistical Techniques

Periods/week: 3L, 1T

Max. Marks: 100

Course Objective

The course consists of theory and application of numerical approximation techniques. Topics included are numerical error, root-finding, interpolation polynomial approximation, numerical differentiation and integration, differential equations, frequency charting and timeseries forecasting.

Course Contents

Unit - I

Floating point Arithmetic: Representation of floating point numbers, Operations, Normalization, Pitfalls of floating point representation, Errors in numerical computation

Iterative Methods: Zeros of a single transcendental equation and zeros of polynomial using Bisection Method, Regula-Falsi method, Newton Raphson method, Secant method, Rate of convergence of iterative methods.

Unit - II

Simultaneous Linear Equations: Solutions of system of Linear equations, Gauss elimination direct method and pivoting, Ill conditioned system of equations, refinement of solution. Gauss Seidal iterative method, Gauss-Jordan method.**Interpolation and approximation**: Finite differences, difference tables polynomial interpolation: Newton's forward and backward formula. Central difference formulae: Gauss forward and backward formula, Stirling's, Bessel's, Everett's formula. **Interpolation with unequal intervals**: Langrange's interpolation, Newton divided difference formula.

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Unit -III

Numerical Differentiation and Integration: Introduction, numerical differentiation, numerical integration, trapezoidal rule, Simpson's rules, Boole's rule, Weddle's rule, Euler- Maclaurin's formula. **Solution of differential equations**: Picard's method, Euler's 30 method, Taylor's method, Runge-Kutta methods, Predictor-corrector method, automatic error monitoring, stability of solution.

Unit -IV

Frequency Chart: Different frequency chart like histogram, frequency curve, Pi-chart.

Curve fitting, Cubic Spline and Approximation: Method of least squares, fitting of straight lines, polynomials, exponential curves etc.

Unit -V

Time series and forecasting: Moving averages, smoothening of curves, forecasting models and methods. Statistical quality controls methods **Testing of Hypothesis**: Test of significance, chi-square test, t-test, F-Test, ANOVA (one- way classified data), application to computer science, medicine, agricultureetc.

Books Recommended:

1. Rajaraman V., "Computer Oriented Numerical Methods",PHI
2. Sastry S.S., " NumericalAnalysis"
3. Balaguruswamy E. "NumericalMethods".
4. Gerald & Wheatley, "Applied Numerical Analyses",AW
5. Jain, Iyengar and Jain, "Numerical Methods for Scientificand Engineering Computations", New AgeInt.
6. Grewal B. S., "Numerical methods in Engineering and Science",Khanna Publishers,Delhi
7. T. Veerarajan, T Ramachandran, "Theory and Problems inNumerical Methods",TMH

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8. PradipNiyogi, "Numerical Analysis and Algorithms",TMH
9. Francis Scheld, "Numerical Analysis",TMH
10. Gupta S. P., "Statistical Methods", Sultan Chand andSons

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MCA-203: Operating System

Periods/week: 3L,1T

Max. Marks:100

Course Objective:

This course is aimed at providing the basic knowledge of the concepts involved in designing and working of an operating system, how it acts as a resource manager of the system as a whole, how various issues such as memory conflicts, resource conflicts are resolved by an operating system and a study of various types of operating systems.

Course Contents

Unit - I

Introduction: Definition and types of operating systems, batch system, multi programming, time–sharing, parallel, distributed and real-time systems, operating system structure, operating system components and services, system calls, system programs, virtualmachines.

Unit - II

Process Management: Process concept, process scheduling, cooperating processes, threads, interprocess communication, CPU scheduling criteria, Scheduling algorithms, multiple-processor scheduling, real-time scheduling and algorithm evaluation.

Unit - III

Process Synchronization and Deadlocks: The critical-section problem, synchronization hardware, semaphores, classical problems of synchronization, critical regions, monitors, deadlocks-system model, characterization, deadlock prevention, avoidance and detection, recovery from deadlock, combined

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approach to deadlock handling.

Unit - IV

Storage management: Memory management-logical and physical address space, sWrite a program ping, contiguous allocation, paging, segmentation with paging in MULTICS and Intel 386, virtual memory, demand paging and its performance, page replacement algorithms, allocation of frames, thrashing, page size and other considerations, demand segmentation, file systems, secondary storage structure, file concept, access methods, directory implementation, efficiency and performance, recovery. Disk structure, disk scheduling methods, disk management, recovery, Disk structure, disk scheduling methods, disk management, sWrite a program -space management, diskreliability.

Unit - V

Protection and security: Case Study-Linux, Windows, Mac OS and Mobile OS.

Books Recommended:

1. Abraham Siberschatz and Peter Baer Galvin, "OperatingSystem Concepts", Fifth Edition,Addision-Wesley
2. Milan Milankovic, "Operating Systems, Concepts and Design", McGraw- Hill.
3. Harvey M Deital, "Operating Systems", AddisonWesley
4. Richard Peterson, "Linux: The Complete Reference", OsborneMcGraw- Hill.
5. Sumitabh Das, "Unix Concepts and applications",TMH
6. Mike Joy, Stephen Jarvis, Michael Luck, "Introducing Unix andLinux", PalgraveMacmillan.
7. Rachel Morgan, Henry McGilton, "Introducing Unix System V",TMH

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MCA-204: Data Communication & Computer Networks

Periods/week: 3L, 1T

Max. Marks: 100

Course Objective:

The basic aim of this course is to provide knowledge of basic data communication and networking concepts. Topics include LANs/WANs,TCP/IP,UDP internetworking technologies, the OSI reference model for networking protocols, CSMA/CD, TCP/IP implementation, frame relay, FDDI, X-25, ISDNservices.

Course Contents

Unit - I

Introductory Concepts: Overview, evolution of computer networks, goals and applications of networks, computer telephony. Data communications – advantages of digital communication, transmission media, and fundamentals of digital communications, transmission media, modulation techniques and modems.

Unit – II

The OSI seven layer network model, LAN technologies – protocols and standards, LAN hardware, TCP/IP and the internet, internet architecture, internet protocol and datagram's., routing protocols, UDP, internet standard services, DNS.

Unit - III

Networking technologies, ISDN, cable modem System, DSL, SMDS, frame relay, fast Ethernet, 100VG-anyLAN and gigabit Ethernet, FDDI and CDDI, asynchronous transfer, SONET, DWDM.

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Unit IV

Switching and virtual LAN, non-ATM virtual LANs, IEEE 802.1Q VLAN standard, network performance, analytical approaches, simulation, traffic monitoring.

Unit V

Network Management – SNMP, RMON and RMNv2, TMN, directory services and network management. Issues related to network reliability and security, SSL and VPN. Introduction to firewalls and Kerberos and cyberlaws.

Books Recommended:

1. A. S Tanenbaum, "Computer Networks, 3rd Edition",PHI
2. W. Stallings, "Data and Computer Communication", MacmillanPress
3. Comer, "Computer Networks & Internet",PHI.
4. Comer, "Internetworking with TCP/IP",PHI
5. Forouzan, "Data Communication and Networking",TMH

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MCA -205: Environmental Science

Periods/week: 3L,1T

Max. Marks:100

CourseObjective:

The basic aim of this course is to provide knowledge and understanding of the multidisciplinary nature of environmental studies which includes various types of resources and their benefits. Role of an individual in conservation of natural resources, ecosystem concepts, pollution hazards, social issues and environmentethics.

Course Contents

Unit I

Definition, scope and importance, need for public awareness. Natural Resources: renewable and non-renewable resources, natural resources and associated problems. Forest resources: Use and over-exploitation, deforestation. Timber extraction, mining, dams and their effects on forests and tribal people. Water resources: Use and over-utilization of surface and ground water, floods, drought, conflicts and water, dams-benefits and problems.

Unit-II

Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources. Food resources: World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer- pesticide problems, water logging, salinity, Energy resources: Growing energy needs, renewable and non renewable energy sources, use of alternate energy sources. Land resources: Land as a resource, land degradation, man induced landslides, soil erosion and desertification. Role of an individual in conservation of naturalresources.

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Unit III

Ecosystems: Concept of an ecosystem, structure and function of an ecosystem. Producers, consumers and decomposers and energy flow in the ecosystem. Ecological succession, food chains, food webs and ecological pyramids. Introduction, types, characteristic features, structure and function of the following ecosystem:-Forest ecosystem, grassland ecosystem, desert ecosystem, aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries). Biodiversity and its conservation: Introduction – Definition: genetic, species and ecosystem diversity. Biogeographically classification of India, value of biodiversity: consumptive use, productive use, social, ethical, aesthetic and option values. Threats to biodiversity: habitat loess, poaching of wildlife, man-wildlife conflicts. Endangered and endemic species of India. Conservation of biodiversity: In-situ conservation of biodiversity.

Unit IV

Environmental Pollution: Definition, causes, effects and control measures of: Air pollution, water pollution, soil pollution, marine pollution, noise pollution and thermal Pollution. Solid waste management: Causes, effects and control measures of urban and industrial wastes. Role of an individual in prevention of pollution. Disaster management: floods, earthquake, cyclone andlandslides.

Unit V

Social Issues and the Environment: From unsustainable to sustainable development, urban problems related to energy, water conservation, rain water harvesting, watershed management, resettlement and rehabilitation of people; its problems and concerns. Environmental ethics: Issues and possible solutions. Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents, consumerism and waste products, environment protection Act.

Books Recommended

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1. Environmental Studies-Benny Joseph-Tata McgrawHill-2005
2. Environmental Studies -Dr. D.L. Manjunath, PearsonEducation-2006.
3. Environmental Studies-R. Rajagopalan-Oxfordpublication-2005.
4. Text book of Environmental Science & Technology -M. Anji Reddy-BS Publication.
5. Principles of Environmental Science and Engineering -P Venugopal Rao, Prentice Hall ofIndia.
6. Environmental Science & Engineering -Meenakshi, Prentice HallIndia.

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MCA- 251: Data Structures Using C Language Lab

Max. Marks: 100

1. Write a program to search an element in a given array using linearsearch.
2. Write a program to search an element in a given array using binarysearch. 3 Write a program to sort the elements of an array using thefollowing techniques: Bubble Sort, Selection Sort, and Insertion Sort. Compare the time taken by each sorting technique.
4 Write a program using the concept of iteration and recursion to sort the elements of an array using Quick Sort.
5. Write a C program to implement Heapsort.
6. Write a program to delete an element from the kith element of anarray.
7. Write a program to insert an element at the kth element in anarray.
8. Write a program to remove duplicates in anarray.
9. Write a program to merge two sortedarrays.
10. Write a program to perform the following operations on two givenmatrices: Addition andMultiplication.
11. Write a program to implement a Stack, show overflow and underflowwhile performing push and pop operationsrespectively.
12. Write a program to evaluate a postfixexpression.
13. Write a program to implement a queue and show the following:insertion anddeletion.
14. Write a program to implement a circular queue and show thefollowing: insertion anddeletion.
15. Write a program to implement Linear Linked List and show thefollowing operations: creation, display, insertion, deletion andsearching.
16. Write a program to increment the data part of every node in a linked listby 10.
17. Write a program to implement a stack using linked list and showthe following operations: Push, Pop, andDisplay.
18. Write a program to implement a stack using linked list and showthe following operations: Insertion, Deletion, andDisplay.
19. Write a program to count the number of repetitions of a number in a linked list.

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20. Write a program to implement Doubly Linked List and show thefollowing operations: creation, display, insertion, deletion andsearching.
21. Write a program to implement Binary tree and display the contentsusing preorder, postorder and inorder traversaltechniques.
22. Write a program to convert a Binary Tree to a Threaded BinaryTree.
23. Write a program to construct a Binary Search tree and performthe following operations: Insertion and Deletion of anode.
24. Write a program to construct an AVL tree and perform thefollowing operations: insertion, deletion andsearching.
25. Write a program to insert and delete nodes in a graph using adjacency matrix.
26. Write a program that demonstrates Warshall"salgorithm.
27. Write a program to implement Depth First Search usinglinked representation ofgraph.
28. Write a program to implement Breadth First Search usinglinked representation ofgraph.
29. Write a program to create a minimum spanning tree using Kruskal"s algorithm
30. Write a program to create a minimum spanning tree using Prim"s algorithm.

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MCA-252: Numerical Techniques Lab

Max. Marks: 100

1. Write programs in C/C++ to implement Floating Point Representation of the following:
   a) Addition
   b) Subtraction
   c) Multiplication
   d) Division
2. Write programs in C/C++ to implement toimplement
   a) BisectionMethod
   b) Newton RaphsonMethod
   c) Regula – FalsiMethod
3. Compute the two regression coefficients using the values of actual means of X and Y from the data given below and then work out the values of'r':

X	7	4	8	6	5
Y	6	5	9	8	2

4. Implement the following:
   a) Newton's Forward DifferenceTable
   b) Newton's Backward DifferenceTable
   c) Newton's Central DifferenceTable
   d) Newton's Forward InterpolationFormula
   e) Newton's Backward InterpolationFormula
   f) Newton's Central Difference Interpolation Formula

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5. Write a program to implement Jacobi'sMethod.
6. 200 digits were chosen at random from a set of tables. The frequencies of the digitswere:

Digits	0	1	2	3	4	5	6	7	8	9
Frequencies	18	9	23	21	16	25	22	20	21	15

Use x2 test to assess the correctness of hypothesis that the digits were distributed in

equal numbers in the table.

7. Write programs in C/C++ to implement thefollowing:

   a) Gauss – SeidelMethod

   b) Lagrange'sInterpolation

   c) TrapezoidalRule

   d) Simpson's 1/3Rule

   e) Simpson's 3/8Rule

   f) Euler'sMethod

   g) Euler's ModifiedMethod

   h) Runge – Kutta II OrderMethod

   i) Runge – Kutta IV OrderMethod

   j) Fitting a Straight Line

8. **Tests:**F – Test, T – Test, Chi – SquareTest

9. Write a program to set up a two-way ANOVA table for the following table : Pieces of

   lang Treatment

	P	Q	R	S
X	18	19	21	20
Y	16	17	20	19
Z	20	19	18	17

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MCA-253: Unix& Shell Programming Lab

Max. Marks: 100

1. Write a shell script which ask your name, age, department, and course and lastly give the syntax to display all yourinformation.

2. Write a shell script which asks your Enrolment no., name, name of3 subjects and marksobtained.
3. Display these fields by using echo and equaloperator.
4. Write a shell script, declare 5 variables and assign values tothem. Display the values in the given order: - 1,5,2,3,4.
5. Write a shell script that creates a file containing the message that this file is created today i.e. on the current date followed are the users of UNIX at this moment and show the list ofusers.
6. Write a shell script that accepts two file names from thecommand line, copies the first to second file and display the secondfile.
7. Write a shell script that accepts two parameters i.e. two files,append file1 to file2 and displayfile2.
8. Write a shell script that assigns execute permission to afile.
9. Write a shell script that accepts one file and directory name andmove that fileto
   the directory and show recursive listing and long listing.
10. Write a shell script where we create a directory, move to the directory, create a file. Show the present path and display thefile.
11. Write a shell script that asks your name and invite you on current date for a party and append this message to a file nameparty.
12. Write a shell script that reads a file name from command lineand changes name tofilename.logname.
13. Display the number of links and size of the file given as thecommand lineargument.
14. Write a shell script which displays the date in desired format i.e. Monday 25 September 2006. Write a shell script by which you create a branch \usr directory till depth of d5 and using concept of assigning the path to the variables do the movements within this directory path and create two files in each directory

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fromd1.

15. Write a shell script and declare two variables A and B. Take staticvalue

of A=5 and B=3. Perform all operations on it.

16. Write a shell script which accepts a number and checks whether the number is an odd or evennumber.

17. Write a shell script to give the result of student. Take marks of the five subjects, student name, roll no and percentage and show a message whether a student gets division as per the followingrules:

    70% <-> distinction

    60 %-> 1st divisions

    50 %-> 2nd divisions

    <40 %-> Fail

18. Write a shell script which checks the age of the student for swimming. The condition are as follows:

    <10- not allowed 10-

    18- junior pool only

    >18- swimming is allowed in depth also.

19. Write a shell script to find out the gross salary of an employee whenthe given information is asunder:-

    a) If basic salary is less than Rs.1500/-

    HRA = 10% of basicDA

    = 90% of basic

    b) If basic is greater than or equal to

    Rs.1500/-HRA =500/-

    DA = 98% of basic

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20. Write a shell script to enter a year and show a message whether the yearis a leap year ornot.

21. Write a shell script using concept of position parameters which copies one file and display destination file and it should also contain an error message if the sourcefile

22. Write a shell script to calculate the gross salary of an employee whose basic salary is entered through keyboard. His DA=40% of basic and HRA=20% ofbasic.

23. Write a shell script where distance between two cities is input through the keyboard inkm.
24. Convert and print this distance in meters, feet, inches andcm.
25. Write a shell script to find area and perimeter ofrectangle.
26. Write shell scrip to find area and circumference of thecircle.
27. Write a shell script to find sum of digits of a number and check whetherthe number is palindrome ornot.
28. Pass a filename as command line argument to script whichfinds
    (i) Whether file exists ornot.
    (ii) Display the message what type of file itis.
    (iii) (a) If the file is ordinary files check its read permission. If available display the file else display message read permission denied. (b) Check its write permission and if available append that file by your name and course, else display error message. (c) Check executes permission & if available shows the output of thatfile.
    (iv) (a) if it's a directory checks its read permission, if available listthe directory.
    (b) Check its write permission; if available make a sub-directory in that directory. Create two file in that sub-directory that you created just now.
29. Write a menu driven program:-a) Place the pwdof user.
    b) List the directory ofuser.
    c) Long listing the directory of the user and at the same time this long listing is to be stored in afile.
    d) Create a file in your directory and copy this file in yourdirectory.
    e) Move the specified file to your parentdirectory.
    f) Rename the specified file in the currentdirectory.
    g) Make a sub directory in the current directory and change its permission by taking away all the permission of group andothers.
30. Write a Menu drivenprogram

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a) Check the contents of/etc/passwdfile. d)Exit

b) List of users who have currently loggedin.

c) Pwd

31. Write a shell script where you accept a character and you have to echo message whether the entered character is a small case, capital case or a digit or a specialsymbol.
32. Display error message if more than one character isentered.
33. Write a shell script where you accept a word and echo themessage
    a) Whether the word begins with vowel, consonant or adigit.
    b) Check whether the word begins with small case vowel or capital casevowel.
    c) Checks whether the word ends with a digit.
34. Write a shell script where you checkwhether
    a) The word begins with "a" and ends with"t"
    b) The word begins with "s" and ends with"p"
    c) Any word with fixed length of 4characters.
    d) Display the word starting with "z" and ending with"l"
35. Write a shell script to print ifit's:
    a) Morning time, print "GoodMorning"
    b) Afternoon time, print "GoodAfternoon"
    c) Evening time print "GoodEvening"
36. Write a shell script for printing calendar. Accepts month, year and name as command line argument.
37. Write a shell script to find a totalof
    a) First 9integers
    b) Any fivenumbers
    c) Do option (b) from commandline
38. Write a shell script that takes a search string and filename from theterminal and display theresult
39. Write a shell script that takes pattern and filename as command line arguments and displays the results appropriately i.e. patternfound/pattern

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not found.

40. Write a shell script that accepts only three arguments from command line. The first is the pattern string, the second is the filename in which the pattern is to be searched and the third is the filename in which result is to bestored.
41. Write a shell script that accepts a filename as a command line and finds out if it's a regular file or a directory. If it's regular file, then perform various tests.
42. Write a shell script that changes the extension of group files from text todoc
43. Write a shell script which will redirect the output of the datecommand without the time into afile.
44. Write a shell script to execute endlessly a loop which displays contents of the current directory, disk space status, and sleep for 30seconds and display the users currently logged in on thescreen.
45. Write a shell script that receives two filenames as arguments. It should check whether content of the two file is same or not. If they are same, second file should bedeleted.
46. If a number is input through keyboard, write shell script to calculatesum of digits.
47. Write a shell script that performs a count down either from 10 or fromthe value that is entered by theuser.
48. Write a shell script that examines each file in the current directory. Files whose names end in old are moved to a directory named old files and files whose name ends with .c are moved to directory namedcprograms
49. Write a shell script which takes a command line argument of kmsand by default converts that number into meters. Also provide options to convert km to dmand km tocm.
50. Write a shell script for renaming each file in the directory such that it will have the current shell PID as an extension. The shell script should ensure that the directories do not getrenamed.
51. Write a shell script that will receive any number of filenames asarguments.

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The shell script should check whether such file already exists. If they do, then it should be reported. The files that do not exist should be created in a sub directory called mydir. The shell script should first check whether the subdirectory mydir exists in the current directory. If it doesn't then it should be created. If it does then it should be reported along with the number of files that are currently present inmydir.

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MCA-254: Communication & Soft Skills -II

Max. Marks: 50

1. **Fundamentals ofCommunication:**
   a. Role and purpose ofcommunication
   b. 7 C's ofCommunication,
   c. Barriers to effectivecommunication.
2. **Interpersonal and Inter-Cultural CommunicationSkills**
   a. Cross cultural communication: Cross cultural issues which affect Communication across different Cultures, Culture and non verbal communication, Effective interculturalcommunication.
   b. Persuasive communication: the process of persuasion, formal and informalpersuasion.
   c. NegotiationSkills
   d. Presentation skills: Planning, Structure andDelivery.
3. **BusinessWriting**
   a. Developing coherentparagraphs
   b. Préciswriting
   c. Business letters: writing routine and persuasive letters – positive and negativemessages.
   d. Writing memos, circulars, notices andemails,
   e. Business reports: what is a report, kinds and objectives of reports, Process, Structure andLayout.
   f. Writing businessproposals
   g. Meetings: Agenda andMinutes.
4. **Soft skills**
   a. How communication skills and soft skills areinter-related.
   b. Leadershipskills
   c. GroupDynamics
   d. GroupDiscussions
   e. Telephoneetiquettes.
   f. Businessetiquettes.
5. **Guidelines to give an effectivepresentation**

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Activities to include: Presentations by students

6. **CommunicationClimate**
   a. Foundation of Interpersonal Relationships: Elements ofSatisfying
   b. Relationships Conforming and DisconfirmingCommunication
   c. RelevantCommunication
   d. Guideline for Creating and Sustaining HealthyClimate
7. **InterpersonalCommunication**
   a. Imperatives for Interpersonal Communication
   b. Models –Linear
   c. Interaction andTransaction
   d. Patterns – Complementary Symmetrical and Parallel Types – Self and other Oriented.
   e. Steps to improve InterpersonalCommunication.
8. **Interpersonal RelationshipDevelopment**
   a. Relationship circle – Peer/Colleague
   b. Superior and subordinate
   c. Initiating and establishingIPR
   d. Escalating, maintaining and terminatingIPR
   e. Direct and indirect strategies of terminatingrelationship
9. **Managing Emotions and Building InterpersonalCompetence**
   a. Need and importance ofEmotions
   b. Healthy and Unhealthy expression ofEmotions
   c. Anger: Conceptualization and Cycle Developing Emotional and Interpersonal Competence 9.4Self assessment, Analysis and Action Plan.

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Books Recommended:

1. Adair, John. Effective Communication. New Delhi: Macmillan,1997.
2. Kumar, Sanjay &Pushpalata. Communication Skills. NewDelhi: Oxford University Press,2012.
4. Mitra, Barun Kumar. Personality Development and Soft Skills. New Delhi: Oxford University Press, 2011. Mohan, Krishna &MeeraBanerji. Developing Communication Skills. New Delhi: Macmillan,2009.
5. Raman, Meenakshi& Prakash Singh. Business Communications.New Delhi: Oxford University Press,2006.
6. Weisinger, Hendrie. Emotional Intelligence at Work. Delhi: Jossey-bass, 1997.

Wood, Julia. Interpersonal Communication: Everyday Encounters. California: Wadsworth Publishing Company,2011.

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Semester – III

MCA 301: Object Oriented Programming

Periods/week: 3L, 1T

Max. Marks: 100

Course Objective:

This course is aimed at developing Programming skills using Object Oriented Technology in C++ and Java. This purpose of this subject is to improve the programming approach and development of software using OOPS technology. The Subject involves various concepts of Object Oriented Programming such as Classes, Objects, Polymorphism, Inheritance, Templates, Exception Handling etc. needed for a better approach towards softwaredevelopment.

Course Contents

Unit I

Introduction: Object oriented paradigm, elements of object oriented programming Merits and demerits of OO methodology , C++ fundamentals , data types, operators and expressions, control flow, arrays, strings, pointers and functions.

UNIT II

Programming in C++: Classes and objects, constructors and destructors, operator overloading, inheritance, virtual functions and polymorphism.

UNIT III

File Handling: C++ streams , console streams , console stream classes, formatted and unformatted console I/O operations, manipulators , File streams , classes file modes file pointers and manipulations file I/O , Exception handling.

UNIT IV

Java Introduction: An overview of Java, data types, variables and arrays, operators, control statements, classes, objects, methods, Inheritance.

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UNIT V

Java Programming: Packages and Interfaces, Exception handling, Multithreaded programming, Strings, Input /Output.

Books Recommended:

1. K.R.Venugopal, RajkumarBuyya, T.Ravishankar, "Mastering C++", TMH,2003.
2. Herbert Schildt, "the Java 2: Complete Reference", Fourth edition, TMH,2002.
3. Ira Pohl, "Object oriented programming using C++", PearsonEducation Asia,2003.
4. BjarneStroustrup, "The C++ programming language", Addison Wesley,2000.
5. John R.Hubbard, "Progranning with C++", Shamus outlines series, TMH,2003.
6. H.M.Deitel, P.J.Deitel, "Java: how to program", Fifth edition, Prentice Hallof India privatelimited.
7. Programming in Java: E. Balagurusamy; TMH.
8. Core Java Fundamentals – Volume I and II; Cay Horstmann,Gary Cornell; PearsonEducation.

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MCA-302: System Analysis and Design

Periods/week: 3L, 1T

Max. Marks: 100

Course Objective:

The course will cover system development activities in the context of when they typically occur. Most of the course will be devoted to learning and practicing the techniques and processes used by the systems analyst at each phase within the systems development cycle.

Course Contents

Unit-I

System Concepts and the information System Environment: The System Concept, Definition, Characteristics of a System, Elements of a System, Types of Systems, Information. **System Development Life Cycle:** Definition, Problem Recognition, Feasibility Study, System Analysis, System Design, Coding and Testing, Implementation, Post Implementation andMaintenance.

Unit-II

Feasibility Study: System performance, Economic Feasibility, Technical Feasibility, Behavioral Feasibility, Steps in Feasibility Analysis. **Input/output and Forms Design:** Input Design, CRT Screen Design, Output Design, Requirements of form Design.

Unit-III

System Analysis : System Planning, Role and Task of System Analyst, Information Gathering, Information Sources, Information Gathering Tools, Review of Literature, Procedure, Onsite Observation, Interviews and Questionnaire, Tools of Structured Analysis, What is Structure Analysis? DFD, Data Dictionary, Decision Tree, Decision table, Structured English, Exercises.

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Unit-IV

System Design: Stages of System Design, Program Design, Input Output and Forms Design, File Design, Database Design.

System Testing and Quality Assurance: Testing, Types of testing, Test plan, Testing Principles, Quality assurance goals in the System Life Cycle, Levels of Quality assurance, Quality Assurance Activities.

Unit-V:

Implementation and Software Maintenance

Introduction, conversion, Review Plan, Primary activities for maintenance, reducing maintenance cost **Hardware / Software Selection:** Criteria for selection, the procedure for Hardware/Software selection, The Examination process, financial consideration in selection.

Books Recommended:

1. Elias M.Awad, "Systems Analysis & Design", GalgotiaPublication.
2. Hoffer, "Modern Systems Analysis & Design", AddisionWesley.
3. Kendall, "Introduction to System Analysis & Design", McGrawHill.

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MCA 303: Computer Graphics

Periods/week: 3L, 1T

Max. Marks: 100

Course Objective:

The basic aim of this course is to provide an opportunity for students to formulate and implement applications of computer graphics and to acquaint with the theoretical aspects of computer graphics. This course further allows students to develop programming skills in computer graphics by programmingassignments.

Course Contents

Unit - I

Components of Graphics Systems: Video Display Devices, Raster Scan Systems, Random Scan systems , Input devices, Graphics Software Coordinate Representations, Fundamental Problems in Geometry.

Unit –II

Algorithms: Line drawing algorithms- DDA Algorithm, Bresenham's Line Algorithm, Frame buffers, Circle and Eclipse generating algorithms, Midpoint Circle Algorithm and Sean-line polygon fill algorithm. Inside-Outside tests. Sean- Line fill of curved Boundary Areas, Boundary fill Algorithm, and Flood fill Algorithm, Character generation, Attributes of lines, curves, filling, and characters.etc.

Unit –III

Graphics Primitives: Primitive Operations, The display file interpreter-Normalized Device Coordinates. Display- File structure. Display – file algorithm. Display control and Polygons. Polygon Representation Attributes of output primitives: Line attributes - Line type. Line width, Pen and Brush options, and Line Color, Color and gray scale levels. Area- Fill Attributes- Fill styles. Pattern fill, Soft fill, Character Attributes and Text attributes.

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Unit -IV

Geometric Transformations: Matrices. Scaling Transformations.Sin and Cos Rotation.Homogeneous Co-ordinates and Translation.Co-ordinate Translations.Rotation about an arbitrary point. Inverse Transformations, Transformations Routines. 2-D Viewing- The viewing pipeline.Viewing co-ordinate, Reference Frame. Windows to view ports .co-ordinate transformation 2-D Viewing functions. Clipping operations point clipping. Line clipping. Cohen-Sutherland. Line Clipping, Polygon clipping,Sutherland Hodge man clipping.

Unit-V

concepts. Three dimensional Display Methods Parallel projection. Perspective projection. Visible line and surface identification. Surface rendering. Three Dimensional Object representations. Bezier curves and surfaces. B-Spline curves and surfaces. Visibility , Image and object precision Z- buffer algorithm. Floating horizons. Computer Animation: Design of Animation Sequences. General Computer Animation Functions-Raster Animations. Key Frame Systems. Morphing Simulating Accelerations. Motion Specifications. Kinematics andDynamics.

Books Recommended:

1. Donald Hearn and M. Pauline Baker, "Computer Graphics",PHI.
2. Steven Harrington, "Computer Graphics: A Programming Approach",TMH.
3. Prajapati A. K, "Computer Graphics", PPM Ed2.
4. Foley James D,"Computer Graphics", AW Ed2.
5. Newman and Sproul, "Principle of to Interactive Computer Graphics", McGrawHill
6. Rogers, "Procedural Elements of Computer Graphics", McGrawHill
7. Rogers and Adams, "Mathematical Elements of Computer Graphics", McGrawHill
8. Tay Vaughan "Multimedia, Making IT Work" Osborne McGrawHill.
9. Buford "Multimedia Systems" AddisonWesley.
10. David Hillman "Multimedia technology and Applications" GalgotiaPublications.

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MCA-304: Artificial Intelligence

Periods/week: 3L, 1T

Max. Marks: 100

Course Objective:

The primary objective of this course is to provide an introduction to the basic principles, techniques, and applications of Artificial Intelligence. This course will also cover introduction to fuzzy logic, neural network and learning concepts.

Course Contents

Unit I

Scope of AI: Games, theorem proving, natural language processing, vision and speech processing, robotics, expert systems, AI techniques- search knowledge, abstraction.

Unit II

Problem solving: State space search; Production systems, search space control: depth-first, breadth-first search, heuristic search - Hill climbing, best-first search, branch and bound. Problem Reduction, Constraint Satisfaction End, Means-End Analysis.

UnitIII

Knowledge Representation: Predicate dependency directed backtracking rule resolution, backward reasoning: use Representation: Semantic Nets: slots, dependency, scripts.

Logic: Unification, modus pones, resolution, based Systems: Forward reasoning:conflict of no backtrack. Structured Knowledge exceptions and default frames,conceptual

Unit IV

Handling uncertainty: Non-Monotonic Reasoning, Probabilistic reasoning, use of certainty factors, fuzzy logic.**Learning** Concept of learning, learning automation, genetic algorithm, learning by inductions, neural nets.

Unit V

Expert Systems: Need and justification for expert systems, knowledge acquisition, Case studies: MYCIN, RI.

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Books Recommended

1. E. Rich and K. Knight, "Artificial intelligence", TMH, 2nd ed.,1992.
2. N.J. Nilsson, "Principles of AI", Narosa Publ. House,1990.
3. D.W. Patterson, "Introduction to AI and Expert Systems", PHI,1992.
4. Peter Jackson, "Introduction to Expert Systems", AWP, M.A.,1992.
5. R.J. Schalkoff, "Artificial Intelligence - an Engineering Approach", McGraw Hill Int Ed., Singapore,1992.
6. M. Sasikumar, S. Ramani, "Rule Based Expert Systems", Narosa PublishingHouse, 1994

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MCA-305: Design and Analysis of Algorithm

Periods/week: 3L, 1T

Max. Marks: 100

Course Objective:

The basic aim of this course is to provide knowledge of basic concepts in algorithms designing. This course also covers implementation and performance analysis of various algorithms.

Course Contents

Unit - I

Introduction: Algorithms, Analysis of Algorithms, Design of Algorithms, and Complexity of Algorithms, Asymptotic Notations.

Unit - II

Review of Stacks, Queues, Linked list, Binary Search Tree, Hash Table

Advanced Data Structure: BTree, Data Structure for Disjoint Sets Union-find Algorithm, Dictionaries and priority Queues.

Unit - III

Advanced Design and Analysis Techniques: Dynamic programming (0/1 Knapsack, TSP, Multistage Graphs), Greedy Algorithm (Knapsack Problem, Job Sequencing with Deadlines), Backtracking (N Queen Problem, Sum of Subsets, Hamiltonian Cycles), Branch-and-Bound (TSP, Assignment Problem), Amortized Analysis

Unit - IV

Graph Algorithms: Elementary Graph Algorithms, Breadth First Search, Depth First Search, Minimum Spanning Tree, Kruskal's Algorithms, Prim's Algorithms, and Shortest Path, All pair Shortest Path, Maximum flow, Max Flow Min Cut Theorem , Ford FulkersonAlgorithm.

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Unit – V

Randomized Algorithms, String Matching, NP-Hard and NP-Completeness, Approximation Algorithms, Vertex Cover Problem, Sorting Network, Polynomials & the FFT, Computational Geometry, Convex Hull, Graham Scan Algorithm.

Books Recommended

1. Horowitz Sahani, "Fundamentals of Computer Algorithms",Golgotia
2. CoremenLeisersonetal, "Introduction to Algorithms",PHI
3. Brassard Bratley, "Fundamental of Algorithms",PHI
4. M T Goodrich etal, "Algorithms Design", JohnWiley
5. A V Ahoetal, "The Design and analysis of Algorithms", PearsonEducation

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MCA-351: Object Oriented Programming Lab

Max. Marks: 100

1. Write a program to display diamond of stars(*"s).
2. Write a program to print Fibonacci series of „n" numbers, where n is given bythe programmer.
3. Write a program to read a set of numbers in an array & to find the largest ofthem.
4. Write a program to sort a list of names in ascendingorder.
5. Write a program to sort an array of integers usingfunctions.
6. Write a program to exchange contents of two variables using call byvalue.
7. Write a program to exchange contents of two variables using call byreference.
8. Write a program to do the following using inlinefunctions:
   a. Generate the followingmenu:
      1. Add twonumbers.
      2. Subtract twonumbers.
      3. Multiply twonumbers.
      4. Divide twonumbers.
      5. Exit.
   b. Ask the user to input two integers and then input a choice from the menu. Perform all the arithmetic operations which have been offered by the menu. Checks for errors caused due to inappropriate entry by user and output a statement accordingly.
9. Write a program to add two complex numbers using friendfunction.
10. Write a program to exchange values between two classes using friendfunction. 11

Calculate area of different geometrical figures (circle,rectangle, square, triangle) using function overloading.

12. Write a program to overload a function and create a situation such that thecompiler does internalconversion.
13. Create a class Complex for performing all arithmetic operations withcomplex numbers.
14. Write a program to maintain the student record which contains Roll number, Name, Marks1, Marks2, Marks3 as data member and getdata (), display () and setdata () as member functions.

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15. Write a class bank, containing data member: Name of Depositor, A/c type, Type of A/c, Balance amount. Member function: To assign initial value, to deposit an amount, to withdraw an amount after checking the balance (which should be greater than Rs. 500), to display name &balance.
16. Write a program to add & multiply two matrices by overloading + and *operators respectively.
17. Design three classes: Student, Test & Result. The Student class has its data members such as roll no, name etc. Create a Test class by inheriting the Student class. The Test class adds its own data members representing the marks scored in four subjects. Design one more class named as Sports which has a single data member representing sports marks. Derive the Result from class Test & Sports. What type of relationship this model belongs to? Write a program to model thisrelationship.
18. Write a class string to compare two strings, overload (= =)operator.
19. Declare a class of vehicle. Derived classes are two-wheeler, three-wheeler & four- wheeler. Display the properties of each type of vehicle using member functions of classes.
20. Create two classes namely Employee and Qualification. Using multiple inheritance derive two classes Scientist and Manager. Take suitable attributes &operations.

21 Write a program to implement this class hierarchy.

22. Consider an example of book shop which sells books and video tapes. These two classes are inherited from base class called media. The media class has command data members such as title and publication. The Book class has data members for storing number of pages in a book and tape class has playing time in a tape. Each class will have member functions such as read () and show ().In the base class, these members have to be defined as virtual functions. Write a program to model the class hierarchy for book shop and process objects of these classes using pointers to base class.
23. Write a program to create template to perform bubble sort for an array of anydata type.
24. Write a program to read data from keyboard & write it to the file. After writing is completed, the file is closed. The program again opens the same file and readsit.
25. Write a program to reverse a string using pointers andarrays.

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26. Write programs illustrating file handlingoperations:

Ex. a) Copying a text files b) Displaying the contents of the file etc.

27. Write programs illustrating the console I/Ooperations.

28. Write programs illustrating how exceptions are handled (ex: division-by-zero, overflow and underflow in stacksetc.).

29. Write a Java Program to compute &print

a) factorial of any givennumber.

b) Fibonaccinumbers

c) compute the sum of digits of a giveninteger

d) reverse the digits of anumbers

30. Assume that a bank maintains two kinds of account for its customers, one called saving and other current. The saving account provides compound interest and withdrawal facilities but not cheque book. The current account provides cheque book but no interest. Current account holders should also maintain a min balance & if the balance falls below, a service charge is imposed. Create a class Account that stores customer name, account number & type of account. From this derive the classes Curr-acc&Sav-acc to make them more specific to their requirements. Include the necessary methods in order to achieve the followingtasks:

0 Accept deposit from a customer and update the balance 1

Display thebalance.

2 Compute and depositinterest

3 Permit withdrawal and update thebalance.

4 Check for the minimum balance, impose penalty. If necessary, and updatethe balance

31. Write a Java Program to sort element of thearray.

32. Write a Java Program to read marks out of 100 declare result asfollows:

a. 60 or more 1stclass

b. 50-59 2ndclass

c. 40-49pass

d. Less than 40fail

33. Write a java program to check whether a year is a leap year ornot.

34. Write a Java Program to read string from console and display the number of occurrence of eachword.

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35. Write a Java Program to demonstrate use of Inheritance through vehicle,two wheeler, four wheeler and three-wheeler class.
36. Write a Java Program to demonstrate runtime polymorphism with the help ofabstract classes.
37. Write a Java Program to demonstrate runtime polymorphism with the helpof interfaces.
38. Write a java program to display the use of all access modifiers with the help oftwo packages
39. Write a Java Program to take a filename as command line argument and displayits contents.
40. Write a Java Program that reads a file and then displays it, with a line number before eachline.
41. Write a Java Program that displays number of characters, lines and words in a text file.
42. Write a Java Program that appends the contents of one file toanother.
43. Write a Java Program to demonstrate how we can make sure that the main thread gets executed after the child threadsfinishes.
44. Write a Java Program to show exception handling. Also demonstrate the useof finally.
45. Write a Java program which takes as input a number and throws a userdefined exception when number is greater than 10.
46. Write a Java Program to demonstrate the use of throws. Also show what happens ifa parent exception class precedes a child exception class in the throwsclass.
47. Write a Java Program to demonstrate the Applet LifeCycle.
48. Develop an applet that displays the received integer in one text box and then on pressing the compute button, displays the factorial in another textbox.
49. Write a Java Program to demonstrate a working chat applet (Create both serverand client).
50. Write a Java Program to roll a given string diagonally in an Applet. Make useof <param> tag for setting the width and height of the applet.
51. Write a Java Program a program to show how interface can be used tosupport multiple inheritances injava.
52. Create an applet that will have a text area and a Frame. When any mouseevent

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occurs on the frame, make an entry of that event into the text area. For example, add "Mouse Dragged" when the mouse id dragged.

53. Programs to create packages and multiple threads inJAVA.
54. Programs to write applets to draw the various shapes: a) Cylinder b) Cube c) Square insidea circle d) Circle inside a square e) Polygonsetc.
55. Create and manipulate labels, lists, text fields, text areas andpanels.
56. Understand and handle mouse events and keyboard events and uselayout managers.
57. Create and manipulate the following: Textareas, canvases, scrollbars,frames, menus, dialog boxes.
58. Programs which illustrates the use of files andstreams.
59. Create an applet with Border Layout, with a button in each of the border layout component.

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MCA-352: Computer Graphics Lab

Max. Marks: 100

1. Write a program to implement DDAalgorithm.
2. Write a program to implement Bresenham's linealgorithm.
3. Modify the Bresenham's line algorithm so that it will produce adashed-line pattern. Dash length should be independent ofslope.
4. Write a program to implement Midpoint circle generatingalgorithm.
5. Write a program to implement Bresenham's circle generatingalgorithm.
6. Write a program to draw the followingfigure:-

Point A and B is input.

7. Write a program to implement outlinecharacter.
8. Write a program to implement bitmapcharacter.
9. Write a program to implement ellipse generatingalgorithm.
10. Write a program for 2D line drawing as Raster GraphicsDisplay.
11. Write a program for circle drawing as Raster GraphicsDisplay.
12. Write a program for Polygon filling as Raster GraphicsDisplay.
13. Write a program to implement Line Clipping Algorithm usingCohen SutherlandAlgorithm.
14. Write a program to implement Line Clipping Algorithm using Liang Barsky Algorithm.
15. Write a program to Implement Polygon Clipping Algorithm using Sutherland - HodgmanAlgorithm.
16. Modify the Liang-Barsky line clipping algorithm to polygonclipping.
17. Write a program to implement scaling onpolygon.
18. Write a program to implement transferring onpolygon.
19. Write a program to implement rotation onpolygon.
20. Write a program to implement reflection onpolygon.
21. Write a program for displaying 3D objects as 2D display usingperspective transformation.

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22. Write a program for rotation of a 3D objects about arbitraryaxis.

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23. Write a program for Hidden surface removal from a 3Dobjects.
24. Write a program to draw a hut or other geometricalfigures.
25. Write a program to rotate a Circle around any arbitrary point or around the boundary of another circle.
26. Write a menu driven program to rotate, scale and translate a line point,square, triangle about theorigin.
27. Write a program to implement polygonfilling.
28. Write a program to implement transformations in threedimensions.
29. Write a program to implement set of Basic Transformations on Polygoni.e. Translation, Rotation andScaling.
30. Write a program to implement set of Composite Transformations on PolygonI.e. Reflection, Shear (X &Y), rotation about an arbitrarypoint.
31. Find a transformation of triangle (coordinates will be given) by Rotating 45 Degree about the origin and then translating one unit in X and Y direction. Program to rotate circle around anothercircle.
32. Show that transformation matrix for a reflection about the line y=x, is Equivalent to a reflection relative to the x axis followed by a counter clockwise rotation of 90 degrees.
33. Program to perform varioustransformations.
34. Write a program to draw a movingcar.
35. Write a program to design a sky consisting of moving clouds using set of ellipses andcircles.
36. Write a program to design a Solar Planet System using a set ofcircles.

MCA-353: DAA Lab

Max. Marks: 100

Write Programs in C/C++ for

1. Creation of a binary search tree and insertion & deletion intoit.
2. Creation of a Red Black tree and all the associated operations onit.
3. Implementing an AVL tree and all the associated operations onit.
4. Multiplication of two matrices using Strassen's Matrix Multiplicationmethod.
5. Solving Knapsackproblem.
6. Implementing shortest path algorithms (Dijkastra's and Bellman FordAlgorithm).
7. Finding the minimum cost Spanning Tree in a connectedgraph.
8. Solving 8 Queen'sproblem.
9. Finding the number of connected components in aGraph.
10. Write a program to find the minimal spanning tree of a graph using the Prim's algorithm. The program should be able to read in the weight matrix of a graph and produce the corresponding matrix of the minimal spanning tree. Generate weight matrices with a large number of nodes and estimate the time complexity of the algorithm.
11. Use a greedy algorithm to generate approximate solutions of the 0/1knapsack problem.
12. Write a program to add two polynomials using most suitable dynamic datastructure.
13. Write a program to sort list of 50 names using Radix/Bucketsort.
14. Write a program to traverse the graph using BFS traversaltechnique.
15. Write a program to find single source shortest path using Dijkastra'salgorithm.
16. Write a program to add two sparsematrices.
17. Write a program for a given directed graph G (v, e). Find and print all thenodes reachable from a node sayJ.
18. Find all distinct solutions of the n-queens problem using a backtrackingalgorithm.
19. Write a program to find the closest pair of points using a divide and conquer strategy. Use the random number generator to generate a large number of points in a unit square as input to thealgorithm.
20. Write a program to find the minimal spanning tree of a graph using the Prim's algorithm. The program should be able to read in the weight matrix of a graphand

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produce the corresponding matrix of the minimal spanning tree. Generate weight matrices with a large number of nodes and estimate the time complexity of the algorithm.

21. Use a greedy algorithm to generate approximate solutions of the 0/1 knapsack problem.
22. Write a program to add two polynomials using most suitable dynamic datastructure.
23. Write a program to sort list of 50 names using Radix/Bucketsort.
24. Write a program to traverse the graph using BFS traversaltechnique.
25. Write a program to find single source shortest path using Dijkastra'salgorithm.
26. Write a program to add two sparsematrices.
27. Write a program for a given directed graph G (v, e). Find and print all thenodes reachable from a node sayJ.
28. Find all distinct solutions of the n-queens problem using a backtrackingalgorithm.
29. Write a program to find the closest pair of points using a divide and conquer strategy. Use the random number generator to generate a large number of points in a unit square as input to thealgorithm.

MCA: 354 Communication & Soft Skills – III

Max. Marks: 50

1 Case studies highlighting cross culturalissues

a. Negotiation Skills practice through role plays in differentsituations.

b. Extempore

c. Delivering OralPresentations

2 WritingsSkills

a. The development of coherentparagraphs

b. Preciswriting

c. Writing Businessletters

d. Writing memos, circulars, notices andemails.

e. Writing Business reports and businessproposals.

f. Preparing agenda and minutes for meetings through mockmeetings.

3. Soft Skills

a. Activities designed to highlight leadership and teamskills.

b. GroupDiscussions

c. Grouppresentations

d. Oral case analysis in smallgroups

e. Mockinterviews

f. Telephone etiquettespractice

4. BusinessPresentations

a. Planning, design and layout ofpresentation

b. Information Packaging Audienceanalysis

c. Audio visual aids, speaking withconfidence.

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5. **Teams: An Overview**

a. Team Design Features: team vs.group

b. Effective Team Mission and Vision Life Cycle of a ProjectTeam.

c. Rationale of aTeam

d. Goal Analysis and TeamRoles

e. Conflict managementstrategies

6. Leading through PositiveAttitude

a. Understanding Attitudes

b. Formation ofAttitudes

c. Types ofAttitudes

d. Effects of Attitude on , Behavior ,Perception

e. Motivation

f. StressAdjustment

g. TimeManagement

h. EffectivePerformance

i. Building PositiveAttitude

Books Recommended

1. Hoover, Judith. Effective Small Group and TeamCommunication. California: Wadsworth Publishing Company,2004.
2. King, Graham. Collins Improve Your Writing Skills. New Delhi:HarperCollins, 2011.
3. Kumar, Sanjay &Pushpalata. Communication Skills. New Delhi: OxfordUniversity Press, 2012.
4. Krishnaswamy, N. Creative English for Communication. New Delhi:Macmillan, 2009.
5. Mitra, Barun Kumar. Personality Development and Soft Skills. New Delhi:Oxford University Press,2011.
6. Raman, Meenakshi& Prakash Singh. Business Communications. New Delhi: Oxford University Press,2006.
7. Weisinger, Hendrie. Emotional Intelligence at Work. Delhi: Jossey-bass,1997.

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Semester IV

MCA-401: Management Information System

Periods/week: 3L, 1T

Max. Marks: 100

Course Objective:

This course will provide the students with an understanding of the principles of information systems technology and its impact on the strategic goals and direction of the organization. They will learn how MIS concepts are applied in business and how information systems can provide solutions to the entire organization.

Course Contents

Unit - I

Foundation of Information Systems: Introduction to information system in business, fundamentals of information systems, solving business problems with information systems, Types of information systems, Effectiveness and efficiency criteria in information system.

An overview of Management Information Systems: Definition of a management information system, MIS versus Data processing, MIS & Decision Support Systems, MIS & Information Resources Management, End user computing, Concept of an MIS, Structure of a Management information system. Information System for Managerial Decision Support, Information System for Strategic Advantage.

Unit - II

Concepts of planning & control: Concept of organizational planning, The Planning Process, Computational support for planning, Characteristics of control process, the nature of control in an organization. Managing Information Technology: Enterprise & global management, Security & Ethical challenges, Planning & Implementing changes.

Unit - III

Business applications of information technology: Internet & electronic commerce, forces behind Ecommerce, Advantages and Disadvantages, Architectural framework, Impact of E-commerce on business. Network Infrastructure for E- Commerce: Internet and Intranet

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based E-commerce- Issues, problems and prospects, Intranet, Extranet & Enterprise Solutions, Information System for Business Operations.

Unit - IV

Advanced Concepts in Information Systems: Enterprise Resource Planning, Supply Chain Management, Customer Relationship Management, and Procurement Management. Framework for evaluating ERP acquisition, Analytical Hierarchy Processes (AHP), Applications of AHP in evaluating ERP, Selection of Weights, Role of consultants, vendors and users in ERP implementation; Implementation vendors evaluation criterion, ERP Implementation approaches and methodology, ERP implementation strategies.

Unit- V

Critical success and failure factors for implementation, Model for improving ERP effectiveness, ROI of ERP implementation, Hidden costs, ERP success inhibitors and accelerators, Management concern for ERP success, Strategic Grid: Useful guidelines for ERP Implementations.

Books Recommended:

1. O Brian, "Management Information System",TMH
2. Gordon B. Davis &Margrethe H. Olson, "Management Information System",TMH.
3. O Brian, "Introduction to Information System", MCGRAWHILL.
4. Murdick, "Information System for Modern Management",PHI.
5. Jawadekar, "Management Information System",TMH.
6. Jain Sarika, "Information System",PPM

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MCA-402: Advanced Java Programming

Periods/week: 3L, 1T

Max. Marks: 100

Course Objective

The basic aim of this course is to provide knowledge and implementation of advanced java features such as java beans, servelets, JSP, database access, database programming using JDBC. This course also involves review of applets, AWT and Swings.

Course Contents

Unit –I

Basic Review: Review of Applets, Class, Event Handling, AWT Programming, **and Introduction** to Swing: Japplet, Handling Swing Controls like Icons Labels Buttons Text Boxes Combo Boxes Tabbed Pains Scroll Pains Trees Tables Differences between AWT Controls & Swing Controls Developing a Home page using Applet &Swing.

Unit-II

Java Beans Introduction to Java Beans, Advantages of Java Beans, BDK Introspection, Using Bound properties, Bean Info Interface, Constrained properties Persistence, Customizers, JavaBeans API.

Unit-III

Introduction to Servelets: Lifecycle of a Serverlet, JSDK the Servelet API, The javax.servelet Package, Reading Servelet parameters, Reading Initialization parameters. The javax.servelet HTTP package, Handling Http Request & Responses, Using Cookies- Session Tracking, Security Issues.Problems with servelets.

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Unit-IV

Introduction to JSP: The Anatomy of a JSP Page, JSP Processing. JSP Application Design with VC Setting Up and JSP Environment: Installing the Java Software Development Kit, 94

Tomcat Server & Testing Tomcat. JSP Application Development. Implicit JSP Objects, Conditional Processing – Displaying Values Using an Expression to Set an Attribute, Declaring Variables and Methods Error Handling and Debugging Sharing Data Between JSP pages, Requests, and Users Passing Control and Data between Pages.

Unit-V

Database Access, Database Programming using JDBC Studying Javax.sql.* package Accessing a Database from a JSP Page Application – Specific Database Actions Deploying JAVA Beans in a JSP Page. Introduction to struts, hibernate and spring framework.

Books Recommended

1. Internet and World Wide Web – How to program by Dietel and Nieto Pearson EducationAsia.
2. The complete Reference Java 2 Third Edition by Patrick Naughton andHerbert Schildt.
3. Java Server Pages by Hans Bergstan.
4. An Introduction to web Design and Programming–Wang-Thomson.
5. Web Applications Technologies Concepts-Knuckles,JohnWiley.
6. Programming world wide web-Sebesta,Pearson.
7. Java Server Pages, Pekowsky, Pearson.

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MCA 403: WEB Technology

Periods/week: 3L, 1T

Max. Marks: 100

Course Objective

The subject covers the wide range of web technologies both client side and server side to provide the exposure to the students to develop Rich Internet Applications using them. It covers the basics WWW, client side technologies like HTML, CSS and DHTML including JavaScript, server side scripting with PHP and database connectivity using PHP and related technologies.

Course Contents

Unit I

Introduction: Concept of WWW, Internet and WWW, HTTP Protocol: Request and Response, Web browser and Web servers, Features of Web 2.0. Web Design: Concepts of effective web design, Web design issues including Browser, Bandwidth and Cache, Display resolution, Look and Feel of the Website, Page Layout and linking, User centric design, Sitemap, Planning and publishing website, Designing effective navigation.

Unit II

HTML : Basics of HTML, formatting and fonts, commenting code, color, hyperlink, lists, tables, images, forms, XHTML, Meta tags, Character entities, frames and frame sets, Browser architecture and Web site structure. Overview and features of HTML5.

Style sheets : Need for CSS, introduction to CSS, basic syntax and structure, using CSS, background images, colors and properties, manipulating texts, using fonts,borders and boxes, margins, padding lists, positioning using CSS, CSS2, Overview and features ofCSS3.

Unit III

JavaScript : Client side scripting with JavaScript, variables, functions, conditions, loops and repetition, Pop up boxes, Advance JavaScript: JavaScript and objects, JavaScriptown objects, The DOM and web browser environments, Manipulation using DOM, forms and validations, DHTML : Combining HTML, CSS and Java Script, Events and buttons. XML: Introduction to XML, uses of XML, simple XML, XML key components, DTD and Schemas, Using XML with application. Transforming XML using XSL andXSLT.

Unit IV

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PHP : Introduction and basic syntax of PHP, decision and looping with examples, PHP and HTML, Arrays, Functions, Browser control and detection, string, Form processing, Files, Advance Features: Cookies and Sessions, Object Oriented Programming with PHP.

Unit V

PHP and MySQL : Basic commands with PHP examples, Connection to server, creating database, selecting a database, listing database, listing table names, creating a table, inserting data, altering tables, queries, deleting database, deleting data and tables, PHP myadmin and database bugs.

Books Recommended

1. Developing Web Applications, Ralph Moseley and M. T. Savaliya, Wiley,India.
2. Web Technologies, Black Book, dreamtechPress
3. HTML 5, Black Book, dreamtechPress
4. Web Design, Joel Sklar, CengageLearning
5. Developing Web Applications in PHP and AJAX, Harwani,McGraw-Hill
6. Internet and World Wide Web How to program, P.J. Deitel&H.M. Deitel,Pearson

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MCA-404: Computer Based Optimization Techniques

Periods/week: 3L, 1T

Max. Marks: 100

Course Objective

The main objective of this course is to study fundamental optimization methods; linear programming, integer programming, network models, and dynamic programming methods of operations research. This also involves modeling and applications of these methods in practical situations.

Course Contents

Unit - I

Linear Programming Problems (LPP): Definition, Construction of LPP, Solution of LPP: Graphical Method, Simplex Method, Two Phase Method, Big-M Method, Sensitivity Analysis, Duality in LPP, Dual SimplexMethod.

Unit - II

Transportation Models and its Variants: Definition, Solution of TP: Determination of basic feasible solution, Iterative computation of solution. Assignment Problems**:** Definition, Hungarian Method for AP.

Unit - III

Integer Linear Programming Problems: Introduction, illustrative applications, Solution of Integer Linear Programming Problem: Cutting Plane Method, Branch and Bound Method. 0-1 integer linear programming problem.

Introduction to NLP: Definition of NLP, Convex Programming Problems, Quadratic Programming Problems: Wolfe's Method for Quadratic Programming, Kuhn-Tucker Conditions, Geometrical Interpretation of KT-Conditions, KT-Points etc.

Unit - IV

Queuing Systems: Introduction to Queues, Basic Elements of Queuing Models, Queue Discipline, Memory less Distribution, Role of Exponential and Poisson Distributions, Markovian Process, Erlang Distribution, Symbols and Notations, Distribution of Arrivals,

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Distribution of Service Times, Definition of Steady and Transient State.Poisson Queues (M/M/1, M/M/C).

Unit - V

Inventory Models: Inventory models –various costs deterministic inventory models, Single period inventory model with shortest cost, stochastic models, Application of inventory models, Economic lot sizes-price breaks.

Books Recommended:

1. Hadley, G.,"Linear Programming, and Massachusetts",Addison-Wesley
2. Taha, H.A, "Operations Research – An Introduction",Macmillan
3. Hiller, F.S., G.J. Lieberman, " Introduction to Operations Research",Holden-Day
4. Harvey M. Wagner, "Principles of Operations Research with Applicationsto ManagerialDecisions",
5. Prentice Hall of India Pvt.Ltd.
6. SwarupKetal, "Operation Research", S.Chand
7. Billey E. Gillet, "Introduction to Operation Research- A Computer oriented AlgorithmApproach"
8. Sharma S D , "OperationResearch"

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MCA-405: Microprocessor & Assembly Language Programming

Periods/week: 3L, 1T

Max. Marks: 100

Course Objective

This course is an introduction to microprocessor system organization and assembly language programming. At first it covers the architecture, instruction set and assembly language of the 8085 and 8086 microprocessor. Then it goes on to examine hardware issues such as memory organization, input/output interfacing, interrupt and

Course Contents

Unit- I

Introduction: Introduction to Microprocessors and microcomputers, Study of 8 bit Microprocessor, Bus concept and organization, concept of multiplexing and de- multiplexing, 8085 pin configuration and signals, Internal Architecture and operations, Types of Interrupt schemes.

Unit-II

Instruction Set: Programming model of 8085, Classification of instruction and instruction Format, addressing modes, Instruction cycle, machine cycle, T-states, timing diagram for 8085 instruction, Different groups of Instruction set, (Data transfer, Arithmetic, logical, Branching, Stack, I/O and Machine control group and RST instructions)

Unit- III

Programming Technique: Assembly Language Programming and Debugging, Advance Assembly Language Programming, Counter and Time delay; Macros, subroutine; Stack- implementation and uses with examples.

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Unit-IV

Microprocessor interfacing: Type of RAM and ROM, Memory Mapping schemes, Memory interfacing, Programmable Peripheral Interface 8255, USART 8251, programmable interval timer 8253, Programmable interrupt controller8259;

Unit-V

Bus Standards: Serial bus - RS232C and RS422A, Parallel interface- Centronics and IEEE 488.

Advanced Microprocessor: Introduction of 8086, Architecture, BIU and EU, Segmentation, Pipelining, Pin Diagram, Minimum and Maximum Mode, Addressing Modes.

Books Recommended:

1. Ramesh. S. Gaonkar, " Microprocessor architecture Programming andApplication with 8085" Pen International Publishing, 4thEdition
2. Douglas V Hall., Microprocessors Interfacing, TMH (2ndEdition).
3. S. Girdher and Gosh ," 0000 to 8085"PHI.
4. B.Ram, "Fundamentals of microprocessors and microcomputer" DhanpatRai,5th Edition.

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MCA-451: Advanced Java Programming

Max. Marks: 100

1. Implementation of Java Scripts, Objects in Java Script, Dynamic HTML withJava Script.
2. Develop a program using the following AWT components in an applet: Text field,Text area, Button andlabel.
3. Develop a program that demonstrates the use of grid layout inapplet.
4. To develop a program to create a member with various menu items andsubmenu items.
5. To develop a program to create an extended AWTcomponent.
6. To develop a program to make a connection to a database named student and display itscontents.
7. To develop a program to design a form having two text fields and a singlebutton using swingcomponents.
8. To develop a program to display a table usingswings.
9. To develop a program to design a form having two text fields and a single button using swingcomponents
10. To develop a program demonstrating the use of HTTP Servletclass.
11. Implementation of Swing. Developing a Home page using Applet &Swing.
12. Implementing javabeans.
13. Implementation of Servelets. Handling Http Request & Responses, Using Cookies-SessionTracking.
14. JSP Application Design with VC Setting Up and JSP Environment: Installingthe Java Software Development Kit, Tomcat Server & TestingTomcat.
15. JSP Application Development. Implicit JSP Objects, Conditional Processing – Displaying Values Using an Expression to Set an Attribute, Declaring Variables and Methods Error Handling.
16. Debugging Sharing Data between JSP pages, Requests, and Users PassingControl and Data between Pages.
17. To develop a program demonstrating the use ofcookies.
18. To develop a program demonstrating the use of generic servletclass.
19. To develop a program using JDBC demonstrating the use of preparedstatement.

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20. Perform deploying JAVA Beans in a JSPPage.
21. To develop a program demonstrating the use ofcookies.
22. To develop a program using JDBC demonstrating the use of preparedstatement

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MCA – 452: WEB Technology Lab

Max. Marks: 100

1. Write a program to make the following list using listtag

Scrambled Eggs

Eggs are one of my favorite foods. Here is a recipe for deliciously rich scrambled eggs.

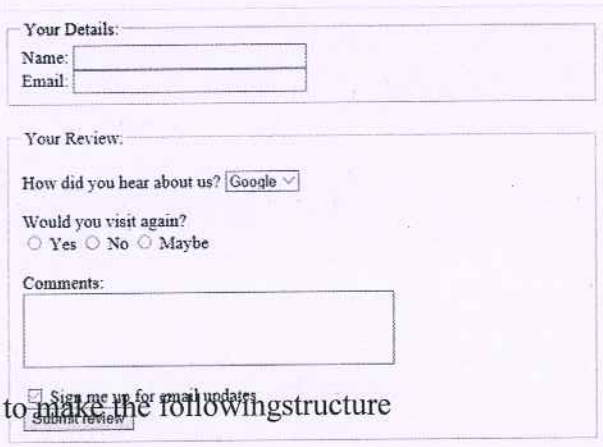
Ingredients

- 2 eggs
- 1tbs butter
- 2tbs cream

Method

1. Melt butter in a frying pan over a medium heat
2. Gently mix the eggs and cream in a bowl
3. Once butter has melted add cream and eggs
4. Using a spatula fold the eggs from the edge of the pan to the center every 20 seconds (as if you are making an omelette)
5. When the eggs are still moist remove from the heat (it will continue to cook on the plate until served)

2. Create the following form and validate it usingHTML-5



3. Write a program to make the followingstructure

	Home starter hosting	Premium business hosting
Disk space	250mb	1gb
Bandwidth	5gb per month	50gb per month
Email accounts	3	10
Server	Shared	VPS
Support	Email	Telephone and email
Setup	Free	Free
FTP accounts	1	5
	Sign up now and save 10%!	

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4. Write a program to change the positionof adiv.
5. Write a program to showtooltip.

6. Output is shown below, write the code for it. (also use anchortag)

Film Folk

Festival Diary

Here are some of the film festivals we will be attending this year.
Please contact us if you would like more information.

January

Sundance Film Festival
Park City, Utah, USA
20 - 30 January 2011

February

Tropfest
Sydney, Australia
20 February 2011

7. Write a program to create thefollowing.

The Evolution of the Bicycle

In 1817 Baron von Drais invented a walking machine that would help him get around the royal gardens faster: two same-size in-line wheels, the front one steerable, mounted in a frame upon which you straddled. The device was propelled by pushing your feet against the ground, thus rolling yourself and the device forward in a sort of gliding walk.

"Life is like riding a bicycle. To keep your balance you must keep moving." - Albert Einstein

The machine became known as the Draisienne (or "hobby horse"). It was made entirely of wood. This enjoyed a short lived popularity as a fad, not being practical for transportation in any other place than a well maintained pathway such as in a park or garden.

The next appearance of a two-wheeled riding machine was in 1865, when pedals were applied directly to the front wheel. This machine was known as the velocipede (meaning "fast foot") as well as the "bone shaker," since its wooden structure combined with the cobblestone roads of the day made for an extremely uncomfortable ride. They also became a fad and indoor riding academies, similar to roller rinks, could be found in large cities.

8. Write a program to showscrollingtext.

9. Write a program to create ablinkingheader.

10. Write a program to make an html file that look like thefollowing.

Home page
Musings
My town
Links

My first styled page

Welcome to my styled page!

It lacks images, but at least it has style. And it has links, even if they don't go anywhere...

There should be more here, but I don't know what yet.

Made 5 April 2004
by myself.

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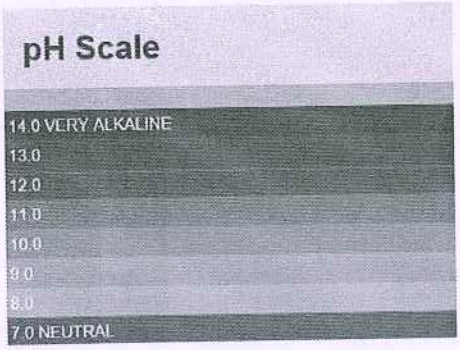
11. Write a program to create thefollowing.



12. Write a program to create an image gallery as shown in the imagebelow.

13. Write a program to automaticallytypewrite themessage.

14. Write a program to convert the text intobiggertext.

15. Write a program toselect allcheck-boxes.

16. Write a program tochange background color of abutton.

17. Write a program to change text color of abutton.
18. Write a program toinsert background image to abutton.

19. Write a program tochange background color of a textarea.

20. Write a program to change text color of a textarea.

21. Write a program toinsert background image to a textarea.

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22. Write a program to extract the domain name from the given emailId.

23. Write a program to createdrop down navigation (select box)menu.

24. Write a program to createtop drop downmenu.

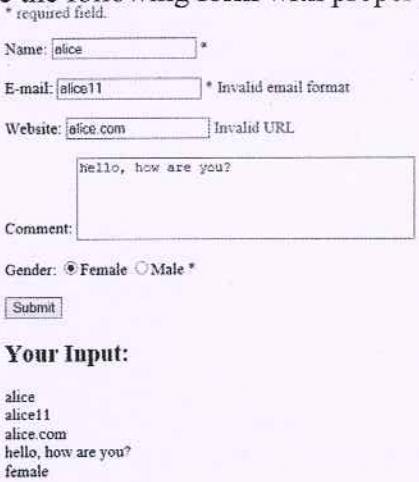
25. Write a program to createalways-on-topmenu.

26. Write a program to createinset bordersmenu.

27. Write a program to calculate the number of days between two dates.Date should be given by theuser.

28. Write a programto read a file (use readfile ()) and write it to the outputbuffer.

29. Write a program to create the following form with propervalidations



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30. Write a program to create a dynamic table. Number of rows and number of columns should be given by theuser.

31. Write a program to clean the sessions of a loginform.

32. Create a registration form for a student and store the details in database using PHP andMySql.

33. Write a program to update and delete the details from database(MySql).

34. Write a program to store and retrieve images fromdatabase.

35. Write a program to create a page for poetry workshop. The following image can help you to better understandit

Poetry Workshops

We will be conducting a number of poetry workshops and symposiums throughout the year.

Please note that the following events are free to members:

- A Poetic Perspective
- Walt Whitman at War
- Found Poems and Outsider Poetry

	New York	Chicago	San Francisco
A Poetic Perspective	Sat, 4 Feb 2012 11am - 2pm	Sat, 3 Mar 2012 11am - 2pm	Sat, 17 Mar 2012 11am - 2pm
Walt Whitman at War	Sat, 7 Apr 2012 11am - 1pm	Sat, 5 May 2012 11am - 1pm	Sat, 19 May 2012 11am - 1pm
Found Poems & Outsider Poetry	Sat, 9 Jun 2012 11am - 2pm	Sat, 7 Jul 2012 11am - 2pm	Sat, 21 Jul 2012 11am - 2pm
Natural Death: An Exploration	Sat, 4 Aug 2012 11am - 4pm	Sat, 8 Sep 2012 11am - 4pm	Sat, 15 Sep 2012 11am - 4pm

Register your interest

Your name:
Your email:
Your closest center: New York
Are you a member? ○ Yes ○ No

Register

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MCA-453: Microprocessor Lab

Max. Marks: 100

1. Study of 8085Kit.
2. WRITE A PROGRAM to add two 16 bit numbers present in memory location& add store the result in another memorylocation.
3. Transfer a block of data from memory location XX00 to another memorylocation XX00 in forward & reverseorder.
4. Write a program to find the square of anumber.
5. Write a main program & a conversion subroutine to convert Binary toits equivalentBCD.
6. Write a program to multiply two 8 bit numbers whose result is 16bit.
7. Write a program of division of two 8 bitnumbers.
8. Write a program to find largest from a givenarray.
9. Write a program to find smallest number from a givenarray.
10. Write a program to Sort an array in ascendingorder.
11. Write a program to Sort an array in descendingorder.
12. To study and interface the PPI (8255) with8085.
13. To study and interface the PPI (8251) with8085.

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MCA-454: Communication & Soft Skills -IV

Max. Marks: 50

1. **Essentials ofGrammar**
   a. Parts ofSpeech
   b. Punctuation
   c. VocabularyBuilding,
   d. Phonetics

2. **OfficeManagement**
   a. Types ofCorrespondence,
   b. Receipt and Dispatch ofMail,
   c. FilingSystems
   d. Classification of Mail, Role & Function ofCorrespondence
   e. MIS, ManagingComputer

3. **Letter & ResumeWriting**
   a. Types of Letters-Formal /Informal
   b. Importance andFunction
   c. Drafting theApplications
   d. Elements ofStructure
   e. Preparing theResume
   f. Do's & Don'ts ofResume
   g. HelpfulHints

4. **PresentationSkills**
   a. Importance of Presentation Skills
   b. Capturing Data, Voice & PictureIntegration
   c. Guidelines to make PresentationInteresting
   d. BodyLanguage
   e. VoiceModulation
   f. AudienceAwareness
   g. VisualAids
   h. Forms of Layout and Styles ofPresentation.

5. **InterviewPreparation**

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a. Types ofInterview
b. Preparing for the Interviews
c. Attending theInterview
d. InterviewProcess
e. EmployersExpectations
f. General Etiquette, Dressing Sense, Postures &Gestures

6. **Group Discussion &Presentation:**
   a. Definition
   b. Process
   c. Guidelines
   d. HelpfulExpressions
   e. Evaluation

(Note: Every student shall be given 10 minutes of presentation time & 5 minutes of discussion on his/ her presentation.)

The student will be evaluated on the basis of:

His / her presentation style

Feedback of Faculty & Students General

Etiquette

Proficiency in Letter Drafting / Interview Preparation

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Books Recommended

1. Burr, Catherine. Resume Building and Interviewing Skills. Indiana: Xlibris Corporation,2007.
2. King, Graham. Collins Improve Your Writing Skills. New Delhi: HarperCollins,2011.
3. Kumar, Sanjay &Pushpalata. Communication Skills. New Delhi: OxfordUniversity Press, 2012.
4. Krishnaswamy, N. Creative English for Communication. New Delhi: Macmillan,2009.
5. Mitra, Barun Kumar. Personality Development and Soft Skills. New Delhi:Oxford University Press,2011.
6. Raman, Meenakshi& Prakash Singh. Business Communications. New Delhi:Oxford University Press,2006.
7. Taylor, Grant. English Conversation Practice. New Delhi: Tata Mcgraw Hill Education Private Limited,2005.

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Training for Oracle Certified Associate Developer

406: RDBMS Concepts and introduction to SQL

Periods/week:3L **Max. Marks:50**

Study of popular RDBMS packages

455: Oracle Database 10G Administration Workshop I Release-2- WDP (D17092GC31S)

Periods/week:12P **Max. Marks:100**

Study of popular SQL Commands and their implementation on Oracle 9i

456: Oracle Database 10G Administration Workshop II Release-2- WDP (D17090GC31S)

Periods/week:12P **Max. Marks:100**

Implementing the Object Oriented concepts, Using Oracle to design down various systems.

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Semester – V

MCA 501: Software Engineering

Periods/week: 3L, 1T

Max. Marks: 100

Course Objective

Students in this course should be able to explain and apply a broad range of concepts from software engineering, spanning all aspects the software engineering process. They should be able to recognize, define, and make correct use of generally accepted software engineering terminology.

Course Contents

Unit-I

Introduction: Introduction to software engineering, Importance of software, The evolving role of software, Software Characteristics, Software Components, Software Applications, Software Crisis, Software engineering problems, Software Development Life Cycle, Software Process.

Unit-II

Software Requirement Specification: Analysis Principles, Water Fall Model, The Incremental Model, Prototyping, Spiral Model, Role of management in software development, Role of matrices and Measurement, Problem Analysis, Requirement specification, Monitoring and Control.

Software-Design: Design principles, problem partitioning, abstraction, top down and bottom up-design, Structured approach, functional versus object oriented approach, design specifications and verification, Monitoring and control, Cohesiveness, coupling, Fourth generation techniques, Functional independence, Software Architecture, Transaction and Transform Mapping, Component – level Design, Fourth Generation Techniques.

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Unit-III

Coding: Top-Down and Bottom –Up programming, structured programming, information hiding, programming style and internal documentation.

Testing: Testing principles, Levels of testing, functional testing, structural testing, test plane, test case specification, reliability assessment, software testing strategies, Verification & validation, Unit testing, Integration Testing, Alpha & Beta testing, system testing and debugging.

Unit-IV

Software Project Management: The Management spectrum- (The people, the product, the process, the project), cost estimation, project scheduling, staffing, software configuration management, Structured Vs. Unstructured maintenance, quality assurance, project monitoring, riskmanagement.

Unit-V

Software Reliability & Quality Assurance: Reliability issues, Reliability metrics, Reliability growth modeling, Software quality, ISO 9000 certification for software industry, SEI capability maturity model, comparison between ISO & SEI CMM.

CASE (Computer Aided Software Engineering): CASE and its Scope, CASE support in software life cycle, documentation, project management, internal interface, Reverse Software Engineering, Architecture of CASE environment.

Books Recommended:

1. Pressman, Roger S., "Software Engineering: A Practitioner's Approach Ed.Boston: McGraw Hill,2001
2. Jalote, Pankaj, "Software Engineering Ed.2", New Delhi: Narosa2002
3. Schaum's Series, "Software Engineering",TMH
4. Ghezzi, Carlo and Others, "Fundamentals of Software Engineering",PHI
5. Alexis, Leon and Mathews Leon, "Fundamental of Software Engineering",Vikas
6. Sommerville, Ian, "Software Engineering", AWL,2000
7. Fairly, "Software Engineering", New Delhi:TMH
8. Pfleerger, S, "Software Engineering", Macmillan,1987

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***Elective – I**

MCA 502.1: Advanced Database Concepts

Periods/week: 3L, 1T

Max. Marks: 100

Course Objective

The purpose of this course is to provide students with a strong foundation in advanced database concepts from an industry perspective. The course covers advanced database concepts like PL/SQL, query processing, transaction and concurrency control techniques. Students also learn object-oriented and object-relational database, distributed database concepts as well as the growing relationship between databases and the World WideWeb.

Course Contents

UNIT I

ER Model - Normalization – Query Processing – Query Optimization – Transaction processing - Concurrency Control – Recovery - Database Tuning – Issues

Unit II

Parallel Databases: I/O Parallelism – Inter and Intra Query Parallelism – Distributed Database Features - Distributed Data Storage – Fragmentation – Distributed Query Processing – Distributed Transactions – Commit Protocols – Concurrency Control – Recovery.

Unit III

Object Databases: Object Identity – Object structure – Type Constructors – Encapsulation of Operations – Methods – Persistence – Type and Class Hierarchies – Inheritance – Complex Objects – Object Database Standards, Languages and Design: ODMG Model – ODL – OQL – Object Relational and Extended – Relational Systems: Object Relational features in SQL/Oracle.

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Unit IV

Rules – Knowledge Bases - Active and Deductive Databases – Image databases – Text/Document Databases - Multimedia Databases - Applications – XML Databases

Unit V

Enhanced Data Models - Client/Server Model - Data Warehousing and Data Mining - Web Databases – Mobile Databases – Location and Handoff Management – Mobile Transaction Models.

Recommended Books

1. R. Elmasri, S.B. Navathe, "Fundamentals of Database Systems", Fifth Edition, Pearson Education/Addison Wesley,2007.
2. Thomas Cannolly and Carolyn Begg, "Database Systems, A Practical Approach to Design, Implementation and Management", Third Edition, PearsonEducation, 2007.
3. Henry F Korth, Abraham Silberschatz, S. Sudharshan, "Database System concepts", Fifth Edition, McGraw Hill,2006.
4. C.J.Date, A.Kannan and S.Swamynathan, "An Introduction to Database Systems", Eighth Edition, Pearson Education,2006.
5. V.S.Subramanian, "Principles of Multimedia Database Systems", Harcourt India Pvt Ltd., 2001. 6. Vijay Kumar, "Mobile Database Systems", John Wiley & Sons,2006.

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MCA 502.2: Data Warehousing & Data Mining Periods/week:

3L, 1T

Max. Marks: 100

Course Objective

The objective of the course is to enable a student to learn data mining and warehousing, covering data preprocessing, OLAP technology, mining patterns, classification and prediction, and cluster analysis.

Course Contents

Unit – I

Data Mining: Introduction, Definition, What motivated data mining? , Data mining as a step in the process of knowledge discovery. Architecture of a typical data mining system, Data Warehouse, Difference between Data Warehouse and operational databases, OLAP,MOLAP, ROLAP.

Unit-II

Data Preprocessing: Why preprocessing Data? Descriptive data summarization, Data Cleaning, data Integration and transformation, data Reduction, Clustering, Sampling, Binning, Histogram Analysis

Data Warehouse Technology: What is a data warehouse, a multidimensional data model-star, snowflake, fact constellation, Data Warehouse Architecture, from data warehouse to data mining?

Unit-III

Data Mining Techniques: Association rules, classification and prediction, clustering: Hierarchical and non-hierarchical techniques, Decision Trees: Decision tree induction, Tree pruning, extracting classification rules from decision trees, Decision tree construction algorithms.

Unit-IV

Other Techniques for Data mining: Introduction, Learning, Neural Networks, Data mining using neural networks, Genetic algorithms. Web Mining: Web mining, Text mining.**UnitV**

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Social Impacts of data Mining, Trends in data mining, major issues in data mining. Introduction to data mining tools, Applications of data mining.

Books Recommended:

1. Jiaweihan and Michelinekamber, Data Mining : Concepts andTechniques,MKP
2. Berson, "Data Warehousing, Data-Mining & OLAP",TMH
3. Mallach, "Decision Support and Data Warehousing System",TMH
4. BhavaniThura-is-ingham, "Data-Mining Technologies, Techniques Tools& Trends", CRCPress
5. Navathe, "Fundamental of Database System", PearsonEducation
6. Margaret H. Dunham, "Data-Mining. Introductory & AdvancedTopics

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MCA 502.3: Android Programming

Periods/week: 3L, 1T

Max. Marks: 100

Course Objective

This course is designed to introduce and familiarize students with programming in the Android environment. It starts with an examination of the basic components and concepts that define the Android platform, and then moves on to cover the specific structure that comprises an Android application. An overview of the most common tools and techniques for writing Android applications is included.

Course Contents

Unit I

Introduction to Android Platform, Android Stack, Android Versions and Installing, Android SDK and updating SDK components, Eclipse, IDEs and ADT plug, in, Using the Emulator, Android vs. Other mobile platforms.

Unit II

Application Life Cycle ,Application Components ,Activity life cycle, Manifest File, Layout XML Code, Strings , the R File, Java Source Code, Java based layout vs. xml based layout ,Eclipse Visual Layout Editor, Logging ,UI Design for Android ,Using different layouts – Linear Layout and Table Layout etc. ,Drawable Resources ,Resolution and density independence ,Working with common widgets ,Working with List View and Adapters, Creating and using option menu, Working with preferences ,Working with Dialogs and Toasts, Working with Graphics and Animation

Unit III

Introducing Intents: Intents, Intent filters, Invoking activities by class name and URI, Sharing data using Extras Bundle and URI parameters, working with Tabs and Fragments. Files and Database: Using File System ,Introducing SQLite on Android, Database Connectivity, Cursors and content values, Using Content Provider to share data , Understanding Security model.

Unit IV

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Working in background :Introducing Service and its life cycle, Creating and starting a service ,Types of services ,Working multithreading and AsyncTask, Broadcast receivers , Triggering receivers with intents ,Responding to system events using Broadcast receivers, UsingAlarm.

Unit V

Using System Services and Web Services: Using Location based Services, Telephony and SMS services, Bluetooth, Network and WiFi, Multimedia and Camera, Accessing Internet and Web Services from Android App.

Books Recommended

1. Rito Meier. "Professional Android 2 Application Development." Wiley Publishing,Inc.
2. SayedHashimi, SatyaKomatineni, Dave MacLean. "Pro Android 2."APRESS.
3. Mark Murphy. "Beginning Android 2."APRESS.

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MCA- 502.4 System Simulation and Modeling

Periods/week: 3L
Max.Marks:100

Unit-I

Introduction to Simulation - Introduction – Simulation Terminologies - Application areas - Model Classification - Types of Simulation - Steps in a Simulation study - Concepts in Discrete Event Simulation - Simulation Examples

Unit-II

Mathematical models - Statistical Models – - Concepts – Discrete Distribution- Continuous Distribution - Poisson Process- Empirical Distributions - Queuing Models – Characteristics- Notation– Queuing Systems - Monrovian Models- - Generation of Pseudo Random numbers- Properties of random numbers Techniques for generating random numbers - Testing random number generators- - Generating Random-Variants- Inverse Transform technique– Acceptance- Rejection technique - Composition & ConvolutionMethod.

Unit-III

Analysis of Simulation Data - Input Modeling - Data collection - Assessing sample independence - Hypothesizing distribution family with data - Parameter Estimation – - Goodness-of-fit tests - Selecting input models in absence of data - Output analysis for a Single system - Terminating Simulations– Steady state simulations

Unit-IV

Verification and Validation - Model Building – - Verification of Simulation Models - Calibration and Validation of Models - Validation of Model Assumptions - Validating Input – Output Transformations

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Unit-V

Simulation Of Computer Systems and Case Studies - Simulation Tools - Model Input - High level computer system simulation - CPU Memory Simulation - Comparison of systems via simulation - Simulation Programming techniques - Development of Simulation models.

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MCA 503: .NET Framework and ASP.NET

Periods/week: 3L, 1T

Max. Marks: 100

Course Objective

This course introduces the students to the .NET Framework, basics of C# and basics of ASP.Net, creating and deploying ASP.Net Applications. This course also includes advanced features of ASP.Net such as handlers, caching in ASP .NET and ASP .NET security, Web services Infrastructure, Ado .NET.NET and .NET Assembles.

Course Contents

Unit I

Introduction to .NET Framework: NET framework, MSIL, CLR, CLS, CTS, Namespaces, Assemblies the Common Language Implementation, Assemblies, Garbage Collection, The End to DLL Hell, Managed Execution.

C# , The Basics and Console Applications in C#: Name Spaces , Constructor and Destructors, Function Overloading & Inheritance, Operator Overloading, Modifiers , Property and Indexers , Attributes & Reflection API, When to use Console Applications , Generating Console Output, Processing Console Input.

Unit II

C#.NET: Language Features and Creating .NET Projects, Namespaces Classes and Inheritance, Namespaces Classes and Inheritance , C, Exploring the Base Class Library, Debugging and Error Handling, Data Types, Exploring Assemblies and Namespaces, String Manipulation ,Files and I/O ,Collections. Visual Inheritance in C#.NET: Apply Inheritance techniques to Forms, Creating Base Forms, Programming Derived Forms. Mastering Windows Forms: Printing Handling Multiple Events, GDI+, Creating Windows Forms Controls.

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Unit III

ADO.NET: Benefits of ADO.NET, ADO.NET compared to classic ADO, Datasets,Managed Providers , Data Binding: Introducing Data Source Controls , Reading and Write Data Using the SqlDataSource Control .Windows Forms and Controls in details: The Windows Forms Model, Creating Windows Forms Windows Forms Properties and Events, Windows Form Controls, Menus , Dialogs –ToolTips .

ASP.NET: Introduction to ASP.NET, Working with Web and HTML Controls, Using Rich Server Controls, Login controls, Overview of ASP.NETValidation Controls, Using the Simple Validations, Using the Complex Validators Accessing Data using ADO.NET, Using the Complex Validators Accessing Data using ADO.NET, Configuration Overview.

Unit IV

Themes and Master Pages: Creating a ConsistentWeb Site, ASP.NET 2.0 Themes Master Pages, Displaying Data with the Grid View Control Introducing the Grid View Control, Filter Data in the Grid View Control, Allow Users to Select from a Dropdown List in the Grid, Add a Hyperlink to the Grid, Deleting a Row and Handling Errors.

Unit V

Advanced in .NET: MVC3: Introduction to MVC3, The Model, View, Controller Pattern, Differences between MVC and Web Forms Applications.Building a Simple MVC Application with Visual Studio, Working with Controllers and Actions, Creating MVCModels, Data and Business Rules in MVC.Applications, Creating a Custom Data Model, Using MVC Views, Views in ASP.NETMVC.

Introduction to Windows Presentation Foundation (WPF), Window Communication Foundation and its Application.

Books Recommended:

1. Jeffrey Richter, "Applied Microsoft .Net Framework Programming",(Microsoft)
2. Fergal Grimes, "Microsoft .Net for Programmers",(SPD)
3. Tony Baer, Jan D. Narkiewicz, Kent Tegels, ChanduThota, Neil Whitlow,"Understanding the .Net Framework",(SPD)
4. ShibiPanikkar and Kumar Sanjeev, "C# with .NET Frame Work", FirewallMedia.
5. Matthew MacDonald, "The Complete Reference – ASP.NET", Tata McGrawHill.

MCA: 504: Compiler Design

Periods/week: 3L, 1T

Max. Marks: 100

Course Objective

This course is an introduction to the design and implementation of compilers. General principles of compiler design are covered, with emphasis on the following components of a compiler: scanner, parser, semantic analyzer, code optimizer, and code generation. Symbol tables and error handling will also be covered.

Course Contents

Unit - 1

Compiler Structure: Compilers and Translators, Various Phases of Compiler, Pass Structure of Compiler, Bootstrapping of Compiler **Programming Languages:** High level languages, The lexical and syntactic structure of a language, Data elements, Data Structure, Operations, Assignments, Program unit, Data Environments, Parameter Transmission. **Lexical Analysis:** The role of Lexical Analyzer, A simple approach to the design of Lexical Analyzer, Regular Expressions, Transition Diagrams, and Finite state Machines, Implementation of Lexical Analyzer, and Lexical Analyzer Generator: LEX, Capabilities of Lexical Analyzer.

Unit - II

The Syntactic Specification of Programming Languages: CFG, Derivation and Parse tree, Ambiguity, Capabilities of CFG. **Basic Parsing Techniques:** Top-Down parsers with backtracking, Recursive Descent Parsers, Predictive Parsers, Bottom–up Parsers, Shift- Reduce Parsing, Operator Precedence Parsers, LR parsers (SLR, Canonical LR, LALR) Syntax Analyzer Generator: YACC

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Unit - III

Intermediate Code Generation: Different Intermediate forms: three address code, Quadruples & Triples. Syntax Directed translation mechanism and attributed definition.

Translation of Declaration, Assignment, and Control flow, Boolean expression, Array References in arithmetic expressions, procedure calls, case statements, postfix translation.

Unit - IV

Run Time Memory Management: Static and Dynamic storage allocation, stack based memory allocation schemes, Symbol Table management **Error Detection and Recovery:** Lexical phase errors, Syntactic phase errors, Semantic errors.

Unit - V

Code Optimization and Code Generation: Local optimization, Loop optimization, Basic blocks and flow graphs, DAG, Data flow analyzer, Machine Model, Order of evaluation, Register allocation and code selection.

Books Recommended:

1. Alfred V Aho , Jeffrey D. Ullman, "Principles of Compiler Design",Narosa
2. A.V. Aho, R. Sethi and J.D Ullman, "Compiler: principle, Techniques and Tools",AW
3. H.C. Holub "Compiler Design in C", Prentice HallInc.
4. Apple, "Modern Computer Implementation in C: Basic Design", Cambridgepress

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MCA 505.1: Parallel Processing

Periods/week: 3L, 1T

Max. Marks: 100

Unit I

Introduction to parallel computing; Parallelism in Uniprocessor Systems; parallel computer structures, Architectural Parallel Classification schemes, parallel Processing applications.Pipelining processing.An overlapped parallelism, Instruction and Arithmetic pipelines.

Unit II

Principles of designing pipelined processors, Internal forwarding and register tagging, Hazard detection and resolution, Job sequencing and collision prevention, Characteristics of Vector processing, Multiple vector task dispatching, SIMD array processors, Masking and Data routing.

Unit - III

SIMD Interconnection network: Static, Dynamic networks, Mesh-connected Illiac Network, Cube interconnection network, Barrel Shifter Shuffle exchange and Omega Network, SIMD matrix multiplication.

Unit - IV

Multiprocessor Architecture: Functional Structures: loosely and tightly coupled systems, Interconnection Networks: time shared, crossbar switch multiport memories, Multiprocessor operating Systems,

Unit V

Multiprocessor Scheduling Strategies: Deterministic and stochastic. **Data flow computers:** Data driven computing and languages, data flow computer architecture. **Introduction to VLSI computing structures.**

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Books Recommended

1. Hwang and Briggs, Computer Architecture and parallel processing, McGrawHill.
2. Crichlow, Introduction to Distributed and Parallel computing,PHI.
3. M.J. Quinn, Designing Efficient Algorithms for Parallel Computers,McGraw-Hill.
4. V. Rajaraman, Elements of Parallel Computing, Prentice-Hall ofIndia.
5. Joseph JA JA, Introduction to Parallel Algorithms, AddisonWesley.
6. S.G. Akl, the Design and Analysis of Parallel Algorithms,PHI.

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Periods/week: 3L, 1T

Max. Marks: 100

Course Objective

The objective of the course is to introduce the students with the various upcoming technologies in the area of mobile computing including GSM, GPRS and WAPetc.

Course Contents

Unit I

Issues in Mobile Computing, Wireless Telephony, Digital Cellular Standards, Bluetooth Technology, Wireless Multiple Access Protocols, Channel Allocation in Cellular Systems. Wireless Application Protocol, WRITE A PROGRAM technology, Mobile Information device, Mobile Computing Applications.

Unit II

Data Management Issues: Mobility, Wireless Communication and Portability, Data Replication and Replication Schemes, Basic Concept of Multihopping, Adaptive Clustering for Mobile Network, Multicluster Architecture. Wireless application development: introduction to ANDROIDS.

Unit III

Location Management, Location Based Services, Automatically Locating Mobile Uses, Locating and Organizing Services, Issues and Future Directions, Mobile IP, Comparison of TCP andWireless.

Unit IV

Transaction Management, Data Dissemination, Cache Consistency, Mobile Transaction Processing, Mobile Database Research Directions, Security Fault Tolerance for Mobile N/W.

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Unit V

What is Ad-hoc Network? , Problems with Message Routing in Wireless Ad-hoc Mobile Networks, Routing scheme based on signal strength, Dynamic State Routing (DSR), Route Maintenance and Routing error, Fisheye Routing (FSR), Ad-hoc on Demand Distance Vector (ADDV).

Books Recommended:

1. ShambhuUpadhyaya, Abhijeet Chaudhary, Kevin Kwiat, Mark Weises,"Mobile Computing", Kluwer Academic Publishers.
2. UWE Hansmann, LotharMerk, Martin-S-Nickious, Thomas Stohe, "Principles ofMobile Computing", Springer InternationalEdition.
3. Wireless and Mobile Networks Architectures, by Yi-Bing Lin &ImrichChlamtac,John Wiley & Sons,2001.
4. Mobile and Personal Communication systems and services, by Raj Pandya, PrenticeHall of India,2001.
5. Wireless Web Development, Ray Rischpater, Springer Publishing,2000.
6. The Wireless Application Protocol, by Sandeep Singhal, Pearson Education Asia,2000.

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Course Objective: To learn the various concept of Distributed and Cloud computing and to study the Architecture and service models in Cloud computing.

Unit I

Distributed Systems Models and Enabling Technologies: Scalable Computing – Technologies for Network, Based Systems – System Models for Distributed and Cloud Computing – Software Environments for Distributed and Clouds – Performance, Security and Energy Efficiency.

Unit II

Virtualization concepts: Implementation Levels of Virtualization – Virtualization Structures, Tools and Mechanisms – Virtualization of CPU, Memory and I/O Devices – Virtual Clusters and Resource Management – Virtualization for Data, Center Automation, and Introduction to Various Virtualization OS, Vmware, KVM, andXen.

Unit III

Service, Oriented Architecture for Distributed Computing: Services and SOA – Message Oriented Middleware – Portals and Science Gateways – Discovery, Registries, Metadata, and Workflow in SOA.

Unit IV

Cloud Computing and Service Models – Data, center Design and Interconnection Networks – Architectural Design of Compute and Storage Clouds – Public cloud Platforms – Inter, cloud Resource Management – Cloud Security and Trust Management.

Unit V

Cloud Programming and Software Environments – Features of Cloud and Grid Platforms – Parallel and Distributed Paradigms – Programming Support of Google App Engine – Amazon AWS and Microsoft Azure, Emerging Cloud Software Environments.

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REFERENCES:

1. Kai Hwang, Geoffrey C.Fox, and Jack J. Dongarra,"Distributed and Cloud Computing", Elsevier India Private Limited,2012.
2. Foster and Kesselman, "The Grid: Blueprint for a New Computing Infrastructure", Morgan Kauffman publishersInc.2004
3. Coulouris, Dollimore and Kindber, "Distributed System: Conceptand Design", Fifth Edition, Addison Wesley,2011.
4. Michael Miller, "Cloud Computing", Dorling Kindersley India,2009.
5. Anthony T. Velte, Toby J. Velte and Robert Elsenpeter, "Cloudcomputing: A practical Approach", McGraw Hill,2010.

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MCA 505.4: Real Time Systems

Periods/week: 3L, 1T

Max. Marks: 100

Course Objective:

This course is aimed at providing the basic knowledge of the concepts involved in designing and working of an operating system, how it acts as a resource manager of the system as a whole, how various issues such as Memory conflicts, resource conflicts are resolved by an operating system and a study of various types of operating systems.

Course Contents

Unit-I

Introduction to Real Time Systems, priorities, Embedded Systems, Task, Classification & Requirements, Deadlines, Soft, Hard.

Unit-II

Firm Real Time Systems, Introduction to Real Time Operating Systems, Task Management, Inter Process Communication, Case Studies of Maruti II, HART OS, VRTX etc.

Unit-III

Characterizing Real Time Systems and Task, Task Assignment & Scheduling Theory, Fixed and Dynamic Priority Scheduling Uniprocessor (RM and EDF), Multiprocessor (Utilization Balancing, Next-fit for RM & Bin-Packing Assignment for EDF) Scheduling.

Unit-IV

Programming Languages and Tools, Real Time Databases Real Time Communication, FDDI, Specification and Verification using Duration Calculus, Flow Control, and Protocols for Real Time (VTCSMA, Window, IEEE 802.3, IEEE 802.4, IEEE 802.5, Stop and Go Protocol, Media Access Protocol).

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Unit-V

Fault, Fault Classes, Fault Tolerant Real Time System, Clocks, Clock Synchronization, Issues in Real Time Software Design.

Books Recommended:

1. Krishna, C.M, "Real Time Systems", McGraw Hill
2. Jane W.S. Liu, "Real Time Systems", Pearson EducationAsia
3. Levi and Agarwal, "Real Time Systems", McGrawHill
4. Mathi& Joseph, "Real Time System: Specification, Validation & Analysis",PHI

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MCA-551: Software Engineering Lab

Max. Marks: 100

1. Define a generalization hierarchy containing the Student entity type, the UndStudent entity type, and the GradStudent entity type. The Student entity type is the supertype and UndStudent and GradStudent are the subtypes. The Student entity type has attributes StdNo (primary key), StdName, StdGender, StdDOB (date of birth), StdEmail, and StdAdmitDate. The UndStudent entity type has attributes UndMajor, UndMinor, and UndClass. The GradStudent entity type has attributes GradAdvisor, GradThesisTitle, and GradAsstStatus (assistantship status.) The generalization hierarchy should be complete anddisjoint.
2. Draw up to 3rd – Level DFDfor
   a) Library Management System" with complete role of everyconnection.
   b) Draw up to 3rd – Level DFD for "On-Line Customer Care Management System"with complete role of everyconnection.
3. Define SRS for any field/Item and write Ten (10) Test Cases five for valid input and five for Invalid input Define SRS for any field/Item and write Ten (10) Test Cases, five for valid input and five for Invalidinput.
4. Draw an ERD containing the Patient, Physician, and the Visit entity types connected by 1-M relationships from Patient to Visit and Physician to Visit. Choose appropriate names for the relationships. Define minimum cardinalities so that patients and physicians are mandatory for a visit, but visits are optional for patients and physicians. For the Patient entity type, add attributes PatNo (primary key), PatFirstName, PatLastName, PatStreet, PatCity, PatState, PatZip, and PatHealthPlan. Forthe

   Physician entity type, add attributes PhyNo (primary key), PhyFirstName,PhyLastName, PhySpecialty, PhyPhone, PhyEmail, PhyHosipital,and

   PhyCertification. For the Visit entity type, add attributes for the VisitNo (primary key),VisitDate, VisitPayMethod (cash, check, or credit card), and VisitCharge. If you are using the ER Assistant of another drawing tool that supports data type specification, choose appropriate data types for the attributes based on your common knowledge.

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5. Use of designer tools like for making DFD/ERDs using **process analysttool**

   • Laboratory experiments in use of interactive SQL and other4GLs.

   • Designing and implementing fully functional informationsystem.

   • Develop software for implementation of information system for the supplychain

   • Develop the software module for the testing of the softwareroutines.

   Note: Students are advised to use **Oracle 91, JAVA2, and Visual Basic 6**. However depending upon the availability of software's, Mini project may also be planned & carried out throughout the semester to understand the important concepts of database and testing until the end of semester.

6. Introduce the lab environment and tools used in the software engineering lab: WebCT, Rational Rose for UML, MS Project, MS Source Safe (configuration management), Rational Requisite Pro (Software requirements and prerequisite pro), and Junit (Software Testing).

   The key objectives are:

   Discuss the Project & learn how to write project definition.

   Learn the cycle phases (project management, requirement engineering,software design, prototyping and testing softwarelife).

   Practice the software phases using aproject.

   Learn a number of CASE tools and use them in a project within a team work environment.

   Get familiar with UML (modeling language for analysis and design).

7. Introduction to UML, Unified Modelling Language and use case diagrams usingRational Rose:

   Develop System modeling (DFD and ER) using Rational Rose.

   Design Flow of events and activity diagram using Rational Rose and how to write SRS document.

   OO analysis: discovering Classes Interaction diagrams: sequence and collaboration diagrams using Rational Rose.

   Developing State Transition Diagram using Rational Rose

   Developing Component and deployment diagrams for Final Documented ProjectReport using RationalRose.

8. Software testing using Junit and other testingtools.

MCA-552.1: Advanced Database Concepts Lab

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Max. Marks: 100

1. A Private Nursing Home has hired you as a database expert to maintain information about Patients, Doctors, Treatments and other related details i.e. Medicine prescribed, lab tests recommended and Doctor's Remark given to the patient by the doctor. Justify your role as a responsible database designer by developing suitable ER Diagram and Data Flow Diagram. Also mention all possible assumptions which are helpful in producing correct database design. Draw a suitable layout for designing theDatabase.
2. A Librarian has hired a database designer to maintain information about its members of library, books, library rules and other related details i.e. about issue of books, returns of books etc. You have to draw a suitable ER Diagram and Data Flow Diagram and also suggest a suitable database design to maintain above mentioned data keeping in mind redundancy and consistency ofdata.
3. A Book Publishing House has to maintain data regarding Books Published, Author's of the Books, Detail of Customers asking for books and detail of order placed by customer. Draw a suitable E R Diagram and Data Flow Diagram and also suggest a suitable database design to maintain all the above mentioned data. Make all suitable assumption for running the businessprocess.
4. Examination department of the university wants to computerized the examination process and by maintaining data about students, course, date sheet of exams, Final Grade obtained by student's semester wise. Draw a suitable E R Diagram and Data Flow Diagram to explain the examination process. Also draw a suitable layout for designing the database which is capable of maintaining above mentioneddata.
5. Implement the following based on above mention businessprocess:
   a) Apply all possible integrity constraints into the database to maintain the integrityand consistency ofdata.
   b) Perform various types of SQL queries to retrieve data from multiple tables (Two or Three)
   c) Suggest and create some suitable views based on the database from one ormore Tables.
   d)Use various oracle function including group functions through multipletable.
   e)Perform some select command on view created from one or moreTables

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6 Write a trigger for overdraftfacility.

7 Write a cursor for calculating income tax for the given employee table.Emp (eid,ename, salary, incometax).

8 Create a table called Area which contains two attributes radius and area. Write a program which will calculate the area of circle for different radius. Take value ofradius from user, calculate it and then insert those values in the Area tablethrough the program.

9. Create user defined Exceptions. Write a program in which the ACCT table recordsthe current balance for an account, which is updated whenever, any deposits or withdrawals takes place. If the withdrawal attempted is more than the current balance held in the account, a user defined exception is raised displaying an appropriate error message otherwise perform the appropriatetask.

10. Write a PL/SQL program to display the number in reverseorder.

11. Write a PL/SQL program to find the factorial of a givennumber.

12. Write a PL/SQL program to generate Fibonacciseries.

13. Write a PL/SQL code block to calculate the area of a circle for a value of radius varying from 3 to 7.Store the radius and the corresponding values of calculated area in an empty table named areas, consisting of two columns radius & area table name: areas radius area.

14. Write a PL/SQL cursor block that will accept an account number from the user,check if the users balance is less than minimum balance, only then deduct rs.100/-from the balance. This process is fired on the accttable.

15. Write a Pl/SQL trigger that maintains following details such as user name, , no of records deleted inserted or updated and old value and new value in the log table , whenever any user performs update /delete or insert actions oncustomer.

16. Write a PL/SQL exception which is raised whenever a user tries to do anyinsertion /updating/deletion on weekends.

17. Write a cursor for calculating income tax for the given employeetable. Imp (aid, enamel, salary,incometax)

18 Using Object Oriented databases create the following types:

a) AddrType1 (Pin code: number, Street :char, City : char,a. state :char) b)(ii)Branch

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Type (address: AddrType1, phone1: integer,phone2: integer) c)

Author Type (name: char, addr AddrType1) d) Publisher Type (name: char, addr: AddrType1, branches: BranchTableType e) AuthorListType as varray, which is a reference to Author Type

Next create the following tables:

f) BranchTableType of BranchType g) authors of AuthorType h) books(title: varchar,year : date, published by ref PublisherType,authorsAuthorListType) i) Publishers of Publisher Type

Insert 10 records into the above tables and fire the following queries:

19. a) List all of the authors that have the same pin code as their publisher: b) List all books that have 2 or more authors: c) List the name of the publisher that has the most branches d) Name of authors who have not published a book e) List all authors who have published more than one book: f) Name of authors who have published books with at least two different publishers g) List all books (title) where the same author appears more thanonce on the list of authors (assuming that an integrity constraint requiring that the name of an author is unique in a list of authors has not beenspecified).

20. Topic: Temporal Databases 4.[A] Create a table tblEmp_Appnt, which stores the account number, name, and valid time say, recruitment date and retirementdate. Insert 10 records and fire the followingqueries

21 a) Find all the employees who join the company on 2/3/2001 b) Find all the employees who will retired on 2/3/2001

b) Create a table tbl_shares, which stores the, name of company, number of shares, and price per share at transaction time. Insert 10 records and fire the following queries

c) Find all the names of a company whose share price is more than Rs. 100 at11:45 A.M.

d) Find the name of company which has highest share price at 5.00P.M.

22. Create a table tblEmp_Appnt, which stores the account number, name, and valid time say, recruitment date and retirement date. Create a trigger for valid time to check that no two records of same employee have common employment period and does not allow the user to update the records. Trigger should also fill up the empty retirement date.

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23. Topic: Active Databases 5. Create a table emp (eno, ename, hrs, pno, super_no) and project (pname, pno, thrs, head_no) where thrs is the total hours and is the derived attribute. Its value is the sum of hrs of all employees working on that project. Eno and pno are primary keys, head_no is foreign key to emp relation. Insert 10 tuples

and write triggers to do the following:

a) Creating a trigger to insert a new employee tupple and display the new total hours f from project table. B) Creating a trigger to change the hrs of existing employee and display the new total hours from project table. C) Creating a trigger to change the project of an employee and display the new total hours from project table. D) Creating a trigger to deleting the project of an employee.

MCA-552.2: Data Warehousing and Data Mining Lab

Max. Marks: 100

1. Introduction about launching the Wekatool.
2. Introduction to WekaExplorer.
3. Introduction to the classification of Mining techniques.
4. Introduction to Attribute Relation File Format(ARFF).
5. To perform Preprocessing, Classification and Visualization techniqueson Customer dataset.
6. To perform Preprocessing, Classification and Visualization techniqueson Agriculturedataset.
7. To perform Preprocessing, Classification and Visualization techniques on Weatherdataset.
8. To perform Clustering technique on Customerdataset.
9. To perform Clustering technique on Agriculturedataset.
10. To perform Clustering technique on Weatherdataset.
11. To perform Association technique on Customerdataset.
12. To perform Association technique on Agriculturedataset.
13. To perform Association technique on Weatherdataset.
14. To perform all the techniques on Friendsdataset.
15. To perform all the techniques on Companydataset.
16. Introduction to Data Cleansing.
17. To implement Data Cleansing applying uppercase on first name inC++.
18. To implement Data Cleansing applying uppercase on first name and last name inC++.
19. To implement Data Cleansing applying uppercase and lowercase on first name inC++.
20. To implement Data Cleansing applying uppercase and lowercase on first nameand last name inC++.
21. To implement Data Cleansing by removing redundancy from first name and last namein C++.
22. Introduction to E-R Diagrams.
23. Introduction to Meta EditTool.
24. To draw E-R Diagram to represent a Pharmaceutical Company using Meta EditTool.
25. To draw E-R Diagram to represent a Hotel Management System using Meta EditTool.
26. To draw E-R Diagram to represent an Airlines Management System using Meta EditTool.
27. To draw E-R Diagram to represent an Employee using Meta EditTool.
28. To draw E-R Diagram to represent Banking System using Meta EditTool.
29. To draw E-R Diagram to represent a Result Management System using Meta EditTool.
30. To draw E-R Diagram to represent GTBIT using Meta EditTool.

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MCA-552.3: Android Programming Lab

Max. Marks: 100

1. Create an application that will store employee information like Employee ID, Name, Address and Designation. User can insert, update, delete and employee searchrecord.
2. Create an application that will change wall paper time bytime.
3. Create an application that will work like a calculator. It should be able to performall arithmeticoperation.
4. Create "Hello World" application. That will display "Hello World" in the middle ofthe screen in the red color with whitebackground.
5. To understand Activity,Intent
6. Create sample application with login module.(Check username andpassword)
7. On successful login, go to next screen. And on failing login, alert user usingToast.
8. Also pass username to nextscreen.
9. Create login application where you will have to validate EmailID(UserName). Till the username and password is not validated , login button should remaindisabled.
10. Create and Login application as above. On successful login, open browser withany URL.
11. Create an application that will pass some number to the next screen and on thenext screen that number of items should be display in thelist.
12. Understand resource folders:
13. Create spinner with strings taken from resource folder (res >> valuefolder).
14. On changing spinner value, changeimage.
15. Understand Menuoption.
16. Create an application that will change color of the screen, based onselected options from themenu.
17. Create an application that will display toast (Message) on specific interval oftime.
18. Create a background application that will open activity on specifictime.
19. Create an application that will have spinner with list of animation names. On selecting animation name, that animation should affect on the images displayedbelow.
20. Understanding of UI:

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21. Create an UI such that, one screen have list of all the types ofcars.
22. On selecting of any car name, next screen should show Car details like: name, launched date company name, images (using gallery) if available, show different colors in which it isavailable.
23. Understanding content providers andpermissions:
24. Read phonebook contacts using content providers and display inlist.
25. Read messages from the mobile and display it on thescreen.
26. Create an application to call specific entered number by user in the EditText.
27. Create an application that will create database with table of Usercredential.
28. Create an application to read file from asset folder and copy it in memorycard.
29. Create an application that will play a media file from the memorycard.
30. Create an application to make Insert, update, Delete and retrieve operation on the database.
31. Create an application to read file from the sdcard and display that file content tothe screen.
32. Create an application to draw line on the screen as user drag hisfinger.
33. Create an application to send message between twoemulators.
34. Create an application to take picture using nativeapplication.
35. Create an application to pick up any image from the native application gallery anddisplay it on thescreen.
36. Create an application to open any URL inside the application and clicking on any link from that URl should not open Native browser but that URL should open the samescreen.
37. Create an application that will store employee information like Employee ID, Name, Address and Designation. User can insert, update, delete and employee searchrecord.
38. Create an application that will change wall paper time bytime.
39. Create an application that will work like a calculator. It should be able to performall arithmeticoperation.

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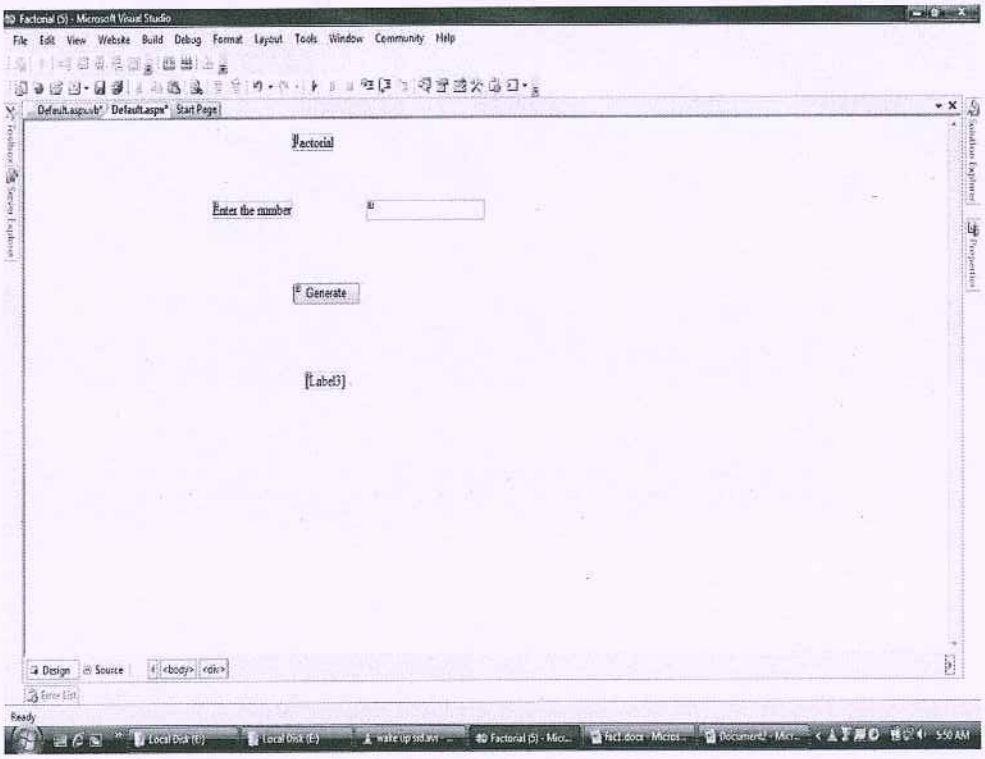
MCA-553 .NET Lab

Max. Marks: 100

1. Create a simple ASP.NetPage
2. To create a WebControl
3. Write a program to accept a Character and check the case ofthe Character.
4. Write a program to accept any Character and Display Vowel orNot.
5. Write a program to accept a String convert a case ofCharacter.
6. Write a program to generate the factorialoperation.



7. Write a program to implement a TextEditor

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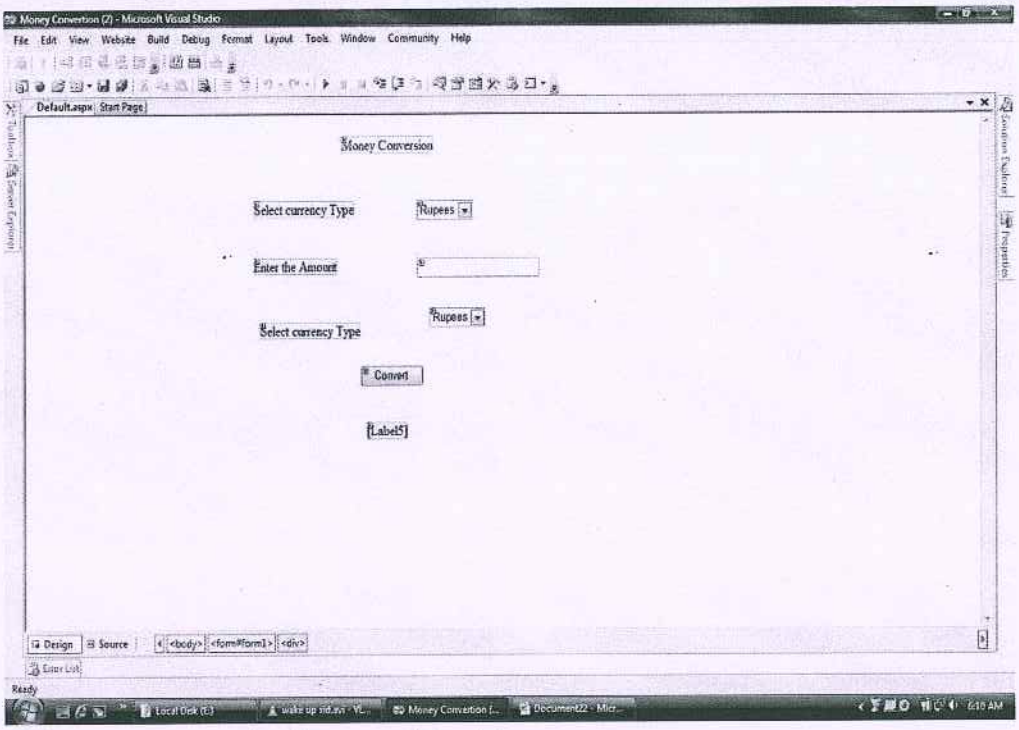
8. Write a program to perform MoneyConversion.

Design:



9. Write a program to implement aCalculator.
10. Write a program to implement a CalendarControl.
11. Write a program to perform a Quiz usingTimer.
12. Write a program to implement Common DialogControl.
13. Write a program to access a SQL Database usingADO.Net
14. Write a program to Store Details usingADO.Net.
15. Write a program to insert, update, and delete operation usingADO.Net.
16. Implement Data grid to display Records, Add, Edit, and ModifyRecords.

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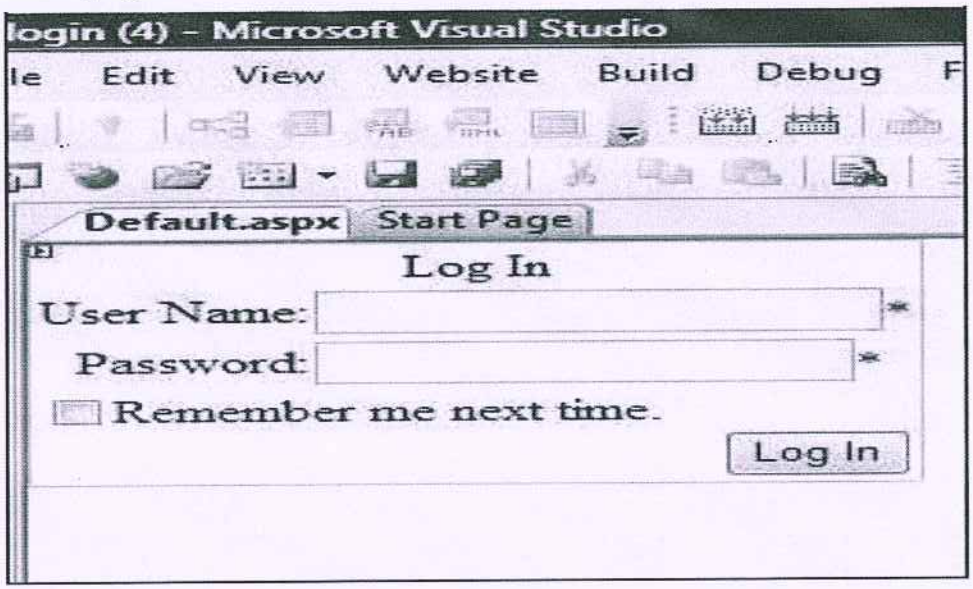
17. Write a program to generate the Logincontrol.

Design: After enter the wrong password login attempt was not successful

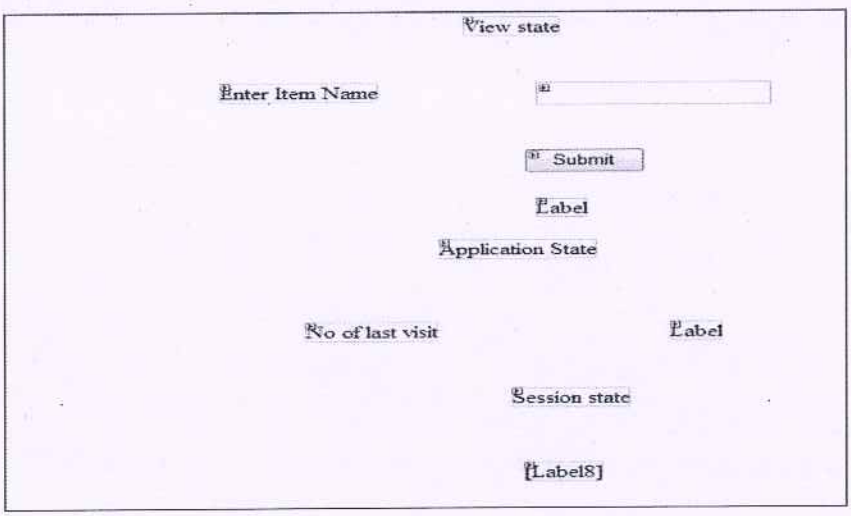
please try again



After log in three times the login will be blocked

18. Write a program to perform Asp.Netstate.

Design:



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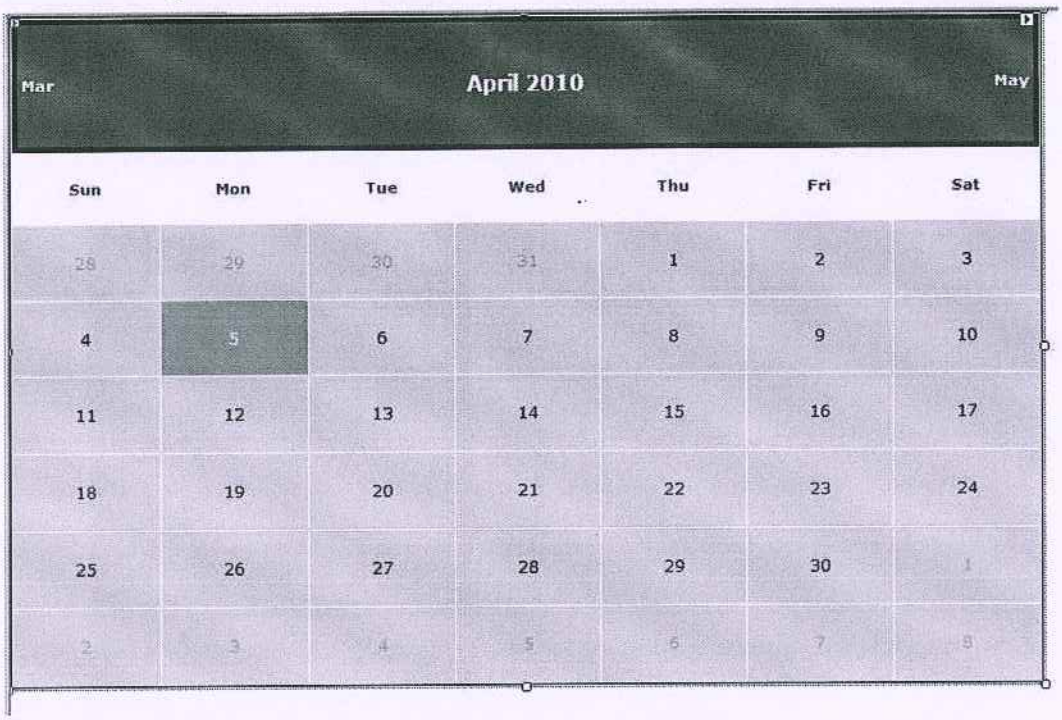
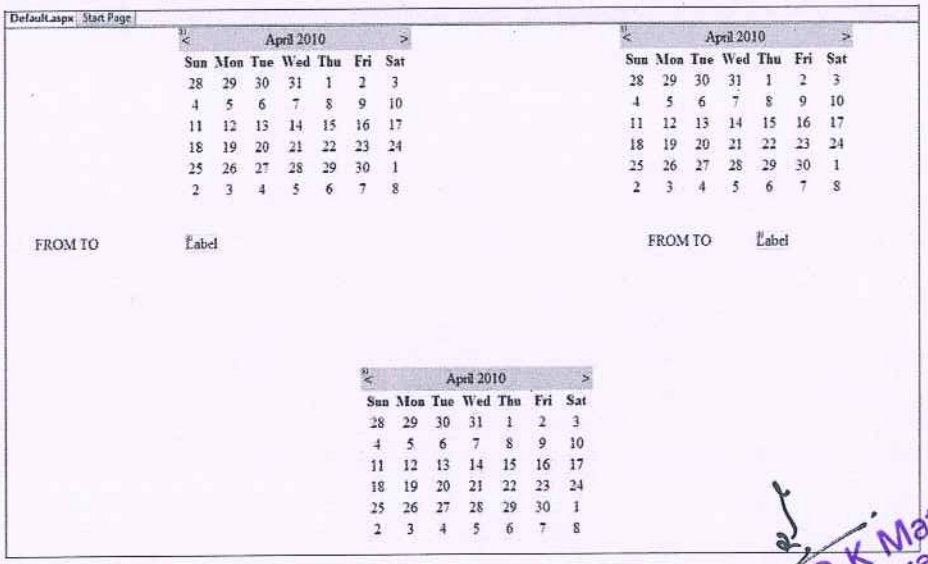
19. Write a program to display the Holidayin calendar.Design:



20. Write a program to display the selected date inthe calendar.Design:



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21. Write a program to display the Difference between the two dates inthe

calendar.

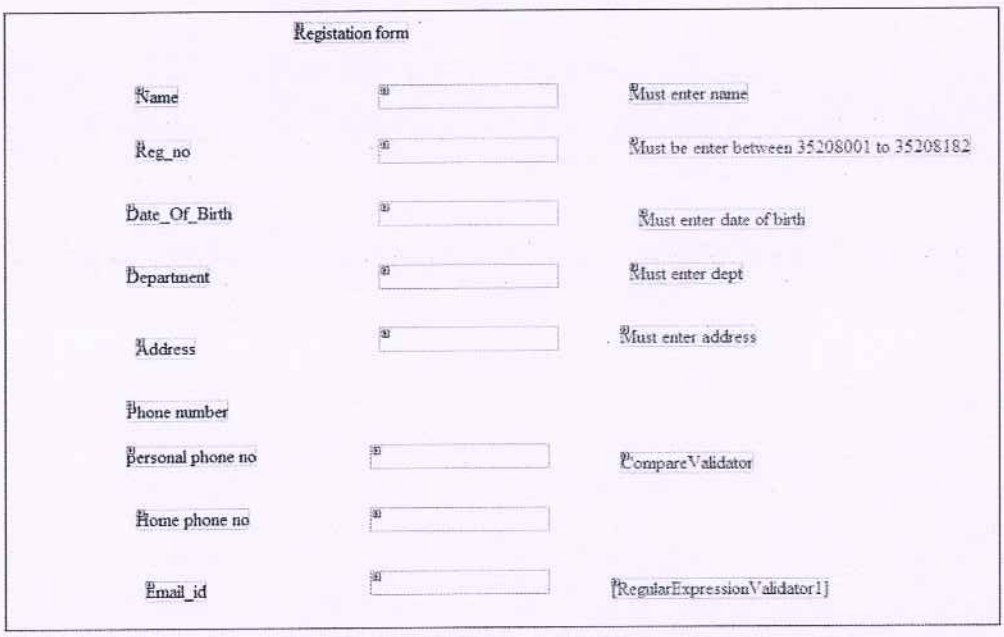
22. Write a program to performvalidation operation.Design:

```
select * from Categories
```

Execute Query

```
1    Beverages      Soft drinks, coffees, teas, beers, and alesSystem.
2    Condiments     Sweet and savory sauces, relishes, spreads, and se
3    Confections    Desserts, candies, and sweet breadsSystem.Byte[]
4    Dairy Products Cheeses        System.Byte[]
5    Grains/Cereals Breads, crackers, pasta, and cerealSystem.Byte[]
6    Meat/Poultry   Prepared meats System.Byte[]
7    Produce        Dried fruit and bean curdSystem.Byte[]
8    Seafood        Seaweed and fishSystem.Byte[]
```

23. Write a program to bind data in a multiline textbox by queryingin anothertextbox.



Execute Query

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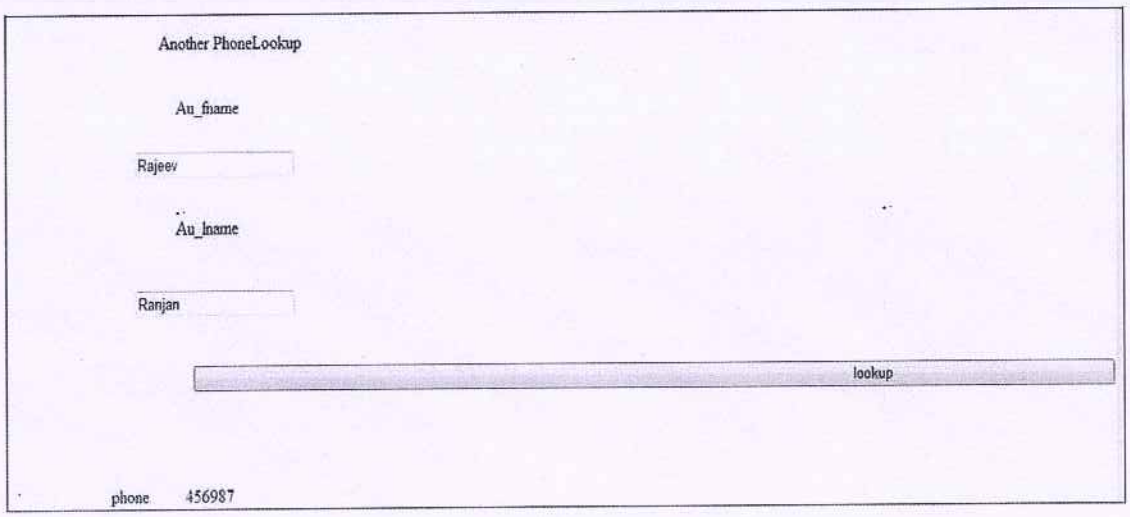
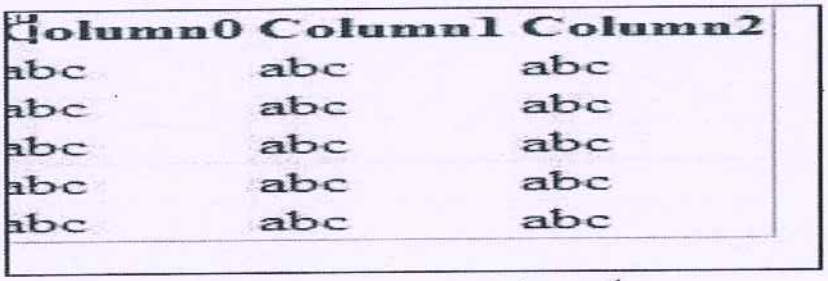
24. Write a program to display the phone no of an author using database.Design:



25. Write a program to display how data bind usingdropdown list.Design:

26. Write a program create an own table and bind data usingdata grid.

Design:



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27. Write a program to transfer the details from one page to anotherpage.
28. Write a program to fetch data throughlinks.
29. Write a program to copy the text in a label fromtextbox
30. Create a loginform
31. Write a program to add two number (use NANproperty)
32. Write a program to perform pageevents.
33. Write a program to add two numbers and print the result inanother text box using autopostbackproperty.
34. Write a program to develop a form and use file uploadcontrol.
35. Write a program to implement a dropdown listcontrol.
36. Write a program using wizardcontrol.
37. Write a program to print a paragraph using panelcontrol.
38. Write a program to draw a dynamic table using tablecontrol.
39. Write a program to create animage gallery using multiviewcontrol.
40. Write a program to print multiple selected dates using calendarcontrol.
41. Write a program to implement a radiobutton list usingxmldatasource.
42. Write a program to develop a form with propervalidations.
43. Write a program to develop a registration form using comparevalidator and validationsummary.
44. Write a program to implement a calculatorwebservice.
45. Write a program to implement a reversewebservice
46. Write a program to fetch data in gridview control usingADO.net.
47. Write a program to add and update data usingADO.net.

MCA – 554: Communication & Soft Skills -V

Max. Marks: 50

1. **Group/Individual Exercises based on Phonemic transcriptionusing IPAsymbols.**
   a. Transcription of words and short sentences in normalEnglish orthography (writing) into their IPAequivalents.
   b. Transcription of words presentedorally.
   c. Conversion of words presented through IPA symbols intonormal orthography.
   d. Syllable division and stress marking (in words presented in IPAform).

2. **Dynamics of Professional Presentation**
   a. Combating StageFright
   b. Describing Objects/ Situations/People
   c. Individual and GroupPresentation
   d. Delivering Just-a minute(JAM)

3. **Improving Conversation**
   a. Tips for ImprovingConversation
   b. TelephonicConversation
   c. Debate

4. **Seminars and Conferences**
   a. Types of DiscussionGroups
   b. ConductingSeminars
   c. OrganizingConferences
   d. Assignments

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5. Writing Style

a. Importance of Professionalwriting
b. Features of WrittenCommunication
c. Choice of Words andPhrases
d. Sentence Structure andLength
e. Paragraph Structure andLength
f. FinalDraft
g. ReadabilityFormulas

6. Individual differences &Personality:

a. Definition&Relevance
b. Importance of nature & nurture in PersonalityDevelopment
c. Importance and Recognition of Individual differences inPersonality
d. Accepting and Managing Individual differences (AdjustmentMechanisms)

7. Human Rights, Values andEthics:

a. Meaning of humanrights
b. Human rightsawareness
c. Importance of humanrights
d. Values andEthics

8. InterviewTechniques

a. Types ofInterview
b. Overcoming StageFright
c. Tips and Scripts That Sell a Switch
d. Ten Interviewer PersonalityTypes
e. Tips to Avoid WretchedReviews

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(Note: Every student shall be given 10 minutes of presentation time & 5 minutes of discussion on his/ her presentation.)

The student will be evaluated on the basis of:

His / her presentation style

Feedback of Faculty &Students

GeneralEtiquette

Proficiency in Letter Drafting / Interview Preparation

Books Recommended

1. Balasubramaniam, T. A Textbook of Phonetics for Indian Students.New Delhi: Macmillan India,2000.
2. Harris, O. Jeff and Sandra J. Hartman. Organizational Behaviour. Mumbai: Jaico Publishing House,2001.
3. Kennedy, Joyce Lain. Job Interviews For Dummies. Canada: John Wiley& Sons,2011.
4. Kumar, Sanjay &Pushpalata. Communication Skills. New Delhi:Oxford University Press,2012.
5. Krishnaswamy, N. Creative English For Communication. NewDelhi: Macmillan,2009.
6. Mitra, Barun Kumar. Personality Development and Soft Skills. NewDelhi: Oxford University Press,2011.
7. Raman, Meenakshi& Prakash Singh. Business Communications. New Delhi: Oxford University Press,2006.

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MCA 651: Industrial Training

Max. Marks: 100

GUIDELINES

Project in IT industry / University Computer Center / Dept. of Computer Science / ReasearchOrganization , etc, as decided by the Head of the Department.

Project: 500 Marks

Internal Assessment : 200 Marks

External Assessment : 300 Marks

The evaluation committee will distribute these marks for seminar/viva/voce/Project report and for any other activity, which the committee thinks to be proper. Joint project will be allowed and joint project report will be also being accepted. In case of Joint Project the team should not consist of more than 3 members. Individual project will be recognized and the student should highlight their contribution in a joint project report.

Committee for evaluation of project report / work:

- Externalexaminer.
- CentreHead
- Internal guide (if any)faculty

Format of Project Report

Title Cover

Certificate from organization about your stay (Project Duration) at that place and about Submission of work done under external guide at the place oftraining.

Certificate from your guide about the submission of work done under his/her guidance,

Internal Supervisor.

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Table of Contents, abstract of the project (abstract of actual workdone).
A brief overview of the organization (regarding function area, location, division in which you are working, turnover).

Profile of problems assigned.

Study of existing system, if any.

Systemrequirements

ProductDefinition

Problem Statement

Function to be Provided

Processing Environment: H/W,

S/W. Solution Strategy

Acceptance Criteria

Feasibility Analysis

Project Plan

Team Structure

Development Schedule

Programming Languages AndDevelopment

Tools System RequirementSpecifications

Developing / Operating / Maintenance Environments

External Interface And DataFlows

User display and report format, usercommand

summary High level DFD and datadictionary

Functional and performance specifications

Design

Detailed DFD's and structure diagrams

Data structures, database and filespecifications

PseudoCode

Test Plan

Functional, Performance, Stress tests etc.

Implementation / Conversion Plan

Project Legacy

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Current status of project

Remaining areas of concern Technical and managerial lessons learnt

Future recommendations

Bibliography

Source Code

It is mandatory to use plain A4 sized sheets. All material should be typed in double spacing, Times New Roman 12. The recommended margins are 25 mm (1 inch) for top, bottom, right and left with an extra 13 mm (0.5 inch) for binding on the left. Other than page numbers, no material should intrude into these margins.

Note: - The above is meant to serve as a guideline for preparation of the project report. The students may add to, modify or omit some of the above- mentioned points depending upon their relevance to the project and with the consultation of the project guide for thesame.

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JAIPUR NATIONAL UNIVERSITY,

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BOARD OF STUDIES

2016-2017

SCHOOL OF LIFE AND BASIC CIENCES

Assistant Registrar
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BOARD OF STUDIES IN THE SCHOOL OF Life & BASIC SCIENCES

AGENDA

The meeting of the Board of Studies in School of Life & Basic Sciences for the year 2016-17, will be held on 20th April 2016at 11:00 am in Director's Office, School of Life & Basic Sciences, Jaipur National University.

The following agenda will be discussed in the meeting:

1. Confirmation of the minutes of the meeting held on 23rd April 2015.
2. Action taken report of the meeting held on 23rd April 2015.
3. To confirm and approve that "No Change" has been done in B.Sc. Pass course PCM.
4. To discuss and approved value added courses in school of basic sciences.
5. Any other matter with the permission of Chair

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BOARD OF STUDIES IN THE SCHOOL OF LIFE AND BASIC SCIENCES

Minutes of the meeting held on 20th April 2016

The meeting of the Board of Studies in School of Life & Basic Sciences for the year 2016-17, was held on 20th April 2016 at 11:00 am in Director's Office, School of Life & Basic Sciences, Jaipur National University.

The following members attended the meeting:

S.No.	Name	Designation
1	Prof. D. S. Bhatia	Chairperson
2	Mr J. M. Arora	External Industry Expert
3	Dr. Meena Nagar	Professor, Department of Chemistry, University of Rajasthan, Jaipur, Rajasthan
	Dr. R.N. Yadav	Professor, Department of Chemistry, Sagar University, Sagar, Madhya Pradesh
4	Dr. B.L Choudhary	Asst. Professor, Department of Physics, University of Rajasthan, Jaipur, Rajasthan
5	Dr. Dheera Sanadhya Dr. Jaspreet Singh Dr. Urvija Garg Mr.Akash Shukla	Faculty Members

Chairperson of the Board addressed the members and introduced external BOS Members to the board and further internal members introduced themselves

Item No. 1

1. **Confirmation of the minutes of the meeting held on 23rd April 2015.**

The minutes of the meeting held on 23rd April 2015 were read and confirmed unanimously by all the members

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RESOLUTION
[No.: BOS/SLBS/2016/1]

UNANIMOUSLY RESOLVED THAT the minutes of BOS Meeting held on 23rd April 2015 were confirmed.

Item No. 2

2. **Action Taken Report**

(i) Implementation of revised curriculum for B.Sc Pass course PCM

The revised curriculum discussed and approved wide **Resolution no. BOS/SLBS/2015/2** with suggestions have been implemented from July 2016, for the following courses

S. No.	Semester	Paper title
1	semester III	Chemistry I (Physico-inorganic chemistry) BS-301
2	semester III	Mathematics II(Algebra of matrix) BS-304
3	semester III	**Physics-II (Theory of Relativity & Modern Physics)BS-306**

The board resolved that minor change in B.Sc. Pass course PCM Program, is implemented from the session 2015-16 with wide resolution **[No.: BOS/SLBS/2015/3]**

Item No. 3

To confirm and approve that "No Change" has been done in B.Sc. Pass course PCM Program.

RESOLUTION
[No.: BOS/SLBS/2016/2]

The board resolved that no change is needed in B.Sc. Pass course PCM Program, as per the suggestions of the members subject to the final approval of the Academic

Item No. 4

To discuss and approve the value added courses from academic session 16-17.

The chair presented the benefits of value added courses in front of the board

The following value added courses were suggested as follows:

1. Goods and service tax certification.

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2. Pearl Programming.

RESOLUTION
[No.: BOS/SLBS2016/3]

The board resolved that the above mentioned value added courses will be implemented from academic session 2016-17 with subject to the final approval of the academic council.

Any other matter with the permission of the Chair:

- The members suggested that only latest addition text and reference books for the programme should be prescribed in the syllabus.
- Members approved the panel of examiners for November 2016 examination.
- Members also suggested to centralize the mid-term examination pattern as a part of examination reform (ex: approval of central authorities before getting publication of mid-term question papers) that were done on the departmental basis previously. They suggested that this would bring more authenticity and credibility to the examination system of the school and the university. To discuss and update on examination reforms

Board of Studies recommended the above resolutions to be presented in the Academic Council for further final approval.

The meeting ended with the vote of thanks to the Chair

Chairperson

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JAIPUR NATIONAL UNIVERSITY, JAIPUR

BOARD OF STUDIES

2016-17

SCHOOL OF AGRICULTURAL SCIENCES

(Prof. D K Mathur)
Registrar
Jaipur National University
Jaipur

BOARD OF STUDIES
SCHOOL OF AGRICULTURAL SCIENCES

AGENDA

The meeting of the Board of Studies in the School of Agricultural Sciences for the year 2016-17, will be held on held on May10, 2016 at 10:30 in the Director's Office , School of Agricultural Sciences, 3rd floor, Main Campus, Jaipur National University, Jaipur.

The following agenda items will be discussed in the meeting:

Item No. 1: To discuss and approve introduction of new programme of B.Sc. (Hons.) Agriculture.

Item No. 2: To discuss and approve theScheme and Syllabusfor B.Sc. (Hons.) Agriculture as per ICAR IVth Dean's committee recommendation and also to discuss the elective course system.

Item No. 3: To discuss and approve the course structure and scheme of examination.

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BOARD OF STUDIES IN THE SCHOOL OF AGRICULTURAL SCIENCES

Minutes of Meeting held on May 10, 2016

The meeting of Board of Studies in School of Agricultural Sciences, for the year 2016-17, was held on May10, 2016 at 10:30 A.M. in Director's office, School of Agricultural Sciences (Main Campus), Jaipur National University, Jaipur.

The following members attended the meeting:

S.No.	Name	Designation
1.	Prof. H. N. Verma, Vice Chancellor, JNU , Jaipur	Chairperson
2.	Prof. V.K. Gaur, School of Agricultural Sciences, JNU, Jaipur	Director
3.	Prof. Rajveer Singh, School of Agricultural Sciences, JNU, Jaipur	Member
4.	Dr.Yogesh Sharma, Rajasthan Agricultural Research Institute, Durgapura., Jaipur	Member
5.	Prof. T. N. Mathur Director Academics, Jaipur National University, Jaipur	Internal Member
6.	Prof. N.S. Parihar School of Agricultural Sciences, JNU, Jaipur	Internal Member
7.	Dr. PradeepSoni, Assistant Prof., School of Agricultural Sciences, JNU, Jaipur	Internal Member
8.	Dr. Atul Sharma, Assistant Prof., School of Agricultural Sciences, JNU, Jaipur.	Internal Member

Chairperson of the Board addressed the members and introduced external BOS Members to the board and internal members introduced themselves.

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Item No. 1

To discuss and approve introduction of new programme of B.Sc. (Hons.) Agriculture.

Prof. Rajveer Singh suggested that the purpose of education is to empower an individual that leads to betterment of society as a whole. Agriculture is one of the basic fields on which humanity survives, as 65 per cent population depends on agriculture and allied activities and agriculture shares 13.2 per cent of National GDP. Therefore, it is needed that bright young minds shedding their inhibitions should critically analyze their options and contribute in the field of agriculture for holistic upliftment of socio-economic status. Prof. V.K. Gaur recommended the introduction of new course curriculum for B.Sc. (Hons.) Agriculture.

RESOLUTION

[No.: BOS/SOAS/2016/1]

Unanimously resolved and approved the new Programme subject to the final approval of Academic Council.

Item No.2:

To discuss and approve the Scheme and Syllabus for B.Sc. (Hons.) Agriculture as per ICAR IVthDean's committee recommendations and also to discuss the elective course system.

Prof. V.K. Gaur recommended Scheme and Syllabus of programmeas per ICAR IVth Dean's Committee recommendation subjected to the final approval of Academic Council. Dr. VK Gaur also discussed the necessity of elective course system for VIIth Semester students in the context of skill enhancement amongst students through experiential learning.

List of Examination Scheme and Course Outline as per IVth Dean's Committee Recommendations

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B.Sc (Hons.) Agriculture
Examination Scheme (2016-17)

I Year, Semester I

Code No	Paper	Evaluation Scheme			
		Internal Assessment	End Semester Exams	Max. Marks	Min.Pass Marks
Theory					
BAG111	Introductory Agriculture and Principles of Agronomy	30	70	100	40
BAG112	Principles of Genetics	30	70	100	40
BAG113	Introduction to Soil Science	30	70	100	40
BAG114	Dimensions of Agricultural Extension	30	70	100	40
BAG115	Agricultural Microbiology	30	70	100	40
BAG116	Introduction to Computer Applications	30	70	100	40
BAG117	Elementary Mathematics	30	70	100	40
BAG118	Comprehensive and Communication Skills in English	30	70	100	40
Practical					
BAGP111	Introductory Agriculture and Principles of Agronomy	30	70	100	50
BAGP112	Principles of Genetics	30	70	100	50
BAGP113	Introduction to Soil Science	30	70	100	50
BAGP114	Dimensions of Agricultural Extension	30	70	100	50
BAGP115	Agricultural Microbiology	30	70	100	50
BAGP116	Introduction to Computer Applications	30	70	100	50

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BAGP118	Comprehensive and Communication Skills in English	30	70	100	50
BAGNC111	NCC/NSS/ Physical Education	30	70	100	50
	Toatal	480	1120	1600	720

I Year, Semester II

Code No	Paper	Evaluation Scheme			
		Internal Assessment	End Semester Exams	Max. Marks	Min.Pass Marks
Theory					
BAG121	Agricultural Meteorology	30	70	100	40
BAG122	Principles of Plant Breeding	30	70	100	40
BAG123	Plant Pathogens and Principles of Plant Pathology	30	70	100	40
BAG124	Insect Morphology and Systematics	30	70	100	40
BAG125	Principles of Agricultural Economics	30	70	100	40
BAG126	Fundamentals of Soil and Water Conservation Engineering	30	70	100	40
BAG127	Biochemistry	30	70	100	40
BAG128	Soil Chemistry, Soil Fertility and Nutrient Management	30	70	100	40
Practical					
BAGP121	Agricultural Meteorology	30	70	100	50
BAGP122	Principles of Plant Breeding	30	70	100	50
BAGP123	Plant Pathogens and Principles of Plant Pathology	30	70	100	50

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BAGP124	Insect Morphology and Systematics	30	70	100	50
BAGP126	Fundamentals of Soil and Water Conservation Engineering	30	70	100	50
BAGP127	Biochemistry	30	70	100	50
BAGP128	Soil Chemistry, Soil Fertility and Nutrient Management	30	70	100	50
	Toatal	480	1120	1600	720

II Year, Semester III

Code No	Paper	Evaluation Scheme			
		Internal Assessment	End Semester Exams	Max. Marks	Min.Pass Marks
		Theory			
BAG231	Field Crops-I (*Kharif*)	30	70	100	40
BAG232	Weed Management	30	70	100	40
BAG233	Introductory Nematology	30	70	100	40
BAG234	Statistics	30	70	100	40
BAG235	Fundamentals of Rural Sociology and Educational Psychology	30	70	100	40
BAG236	Production Technology of Fruits and Plantation Crops	30	70	100	40
BAG237	Production Economics and Farm Management	30	70	100	40
BAG238	Farm Power and Machinary	30	70	100	40
BAG239	Manures And Fertilizers	30	70	100	40
		Practical			
BAGP231	Field Crops-I (*Kharif*)	30	70	100	50
BAGP232	Weed Management	30	70	100	50
BAGP233	Introductory Nematology	30	70	100	50
BAGP234	Statistics	30	70	100	50
BAGP236	Production Technology of Fruits and Plantation Crops	30	70	100	50
BAGP237	Production Economics and Farm Management	30	70	100	50
BAGP238	Farm Power and Machinary	30	70	100	50
	Toatal	480	1120	1600	710

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II Year, Semester IV

Code No	Paper	Evaluation Scheme			
Theory		Internal Assessment	End Semester Exams	Max. Marks	Min.Pass Marks
BAG241	Field Crops- II (*Rabi*)	30	70	100	40
BAG242	Water Management	30	70	100	40
BAG243	Soil survey, Land Use Planning and Remote Sensing	30	70	100	40
BAG244	Insect Ecology and Integrated Pest Management including Beneficial Insects	30	70	100	40
BAG245	Production Technology of Vegetables and Flowers	30	70	100	40
BAG246	Agricultural Finance and Co-operation	30	70	100	40
BAG247	Crop Physiology	30	70	100	40
BAG248	Entrepreneurship Development and Communication Skills	30	70	100	40
	Practical				
BAGP241	Field Crops- II (*Rabi*)	30	70	100	50
BAGP242	Water Management	30	70	100	50
BAGP243	Soil survey, Land Use Planning and Remote Sensing	30	70	100	50
BAGP244	Insect Ecology and Integrated Pest Management including Beneficial Insects	30	70	100	50
BAGP245	Production Technology of Vegetables and Flowers	30	70	100	50
BAGP246	Agricultural Finance and Co-operation	30	70	100	50
BAGP247	Crop Physiology	30	70	100	50
BAGP248	Entrepreneurship Development and Communication Skills	30	70	100	50
	Toatal	480	1120	1600	720

III Year, Semester V

Code No	Paper	Evaluation Scheme			
		Internal Assessment	End Semester Exams	Max. Marks	Min.Pass Marks
	Theory				
BAG352	Rainfed Farming	30	70	100	40
BAG353	Principles of Plant Biotechnology	30	70	100	40
BAG354	Crop and stored grain pests and their management	30	70	100	40
BAG355	Breeding of Field and Horticultural Crops	30	70	100	40
BAG356	Agricultural Marketing, trade and Prices	30	70	100	40

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BAG357	Protected cultivation and Post harvest Technology	30	70	100	40
BAG358	Diseases of Field Crops and their management	30	70	100	40
BAG359	Production technology of Spices, Aromatic and Medicinal crops	30	70	100	40
	Practical				
BAGP351	Practical Crop Production - 1(*Kharif*crops)	30	70	100	50
BAGP352	Rainfed Farming	30	70	100	50
BAGP353	Principles of Plant Biotechnology	30	70	100	50
BAGP354	Crop and stored grain pests and their management	30	70	100	50
BAGP355	Breeding of Field and Horticultural Crops	30	70	100	50
BAGP356	Agricultural Marketing, trade and Prices	30	70	100	50
BAGP357	Protected cultivation and Post harvest Technology	30	70	100	50
BAGP358	Diseases of Field Crops and their management	30	70	100	50
BAGP359	Production technology of Spices, Aromatic and Medicinal crops	30	70	100	50
	Total	510	1190	1700	770

III Year, Semester VI

Code No	Paper	Evaluation Scheme			
		Internal Assessment	End Semester Exams	Max. Marks	Min.Pass Marks
	Theory				
BAG241	Field Crops- II (*Rabi*)	30	70	100	40
BAG242	Water Management	30	70	100	40
BAG243	Soil survey, Land Use Planning and Remote Sensing	30	70	100	40
BAG244	Insect Ecology and Integrated Pest Management including Beneficial Insects	30	70	100	40
BAG245	Production Technology of Vegetables and Flowers	30	70	100	40
BAG246	Agricultural Finance and Co-operation	30	70	100	40
BAG247	Crop Physiology	30	70	100	40
BAG248	Entrepreneurship Development and Communication Skills	30	70	100	40
	Practical				
BGP361	Practical Crop Production – II *(Rabi)*	30	70	100	50
BAGP362	Farming Systems, Sustainable Agriculture and Organic Farming	30	70	100	50
BAGP363	Principles of Seed	30	70	100	50

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	Technology				
BAGP364	Extension Methodologies for Transfer of Agricultural Technology	30	70	100	50
BAGP365	Livestock Production and Management	30	70	100	50
BAGP366	Environmental Science**	30	70	100	50
BAGP367	Post harvest management and value addition of fruits and vegetables	30	70	100	50
BAGP368	Diseases of Horticultural Crops and their management	30	70	100	50
BAGP369	Fundamentals of Agri. Business Management	30	70	100	50
	Total	510	1190	1700	770

IV Year, Semester VII

Code No	Paper	Evaluation Scheme			
		Internal Assessment	End Semester Exams	Max. Marks	Min.Pass Marks
Group-1 Horticulture and Allied Sciences					
Theory					
BAGEHA471	Bio-control agents and Bio-pesticides	30	70	100	40
BAGEHA472	Vermi-composting and Organic farming	30	70	100	40
BAGEHA473	Tissue culture and Micro-propagation techniques	30	70	100	40
BAGEHA474	Plasticulture in Agriculture	30	70	100	40
BAGEHA475	Nursery Management of Horticultural Crops	30	70	100	40
BAGEHA476	Commercial Vegetable Production	30	70	100	40
BAGEHA477	Commercial Fruit Production	30	70	100	40
BAGEHA478	Plant Growth regulators in Agriculture	30	70	100	40
Practical					
BAGEHA471	Bio-control agents and Bio-pesticides	30	70	100	50
BAGEHA472	Vermi-composting and Organic farming	30	70	100	50
BAGEHA473	Tissue culture and Micro-propagation techniques	30	70	100	50
BAGEHA474	Plasticulture in Agriculture	30	70	100	50
BAGEHA475	Nursery Management of Horticultural Crops	30	70	100	50
BAGEHA476	Commercial Vegetable Production	30	70	100	50
BAGEHA477	Commercial Fruit Production	30	70	100	50
BAGEHA478	Plant Growth regulators in Agriculture	30	70	100	50

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Group- 2 Social Sciences					
Theory					
BAGESS471	Marketing Management	**30**	**70**	**100**	**40**
BAGESS472	Project Formulation, Evaluation and Monitoring	**30**	**70**	**100**	**40**
BAGESS473	Natural Resource Economics and Management	**30**	**70**	**100**	**40**
BAGESS474	Visuals and Graphic Communications	**30**	**70**	**100**	**40**
BAGESS475	Govt. Policies and Priogrammes on Agriculture	**30**	**70**	**100**	**40**
BAGESS476	Sampling Techniques	**30**	**70**	**100**	**40**
BAGESS477	Dairy Cattle Production	**30**	**70**	**100**	**40**
BAGESS478	Poultry Production and Management	**30**	**70**	**100**	**40**
Practical					
BAGESS471	Marketing Management	**30**	**70**	**100**	**50**
BAGESS472	Project Formulation, Evaluation and Monitoring	**30**	**70**	**100**	**50**
BAGESS473	Natural Resource Economics and Management	**30**	**70**	**100**	**50**
BAGESS474	Visuals and Graphic Communications	**30**	**70**	**100**	**50**
BAGESS475	Govt. Policies and Priogrammes on Agriculture	**30**	**70**	**100**	**50**
BAGESS476	Sampling Techniques	**30**	**70**	**100**	**50**
BAGESS477	Dairy Cattle Production	**30**	**70**	**100**	**50**
BAGESS478	Poultry Production and Management	**30**	**70**	**100**	**50**

IV Year, Semester VIII

RAWE (Rural Agriculture Work Experience)

Code No	Paper	Evaluation Scheme	Lec. /Week
Practical			
		External Assessment	
BAG481	General Orientation	10	
BAG482	Village Attachment	100	
BAG483	Unit Attached in University/ KVK/Research Station Attachment	40	
BAG484	Agro Industrial Attachment	40	
BAG485	Project Report	10	

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List of Courses B.Sc.(Hons.) Agriculture

First Year

Semester –I		Semester –II	
Code	**Theory**	**Code**	**Theory**
BAG111	Introductory Agriculture and Principles of Agronomy	BAG121	Agricultural Meteorology
BAG112	Principles of Genetics	BAG122	Principles of Plant Breeding
BAG113	Introduction to Soil Science	BAG123	Plant Pathogens and Principles of Plant Pathology
BAG114	Dimensions of Agricultural Extension	BAG124	Insect Morphology and Systematics
BAG115	Agricultural Microbiology	BAG125	Principles of Agricultural Economics
BAG116	Introduction to Computer Applications	BAG126	Fundamentals of Soil and Water Conservation Engineering
BAG117	Elementary Mathematics	BAG127	Biochemistry
BAG118	Comprehensive and Communication Skills in English	BAG128	Soil Chemistry, Soil Fertility and Nutrient Management
Practical		**Practical**	
BAGP111	Introductory Agriculture and Principles of Agronomy	BAGP121	Agricultural Meteorology
BAGP112	Principles of Genetics	BAGP122	Principles of Plant Breeding
BAGP113	Introduction to Soil Science	BAGP123	Plant Pathogens and Principles of Plant Pathology
BAGP114	Dimensions of Agricultural Extension	BAGP124	Insect Morphology and Systematics
BAGP115	Agricultural Microbiology	BAGP126	Fundamentals of Soil and Water Conservation Engineering
BAGP116	Introduction to Computer Applications	BAGP127	Biochemistry
BAGP118	Comprehensive and Communication Skills in English	BAGP128	Soil Chemistry, Soil Fertility and Nutrient Management
BAGNC109	NCC/NSS/ Physical Education		

Second Year

Semester –III		Semester –IV	
Code	**Theory**	**Code**	**Theory**
BAG231	Field Crops-I (*Kharif*)	BAG241	Field Crops- II (*Rabi*)
BAG232	Weed Management	BAG242	Water Management
BAG233	Introductory Nematology	BAG243	Soil survey, Land Use Planning and Remote Sensing
BAG234	Statistics	BAG244	Insect Ecology and Integrated Pest Management including Beneficial Insects
BAG235	Fundamentals of Rural Sociology and Educational Psychology	BAG245	Production Technology of Vegetables and Flowers
BAG236	Production Technology of Fruits and Plantation Crops	BAG246	Agricultural Finance and Co-operation
BAG237	Production Economics and Farm Management	BAG247	Crop Physiology
BAG238	Farm Power and Machinary	BAG248	Entrepreneurship Development and Communication Skills
BAG239	Manures And Fertilizers		

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Practical		Practical	
BAGP231	Field Crops-I (*Kharif*)	BAGP241	Field Crops- II (*Rabi*)
BAGP232	Weed Management	BAGP242	Water Management
BAGP233	Introductory Nematology	BAGP243	Soil survey, Land Use Planning and Remote Sensing
BAGP234	Statistics	BAGP244	Insect Ecology and Integrated Pest Management including Beneficial Insects
BAGP236	Production Technology of Fruits and Plantation Crops	BAGP245	Production Technology of Vegetables and Flowers
BAGP237	Production Economics and Farm Management	BAGP246	Agricultural Finance and Co-operation
BAGP238	Farm Power and Machinary	BAGP247	Crop Physiology
		BAGP248	Entrepreneurship Development and Communication Skills

Third Year

Semester –V		Semester –VI	
Code	**Theory**	**Code**	**Theory**
BAG352	Rainfed Farming	BAG362	Farming Systems, Sustainable Agriculture and Organic Farming
BAG353	Principles of Plant Biotechnology	BAG363	Principles of Seed Technology
BAG354	Crop and stored grain pests and their management	BAG364	Extension Methodologies for Transfer of Agricultural Technology
BAG355	Breeding of Field and Horticultural Crops	BAG365	Livestock Production and Management
BAG356	Agricultural Marketing, trade and Prices	BAG366	Environmental Science**
BAG357	Protected cultivation and Post harvest Technology	BAG367	Post harvest management and value addition of fruits and vegetables
BAG358	Diseases of Field Crops and their management	BAG368	Diseases of Horticultural Crops and their management
BAG359	Production technology of Spices, Aromatic and Medicinal crops	BAG369	Fundamentals of Agri. Business Management
Practical		**Practical**	
BAGP351	Practical Crop Production - 1(*Kharif*crops)	BAGP361	Practical Crop Production –II *(Rabi)*
BAGP352	Rainfed Farming	BAGP362	Farming Systems, Sustainable Agriculture and Organic Farming
BAGP353	Principles of Plant Biotechnology	BAGP363	Principles of Seed Technology
BAGP354	Crop and stored grain pests and their management	BAGP364	Extension Methodologies for Transfer of Agricultural Technology
BAGP355	Breeding of Field and Horticultural Crops	BAGP365	Livestock Production and Management
BAGP356	Agricultural Marketing, trade and Prices	BAGP366	Environmental Science**
BAGP357	Protected cultivation and Post harvest Technology	BAGP367	Post harvest management and value addition of fruits and vegetables
BAGP358	Diseases of Field Crops and their management	BAGP368	Diseases of Horticultural Crops and their management
BAGP359	Production technology of Spices, Aromatic and Medicinal crops	BAGP369	Fundamentals of Agri. Business Management

Fourth Year

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VII Semester (Elective/Experimental Learning Course)		
Group	**Code**	**Course Title**
Crop Production and Allied Disciplines	BAGECA471	Advanced Seed Technology
	BAGECA472	Applied Weed Management
	BAGECA473	Vermi-composting and Organic farming
	BAGECA474	Soil, Plant and Water Analysis
	BAGECA475	Soil Management
	BAGECA476	Dairy Cattle Production
	BAGECA477	Plant Growth regulators in Agriculture
	BAGECA478	Plasticulture in Agriculture
Plant Sciences and Plant Protection	BAGEPP471	Advanced Seed Technology
	BAGEPP472	Tissue culture and Micro-propagation techniques
	BAGEPP473	Bio-agents and Integrated Disease Management
	BAGEPP474	Detection and Management of seed borne pathogens
	BAGEPP475	Non –Insect Pests and their management
	BAGEPP476	Bio-control agents and Bio-pesticides
	BAGEPP477	Plant Growth regulators in Agriculture
	BAGEPP478	Economic Nematology
Horticulture and AlliedSciences	BAGEHA471	Bio-control agents and Bio-pesticides
	BAGEHA472	Vermi-composting and Organic farming
	BAGEHA473	Tissue culture and Micro-propagation techniques
	BAGEHA474	Plasticulture in Agriculture
	BAGEHA475	Nursery Management of Horticultural Crops
	BAGEHA476	Commercial Vegetable Production
	BAGEHA477	Commercial Fruit Production
	BAGEHA478	Plant Growth regulators in Agriculture
Social Sciences	BAGESS471	Marketing Management
	BAGESS472	Project Formulation, Evaluation and Monitoring
	BAGESS473	Natural Resource Economics and Management
	BAGESS474	Visuals and Graphic Communications
	BAGESS475	Govt. Policies and Priogrammes on Agriculture
	BAGESS476	Sampling Techniques
	BAGESS477	Dairy Cattle Production
	BAGESS478	Poultry Production and Management

Note: A student shall be required to offer six courses of 18 credits out of the eight listed in any one of the groups. The individual college will have an option to offer six courses out of the groups to be offered. The student can offer courses from a single group only for which he/she shall be required to submit preference for these groups and no *inter-alia* group courses will bepermitted.

VIII Semester Rural Agricultural Work Experience (RAWE)	
Code	**Activity**
BAG481	Orientation
BAG482	Research Station/KVK/ including village attachment and *In-situ* interaction of farmers, students and research
	In-situ interaction of farmers, college faculty and students
BAG483	Industrial Attachment*/Skill Development/Experiential
BAG484	Educational Tour
BAG485	Project Report Preparation and Evaluation

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*Industrial attachment shall include attachment with any of the following industries/Organisations

1. Seed industries/companies
2. Fertilizerindustries/companies
3. Pesticideindustries/companies
4. Biotechnologicalindustries/companies
5. Tissue culturelaboratories
6. Bio-Pesticideindustries
7. Commercial nurseries/landscapingunits
8. Food processingunits
9. Agricultural finance institutions/banks/credit societies,etc.
10. NGOs

The new curriculum is attached as per link mentioned below:

..\SOAS 1.1.2 Syllabus\B.Sc. (Hons.) Agriculture\B.Sc. (Hons.)Ag 2016-17.docx

RESOLUTION

[No.: BOS/SOAS/2016/2]

Unanimously resolved that the Scheme and Syllabus for B.Sc. (Hons.) Agriculture as per ICAR IVth Dean's committee recommendation and the elective course system was approved subject to the final approval of Academic Council

Item No. 3:

To discuss and approve the course structure and scheme of examination

Chairperson recommended the course structure and scheme of examination for odd & even semesters for the session 2016-17.

Prof. T. N. Mathur also recommended that as per the norms of university the scheme of examination be finalized as 100 marks in theory and practical separately which was bifurcated as 30 marks for internal assessment and 70 marks for external assessment. Whereas, the minimum passing marks were decided to be 40 per cent in theory and 50 per cent in practical, respectively. It was also decided that the student has to pass theory and practical exam separately as per university norms.

RESOLUTION

[No.: BOS/SOAS/2016/3]

Unanimously resolved that the course structure and scheme of examination for odd & even semesters be approved subjected to the final approval by the Academic Council.

There were no other points for discussion.

Board of Studies recommended the above resolutions to be presented in the Academic Council for further final approval

The meeting ended with the vote of thanks to the Chair.

Authorized Signatory

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ANNEXURE

Jaipur National University

SYLLABUS

2016-17

Four year Degree Programme in
Bachelor of Agricultural Science

J.N.U., Jagatpura, Jaipur-302023

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1	**Programme Name**	Bachelor of Agricultural Science
2	**Programme code**	B.Sc.(Hons.) Ag.
3	**Academic Eligibility for admission**	The minimum qualification for admission in B.Sc.(Hons.) Ag. is 10+2 with any discipline from any recognized board of India with at least 45% marks.
4	**Duration of the program**	• Total duration of the B.Sc.(Hons.) Ag. degree course shall be Four academic years/eight Semesters. • Each year shall have the teaching for the prescribed working days excluding holidays, which shall be as per University norms.
5	**Course Introduction**	• B.Sc.(Hons.) Ag.course helps the candidate to acquire theoretical and application information on various areas related to Agriculture. • The course acts as a basis for higher study options, such as master and doctorate level programme in Agriculture and agriculture branches. • This helps the candidate to build up a challenging career in agriculture sector with lucrative salary packages. The same allow opportunity to travel and make contact with a lot of admired personalities. • Develop improved skills and new skills to enhance the state of their practice, work effectively and conduct themselves ethically in their professional environment. • This helps the candidate to build up a challenging career in agriculture sector with lucrative salary packages. The same allow opportunity to travel and make contact with a lot of admired personalities. • Due to the growing importance of agriculture sector, degree holders in the area can find enormous job opportunities. At the initial stage, the candidate can get involved with junior level jobs. As they gain expertise in agriculture, they can slowly move in to high profiled jobs. • The main employment areas for those who completed bachelor of agricultureare marketing, research, consultancy for farmers, framers relation, field experiment, field management, seed production, crop production, new techniques for cultivation etc. Acquire new knowledge by being a member or part of professional organizations and keeping themselves up to date of the new advances in the Bachelor of Agricultural Science.
6	**Course Objectives**	This programme has been developed in response to the needs of those seeking employment in the Indian and the International Agriculture Industry. The course provides a vocationally and practicaly relevant programme of education that is intellectually challenging and will prepare students for a career in various areas of Agriculture industry, by providing the student with: • Vocational skills and understanding of the environment of various areas of agriculture industry to enable them to be effective in immediate employment in farmer consultent and fertilizer Industry, agri chemical industry, agri seed industry

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		and agri product export-emport industry etc. • Student acquires theoretical and practical knowledge of agriculture which enables them in understanding of Industry concepts and encourage independence of thought with which the student will be able to analyze a wide range of situations in Agriculture. • It enable the Student to reflects their field work techniques, crop production techniques, insect-pest, disease controle techniques, making organic manure, biofertlizer, boipesticides, communication skills and writing skills. • Apply the knowledge of new information and new technology, digital working tools and various agriculture technology. • Strategies to cope with change, the programmes personal development skills for students also will allow Masters to manage change with changing environments. • Opportunities to gain industrial experience which will allow students to broaden their perspective of the Agriculture Industry. • Enable students to demonstrate a commitment to address professional and ethical responsibilities, including a respect for diversity. • While the programme will prepare students for immediate employment as agriculture consultant, it will (with appropriate personal development) facilitate early progression to more senior roles. Demonstrate a commitment to quality, timeliness and continuous improvement. • Student acquires theoretical and practical knowledge of Agriculture. • Student reflects their communication skills, writing skills, crop production techniques, insect-pest and disease control techniques, post harvest techniques and making organic manure and fertlilizer. • Apply the knowledge of new information and new farm technology, working tools and various agriculture platform. • Apply written, oral and graphical communication and an ability to identify and use appropriate knowledge. • Demonstrate a commitment to address professional and ethical responsibilities, including a respect for diversity. Demonstrate a commitment to quality, timeliness and continuous improvement.

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7	**Attributes of the Graduates**	• The nature of the Agriculture industry requires that the student develops crucial personal attributes in relation to effective dealing with people, communication skills in both writing and verbal, presentation, field work etc. • A particular Assistant agrilture officer quality is the ability to remain calm under pressure and to think creatively in different cultivation method and apply government polices • The attributes of the graduate will enable them to operate effective within a framework which incorporates their academic achievement and acquired technical skills such as farming and crop cultivation, new techniques in agriculture, etc. **These are summarized as** **i.** Competencey in maximum production and quality production, and new farm Technology ii. Farm Management iii. Assistant Agriculture Officer iv. Pathologist v. Agronomist vi. Horticultirist vii. Food safety officer viii. Agriculture field officer ix. Forest Officer x. Consultant of agriculture xi. Leadership skills xii. Communication skills both written and verbal and soft skills xiii. Training needs and analysis xiv. Digaster management in agriculture
8	**Programme Content Rationale**	
9 9	**Teaching and Learning Strategies**	• Programs are delivered in Blended Learning Mode. We have integrated online with traditional face-to-face class activities in a planned, pedagogically valuable manner. • We use both student oriented and instructor-led teaching learning method. • Live Interactive lectures from eminent faculty experts • The student will undertake research and participate in seminars that investigate diverse issues and problems related to Agriculture Industry. • The methods of learning used will, inter alia, include the following: i. Workshops and 'live'situations will be used across the width of the course and are seen as integral to the learning process. Extra curriculam activities, events and Mega events such as Technoraaz provides opportunities for live projects and assignments. ii. Guest speakers, as well as senior Agriculture Personalities will enhance the contemporary study of the various aspects of Agriculture Industry and will contribute extensively throughout the programme. iii. Seminars will be used as the focus of student led presentations and debate. Seminars will be throughout the four years of the programme. iv. Agriculture technology study and demostration related

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		to various techniques such as green house technology, drip irrigation, aqua culture, hydroponics and pot culture will be used practically across the whole programme, v. Directed and Independent Learning is regarded as a major source of learning and will be supported by farm amanger, agriculture tools manufectures, equipments, fertilizers, insecticides, pesticides and weedicides and other agriculture service. Vi) **"On the job training"** is an essential part of the course. Students join internship or job in the VIIth and VIIth Semester. This enables the students to witness and emphasize the "real" world of Agriculture. The students whilst on such training will continually interacting with faculty of Agriculture who will guide and get feedback on his performance and also evaluate the student's progress.
10	**Curriculum**	• The curriculum for the B.Sc.(Hons.) Agriculture program will be divided into 8 Semesters and shall include lectures, practical, seminars, assignments and project in addition to Practical Training. • It will also include co-curricular and extracurricular activities as prescribed from time to time by the University.
11

- Pass/fail in a paper shall be declared on the basis of total marks obtained separately in theory and practical examination and the sessional marks of the theory and practical will be merged in the marks obtained in the exams for declaring pass/ fail
- The minimum percentage of marks to pass the examination in each semester shall be:40% marks in each written paper with internal and external assessment separately 50% marks in aggregate of each semester practical examination.

A candidate shall be promoted to the next higher semester if he/she passes at least 40% of the papers prescribed in the semester failing which he/she shall be declared as fail in that semester and he/she shall be required to re-admission in the failed semester and shall have to appear in all the papers currently in force for each.

Classification of successful candidates

The list of successful candidates after the eight semester examinations of of B.Sc.(Hons.) Agriculture shall be arranged as under in three divisions on the basis of the aggregate marks obtained in all semester examinations taken together, and the division obtained by the candidate will be stated in his degree.

(i) First Division those who obtain 60% or more of the aggregate marks.
(ii) Second Division those who obtain 45% or more of the aggregate marks.
(iii) Third Division those who obtain 35% or more of the aggregate marks.

Each successful candidate shall receive a copy of detailed marks on having passed the semester examination.

Total credits/marks (semester wise)

Semester first = 1000 [300 (T) + 200 (P)] marks.
Semester second =
Semester third =
Semester forth =
Semester fifth =
Semester sixth =
Semester seventh =
Semester eight =

Continuous Assessment Components

1. Marks Distribution Scheme
(a) For theory: 100 (30+70)
(i) Internal Component

Mid Term	Assignment	Attendance	Total	Final Marks (30)
30	-	-	30	30

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(ii) External Components: 70 marks (End Semester Theory Exam)

(b) For Practical: 100 marks

(i) Internal components:

Attendance	Presentation	Mid Term +Viva	Total
5	5	20	30

(ii) External Component: 70 Marks

Experiment Performed at the time of practical	Viva	Practical Performance	File record	Total
30	10	20	10	70

2. Total Teaching Hours:
3. Total Credit Hours:
4. Total Marks: Theory = 1800
   Practical = 1200
   Grand Total = 3000

The medium of instructions will be English and Hindi

- The medium of instruction and examination for all subjects of B.Sc.(Hons.) Agriculture will be English and Hindi.

10	**Attendance**	Every student is required to attend all the lectures, practicals and other prescribed curricular & co-curricular activities. He/she must have at least 75% attendance in lectures and practicals in each subject otherwise student will not be allowed to appear in the annual examination of the University. **Absence due to accident or illness** Where a student has, on account of physical inability due to any serious accident or illness, or on account of death or a serious accident or illness of one of close members of his/ her family, failed to appear for the examination in one or more papers in which he/ she has failed, he/ she may be granted special dispensation, as the Academic Council may, on the recommendation of the Board of Studies of the relevant School, deem appropriate. (Note: -The Academic Council may lay down guidelines to determine the criteria to determine what constitutes a serious accident/ illness as well as the standard of verifiable medical evidence necessary to substantiate a claim for dispensation. It shall have the discretion to reject any claim for dispensation, without assigning any reason.)
11	**Power of Academic Council to Review these Rules/make rules for different programmes of study**	These rules shell be without prejudice to the powers of the Academic Council to review them or to make rules specific to the requirements of each programme of study whenever required.

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B.Sc.(Hons.) Agriculture

First Year

Semester –I		Semester –II	
Code	**Theory**	**Code**	**Theory**
BAG111	Introductory Agriculture and Principles of Agronomy	BAG121	Agricultural Meteorology
BAG112	Principles of Genetics	BAG122	Principles of Plant Breeding
BAG113	Introduction to Soil Science	BAG123	Plant Pathogens and Principles of Plant Pathology
BAG114	Dimensions of Agricultural Extension	BAG124	Insect Morphology and Systematics
BAG115	Agricultural Microbiology	BAG125	Principles of Agricultural Economics
BAG116	Introduction to Computer Applications	BAG126	Fundamentals of Soil and Water Conservation Engineering
BAG117	Elementary Mathematics	BAG127	Biochemistry
BAG118	Comprehensive and Communication Skills in English	BAG128	Soil Chemistry, Soil Fertility and Nutrient Management
Practical		**Practical**	
BAGP111	Introductory Agriculture and Principles of Agronomy	BAGP121	Agricultural Meteorology
BAGP112	Principles of Genetics	BAGP122	Principles of Plant Breeding
BAGP113	Introduction to Soil Science	BAGP123	Plant Pathogens and Principles of Plant Pathology
BAGP114	Dimensions of Agricultural Extension	BAGP124	Insect Morphology and Systematics
BAGP115	Agricultural Microbiology	BAGP126	Fundamentals of Soil and Water Conservation Engineering
BAGP116	Introduction to Computer Applications	BAGP127	Biochemistry
BAGP118	Comprehensive and Communication Skills in English	BAGP128	Soil Chemistry, Soil Fertility and Nutrient Management
BAGNC111	NCC/NSS/ Physical Education		

Second Year

Semester –III		Semester –IV	
Code	**Theory**	**Code**	**Theory**
BAG231	Field Crops-I (*Kharif*)	BAG241	Field Crops- II (*Rabi*)
BAG232	Weed Management	BAG242	Water Management
BAG233	Introductory Nematology	BAG243	Soil survey, Land Use Planning and Remote Sensing
BAG234	Statistics	BAG244	Insect Ecology and Integrated Pest Management including Beneficial Insects
BAG235	Fundamentals of Rural Sociology and Educational Psychology	BAG245	Production Technology of Vegetables and Flowers
BAG236	Production Technology of Fruits and Plantation Crops	BAG246	Agricultural Finance and Co-operation
BAG237	Production Economics and Farm Management	BAG247	Crop Physiology
BAG238	Farm Power and Machinary	BAG248	Entrepreneurship Development and Communication Skills
BAG239	Manures And Fertilizers		
Practical		**Practical**	
BAGP231	Field Crops-I (*Kharif*)	BAGP241	Field Crops- II (*Rabi*)
BAGP232	Weed Management	BAGP242	Water Management
BAGP233	Introductory Nematology	BAGP243	Soil survey, Land Use Planning and Remote Sensing

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BAGP234	Statistics	BAGP244	Insect Ecology and Integrated Pest Management including Beneficial Insects
BAGP236	Production Technology of Fruits and Plantation Crops	BAGP245	Production Technology of Vegetables and Flowers
BAGP237	Production Economics and Farm Management	BAGP246	Agricultural Finance and Co-operation
BAGP238	Farm Power and Machinary	BAGP247	Crop Physiology
		BAGP248	Entrepreneurship Development and Communication Skills

Third Year

Semester –V		Semester –VI	
Code	**Theory**	**Code**	**Theory**
BAG352	Rainfed Farming	BAG362	Farming Systems, Sustainable Agriculture and Organic Farming
BAG353	Principles of Plant Biotechnology	BAG363	Principles of Seed Technology
BAG354	Crop and stored grain pests and their management	BAG364	Extension Methodologies for Transfer of Agricultural Technology
BAG355	Breeding of Field and Horticultural Crops	BAG365	Livestock Production and Management
BAG356	Agricultural Marketing, trade and Prices	BAG366	Environmental Science**
BAG357	Protected cultivation and Post harvest Technology	BAG367	Post harvest management and value addition of fruits and vegetables
BAG358	Diseases of Field Crops and their management	BAG368	Diseases of Horticultural Crops and their management
BAG359	Production technology of Spices, Aromatic and Medicinal crops	BAG369	Fundamentals of Agri. Business Management
Practical		**Practical**	
BAGP351	Practical Crop Production -1(*Kharif* crops)	BAGP361	Practical Crop Production –II *(Rabi)*
BAGP352	Rainfed Farming	BAGP362	Farming Systems, Sustainable Agriculture and Organic Farming
BAGP353	Principles of Plant Biotechnology	BAGP363	Principles of Seed Technology
BAGP354	Crop and stored grain pests and their management	BAGP364	Extension Methodologies for Transfer of Agricultural Technology
BAGP355	Breeding of Field and Horticultural Crops	BAGP365	Livestock Production and Management
BAGP356	Agricultural Marketing, trade and Prices	BAGP366	Environmental Science**
BAGP357	Protected cultivation and Post harvest Technology	BAGP367	Post harvest management and value addition of fruits and vegetables
BAGP358	Diseases of Field Crops and their management	BAGP368	Diseases of Horticultural Crops and their management
BAGP359	Production technology of Spices, Aromatic and Medicinal crops	BAGP369	Fundamentals of Agri. Business Management

Forth Year

VII Semester (Elective/Experimental Learning Course)		
Group	**Code**	**Course Title**
Crop Production and Allied Disciplines	BAGECA471	Advanced Seed Technology
	BAGECA472	Applied Weed Management
	BAGECA473	Vermi-composting and Organic farming
	BAGECA474	Soil, Plant and Water Analysis
	BAGECA475	Soil Management
	BAGECA476	Dairy Cattle Production
	BAGECA477	Plant Growth regulators in Agriculture
	BAGECA478	Plasticulture in Agriculture
Plant Sciences	BAGEPP471	Advanced Seed Technology

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and Plant Protection	BAGEPP472	Tissue culture and Micro-propagation techniques
	BAGEPP473	Bio-agents and Integrated Disease Management
	BAGEPP474	Detection and Management of seed borne pathogens
	BAGEPP475	Non –Insect Pests and their management
	BAGEPP476	Bio-control agents and Bio-pesticides
	BAGEPP477	Plant Growth regulators in Agriculture
	BAGEPP478	Economic Nematology
Horticulture and AlliedSciences	BAGEHA471	Bio-control agents and Bio-pesticides
	BAGEHA472	Vermi-composting and Organic farming
	BAGEHA473	Tissue culture and Micro-propagation techniques
	BAGEHA474	Plasticulture in Agriculture
	BAGEHA475	Nursery Management of Horticultural Crops
	BAGEHA476	Commercial Vegetable Production
	BAGEHA477	Commercial Fruit Production
	BAGEHA478	Plant Growth regulators in Agriculture
Social Sciences	BAGESS471	Marketing Management
	BAGESS472	Project Formulation, Evaluation and Monitoring
	BAGESS473	Natural Resource Economics and Management
	BAGESS474	Visuals and Graphic Communications
	BAGESS475	Govt. Policies and Priogrammes on Agriculture
	BAGESS476	Sampling Techniques
	BAGESS477	Dairy Cattle Production
	BAGESS478	Poultry Production and Management

Note: A student shall be required to offer six courses of 18 credits out of the eight listed in any one of the groups. The individual college will have an option to offer six courses out of the groups to be offered. The student can offer courses from a single group only for which he/she shall be required to submit preference for these groups and no *inter-alia* group courses will bepermitted.

VIII Semester **Rural Agricultural Work Experience (RAWE)**	
Code	**Activity**
BAG481	Orientation
BAG482	Research Station/KVK/ including village attachment and *In-situ* interaction of farmers, students and research
	In-situ interaction of farmers, college faculty and students
BAG483	Industrial Attachment*/Skill Development/Experiential
BAG484	Educational Tour
BAG485	Project Report Preparation and Evaluation

*Industrial attachment shall include attachment with any of the following industries/Organisations

1. Seed industries/companies
2. Fertilizerindustries/companies
3. Pesticideindustries/companies
4. Biotechnologicalindustries/companies
5. Tissue culturelaboratories
6. Bio-Pesticideindustries
7. Commercial nurseries/land scapingunits
8. Food processingunits
9. Agricultural finance institutions/banks/credit societies,etc
10. NGOs

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Examination Scheme

I Year, Semester I

Code No	Paper	Evaluation Scheme			
		Internal Assessment	End Semester Exams	Max. Marks	Min.Pass Marks
Theory					
BAG111	Introductory Agriculture and Principles of Agronomy	30	70	100	40
BAG112	Principles of Genetics	30	70	100	40
BAG113	Introduction to Soil Science	30	70	100	40
BAG114	Dimensions of Agricultural Extension	30	70	100	40
BAG115	Agricultural Microbiology	30	70	100	40
BAG116	Introduction to Computer Applications	30	70	100	40
BAG117	Elementary Mathematics	30	70	100	40
BAG118	Comprehensive and Communication Skills in English	30	70	100	40
Practical					
BAGP111	Introductory Agriculture and Principles of Agronomy	30	70	100	50
BAGP112	Principles of Genetics	30	70	100	50
BAGP113	Introduction to Soil Science	30	70	100	50
BAGP114	Dimensions of Agricultural Extension	30	70	100	50
BAGP115	Agricultural Microbiology	30	70	100	50
BAGP116	Introduction to Computer Applications	30	70	100	50
BAGP118	Comprehensive and Communication Skills in English	30	70	100	50
BAGNC111	NCC/NSS/ Physical Education	30	70	100	50
	Toatal	480	1120	1600	720

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I Year, Semester II

Code No	Paper	Evaluation Scheme			
		Internal Assessment	End Semester Exams	Max. Marks	Min.Pass Marks
Theory					
BAG121	Agricultural Meteorology	30	70	100	40
BAG122	Principles of Plant Breeding	30	70	100	40
BAG123	Plant Pathogens and Principles of Plant Pathology	30	70	100	40
BAG124	Insect Morphology and Systematics	30	70	100	40
BAG125	Principles of Agricultural Economics	30	70	100	40
BAG126	Fundamentals of Soil and Water Conservation Engineering	30	70	100	40
BAG127	Biochemistry	30	70	100	40
BAG128	Soil Chemistry, Soil Fertility and Nutrient Management	30	70	100	40
Practical					
BAGP121	Agricultural Meteorology	30	70	100	50
BAGP122	Principles of Plant Breeding	30	70	100	50
BAGP123	Plant Pathogens and Principles of Plant Pathology	30	70	100	50
BAGP124	Insect Morphology and Systematics	30	70	100	50
BAGP126	Fundamentals of Soil and Water Conservation Engineering	30	70	100	50
BAGP127	Biochemistry	30	70	100	50
BAGP128	Soil Chemistry, Soil Fertility and Nutrient Management	30	70	100	50
	Toatal	480	1120	1600	720

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II Year, Semester III

Code No	Paper	Evaluation Scheme			
		Internal Assessment	End Semester Exams	Max. Marks	Min.Pass Marks
		Theory			
BAG231	Field Crops-I (*Kharif*)	30	70	100	40
BAG232	Weed Management	30	70	100	40
BAG233	Introductory Nematology	30	70	100	40
BAG234	Statistics	30	70	100	40
BAG235	Fundamentals of Rural Sociology and Educational Psychology	30	70	100	40
BAG236	Production Technology of Fruits and Plantation Crops	30	70	100	40
BAG237	Production Economics and Farm Management	30	70	100	40
BAG238	Farm Power and Machinary	30	70	100	40
BAG239	Manures And Fertilizers	30	70	100	40
		Practical			
BAGP231	Field Crops-I (*Kharif*)	30	70	100	50
BAGP232	Weed Management	30	70	100	50
BAGP233	Introductory Nematology	30	70	100	50
BAGP234	Statistics	30	70	100	50
BAGP236	Production Technology of Fruits and Plantation Crops	30	70	100	50
BAGP237	Production Economics and Farm Management	30	70	100	50
BAGP238	Farm Power and Machinary	30	70	100	50
	Toatal	480	1120	1600	710

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II Year, Semester IV

Code No	Paper	Evaluation Scheme			
Theory		**Internal Assessment**	**End Semester Exams**	**Max. Marks**	**Min.Pass Marks**
BAG241	Field Crops- II (*Rabi*)	**30**	**70**	**100**	**40**
BAG242	Water Management	**30**	**70**	**100**	**40**
BAG243	Soil survey, Land Use Planning and Remote Sensing	**30**	**70**	**100**	**40**
BAG244	Insect Ecology and Integrated Pest Management including Beneficial Insects	**30**	**70**	**100**	**40**
BAG245	Production Technology of Vegetables and Flowers	**30**	**70**	**100**	**40**
BAG246	Agricultural Finance and Co-operation	**30**	**70**	**100**	**40**
BAG247	Crop Physiology	**30**	**70**	**100**	**40**
BAG248	Entrepreneurship Development and Communication Skills	**30**	**70**	**100**	**40**
	Practical				
BAGP241	Field Crops- II (*Rabi*)	**30**	**70**	**100**	**50**
BAGP242	Water Management	**30**	**70**	**100**	**50**
BAGP243	Soil survey, Land Use Planning and Remote Sensing	**30**	**70**	**100**	**50**
BAGP244	Insect Ecology and Integrated Pest Management including Beneficial Insects	**30**	**70**	**100**	**50**
BAGP245	Production Technology of Vegetables and Flowers	**30**	**70**	**100**	**50**
BAGP246	Agricultural Finance and Co-operation	**30**	**70**	**100**	**50**
BAGP247	Crop Physiology	**30**	**70**	**100**	**50**
BAGP248	Entrepreneurship Development and Communication Skills	**30**	**70**	**100**	**50**
	Toatal	**480**	**1120**	**1600**	**720**

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III Year, Semester V

Code No	Paper	Evaluation Scheme			
		Internal Assessment	End Semester Exams	Max. Marks	Min.Pass Marks
		Theory			
BAG352	Rainfed Farming	30	70	100	40
BAG353	Principles of Plant Biotechnology	30	70	100	40
BAG354	Crop and stored grain pests and their management	30	70	100	40
BAG355	Breeding of Field and Horticultural Crops	30	70	100	40
BAG356	Agricultural Marketing, trade and Prices	30	70	100	40
BAG357	Protected cultivation and Post harvest Technology	30	70	100	40
BAG358	Diseases of Field Crops and their management	30	70	100	40
BAG359	Production technology of Spices, Aromatic and Medicinal crops	30	70	100	40
		Practical			
BAGP351	Practical Crop Production - 1(*Kharif* crops)	30	70	100	50
BAGP352	Rainfed Farming	30	70	100	50
BAGP353	Principles of Plant Biotechnology	30	70	100	50
BAGP354	Crop and stored grain pests and their management	30	70	100	50
BAGP355	Breeding of Field and Horticultural Crops	30	70	100	50
BAGP356	Agricultural Marketing, trade and Prices	30	70	100	50
BAGP357	Protected cultivation and Post harvest Technology	30	70	100	50
BAGP358	Diseases of Field Crops and their management	30	70	100	50
BAGP359	Production technology of Spices, Aromatic and Medicinal crops	30	70	100	50
	Total	510	1190	1700	770

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III Year, Semester VI

Code No	Paper	Evaluation Scheme			
		Internal Assessment	End Semester Exams	Max. Marks	Min.Pass Marks
Theory					
BAG241	Field Crops- II (*Rabi*)	30	70	100	40
BAG242	Water Management	30	70	100	40
BAG243	Soil survey, Land Use Planning and Remote Sensing	30	70	100	40
BAG244	Insect Ecology and Integrated Pest Management including Beneficial Insects	30	70	100	40
BAG245	Production Technology of Vegetables and Flowers	30	70	100	40
BAG246	Agricultural Finance and Co-operation	30	70	100	40
BAG247	Crop Physiology	30	70	100	40
BAG248	Entrepreneurship Development and Communication Skills	30	70	100	40
Practical					
BGP361	Practical Crop Production – II (*Rabi*)	30	70	100	50
BAGP362	Farming Systems, Sustainable Agriculture and Organic Farming	30	70	100	50
BAGP363	Principles of Seed Technology	30	70	100	50
BAGP364	Extension Methodologies for Transfer of Agricultural Technology	30	70	100	50
BAGP365	Livestock Production and Management	30	70	100	50
BAGP366	Environmental Science**	30	70	100	50
BAGP367	Post harvest management and value addition of fruits and vegetables	30	70	100	50
BAGP368	Diseases of Horticultural Crops and their management	30	70	100	50
BAGP369	Fundamentals of Agri. Business Management	30	70	100	50
	Total	510	1190	1700	770

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IV Year, Semester VII

Code No	Paper	Evaluation Scheme			
		Internal Assessment	End Semester Exams	Max. Marks	Min.Pass Marks
Group-1 Horticulture and Allied Sciences					
Theory					
BAGEHA471	Bio-control agents and Bio-pesticides	30	70	100	40
BAGEHA472	Vermi-composting and Organic farming	30	70	100	40
BAGEHA473	Tissue culture and Micro-propagation techniques	30	70	100	40
BAGEHA474	Plasticulture in Agriculture	30	70	100	40
BAGEHA475	Nursery Management of Horticultural Crops	30	70	100	40
BAGEHA476	Commercial Vegetable Production	30	70	100	40
BAGEHA477	Commercial Fruit Production	30	70	100	40
BAGEHA478	Plant Growth regulators in Agriculture	30	70	100	40
Practical					
BAGEHA471	Bio-control agents and Bio-pesticides	30	70	100	50
BAGEHA472	Vermi-composting and Organic farming	30	70	100	50
BAGEHA473	Tissue culture and Micro-propagation techniques	30	70	100	50
BAGEHA474	Plasticulture in Agriculture	30	70	100	50
BAGEHA475	Nursery Management of Horticultural Crops	30	70	100	50
BAGEHA476	Commercial Vegetable Production	30	70	100	50
BAGEHA477	Commercial Fruit Production	30	70	100	50
BAGEHA478	Plant Growth regulators in Agriculture	30	70	100	50
Group- 2 Social Sciences					
Theory					
BAGESS471	Marketing Management	30	70	100	40
BAGESS472	Project Formulation, Evaluation and Monitoring	30	70	100	40
BAGESS473	Natural Resource Economics and Management	30	70	100	40
BAGESS474	Visuals and Graphic Communications	30	70	100	40
BAGESS475	Govt. Policies and Priogrammes on Agriculture	30	70	100	40
BAGESS476	Sampling Techniques	30	70	100	40
BAGESS477	Dairy Cattle Production	30	70	100	40
BAGESS478	Poultry Production and Management	30	70	100	40
Practical					
BAGESS471	Marketing Management	30	70	100	50
BAGESS472	Project Formulation, Evaluation and Monitoring	30	70	100	50
BAGESS473	Natural Resource Economics and Management	30	70	100	50

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BAGESS474	Visuals and Graphic Communications	**30**	**70**	**100**	**50**
BAGESS475	Govt. Policies and Priogrammes on Agriculture	**30**	**70**	**100**	**50**
BAGESS476	Sampling Techniques	**30**	**70**	**100**	**50**
BAGESS477	Dairy Cattle Production	**30**	**70**	**100**	**50**
BAGESS478	Poultry Production and Management	**30**	**70**	**100**	**50**

IV Year, Semester VIII
RAWE (Rural Agriculture Work Experience)

VIII Semester **Rural Agricultural Work Experience (RAWE)**	
Code	**Activity**
BAG481	General Orientation
BAG482	Research Station/KVK/ including village attachment and*In-situ* interaction of farmers, students and research
	In-situ interaction of farmers, college faculty and students
BAG483	Industrial Attachment*/Skill Development/Experiential
BAG484	Educational Tour
BAG485	Project Report Preparation and Evaluation

*Industrial attachment shall include attachment with any of the following industries/Organisations

1. Seed industries/companies
2. Fertilizerindustries/companies
3. Pesticideindustries/companies
4. Biotechnologicalindustries/companies
5. Tissue culturelaboratories
6. Bio-Pesticideindustries
7. Commercial nurseries/land scapingunits
8. Food processingunits
9. Agricultural finance institutions/banks/credit societies,etc
10. NGOs

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B. Sc. (Hons.) Agriculture, Part- I, I Semester

BAG111 Introductory Agriculture and PrinciplesofAgronomy 3(2+1)

Course Outcomes :-

1.Student will able to know the basic principles of agronomy practices and modern techniques of farming of agriculture crops.

2.Students will be able to apply crop management suitable in local climate.

3.Students will be able to use particular technique, equipment, plant requirements eg. Plant nutrient dose, irrigation, weed management and other practices which improves crop production and also crop quality.

4.Students will able to identify the crops, their family, genus, species etc. that will be helpful to determine package and practices for a particular crop.

5.Students will be known about basics of nutrient and water management which will reflect on the practical implementation of INM Programme.

Theory:

Definition and importance of Agriculture; Meaning and scope of Agronomy; Plant growth and development– concept and differences; general growth curves, factors affecting crop production, Classification of crops; Meaning and types of tillage and tilth; Soil fertility and productivity ; Soil erosion- nature, extent and types; Soil conservation- meaning , agronomic and common mechanical practices; Agro-climatic zones of Rajasthan and India and National, International Agricultural Research Institutes in India and abroad. Art, science and business of crop production; Agricultural heritage; Chronological agricultural technology development in India; Ancient Indian Agriculture in Civilization Era; Conversion of man from food gatherer to food producer; Development of Agriculture through Kautilya`s work; Tools to predict monsoon rain; Plant protection in ancient and medieval India; Forest management and products, history of some indigenoustrees.

Practical:

Identification of crop seeds and plants; Identification of fertilizers and manures; Acquaintance with farm tools and implements; Methods of ploughing and sowing; Preparation of seed beds of crops; Calculation on plant population ; Calculation of soil and water losses from runoff plots ; Identification of grasses, legumes and trees for soil conservation.

Lecture schedule : Theory

S.No.	Topic	No. of lectures
1.	Agriculture-definition and importance of agriculture	1
2.	Agronomy-meaning and scope of Agronomy	1
3.	Plant growth and development-concept and differences and sigmoid growth curve	1
4.	Factors affecting crop production-genetic, climatic and edaphic	1
5.	Classification of crops-botanical, agronomic, seasonal.	1
6.	Classification of crops based on life span, special purposes i.e. cover, green manure, catch, trap, cash, soiling.	1
7.	Tillage-definition and types of tillage including minimum and no tillage.	1
8.	Tilth-definition and characteristics of good tilth.	1
9.	Soil fertility and productivity-definition and differences	1
10.	Soil erosion-definition, nature and extent of erosion in Rajasthan and India	1
11.	Types of soil erosion-geological and accelerated erosion.	1
12.	Types of water erosion	1
13.	Types of wind erosion	1
14.	Agronomic practices for control of wind erosion.	1
15.	Agronomic practices for control of water erosion.	1
16.	Soil conservation-meaning and importance	1
17.	Agronomic practices for soil and water conservation	1

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18.	Mechanical practices for soil and water conservation	1
19.	Agroclimatic zones of Rajasthan – a brief introduction.	1
20.	Agroclimatic zones of India– a brief introduction	1
21.	National agricultural research institutes in India.	1
22.	International agricultural research institutes in India and abroad.	1
23.	Art, science and business of crop production- a brief introduction.	1
24.	Agricultural heritage	1
25.	Chronological agricultural technology development in India .	1
26.	Ancient Indian agriculture in civilization era.	1
27.	Conversion of man from food gatherer to food producer.	1
28.	Development of agriculture through Kautilya`s work-agriculture	1
29.	Development of agriculture through Kautilya`s work-animal husbandry	1
30.	Traditional tools to predict monsoon rains: Parashara, *Panchangas*	1
31.	Plant protection through *Vrikshayurveda* and traditional knowledge	1
32.	Forest management and products-history of some indigenous trees.	1

Lecturer schedule: Practical

S.No.	Topic	No. of lectures
1	Visit to College farm	1
2	Identification of seeds of major crops	1
3	Identification of crop plants	1
4	Classification and identification of manures and fertilizers	1
5	Acquaintance with farm tools and implements	1
6	Working out seed rate of different crops	1
7	Ploughing and preparation of field	1
8	Sowing of crops	1
9	Calculation of plant population	1
10	Thinning of crop plants	1
11	Inter cultivation in crops of the season	1
12	Preparation of seed beds-ridge and furrow method	1
13	Preparation of seed bed- check basin	1
14	Calculation of soil and water losses from runoff plots.	1
15	Identification of grasses and legumes for soil conservation	1
16	Identification of trees for soil conservation.	1

References:

1. De, Gopal Chandra 1989, Fundamentals of Agronomy. Oxford &IBH Publishing Co.,New-Delhi.
2. ICAR 1989 Handbook of Agriculture, Indian Council of Agricultural Research,New-Delhi
3. Michael, A.M. and Ojha, T.P. 1986. Principles of Agricultural Engineering, Vol.II Jain Brothers, NewDelhi.
4. Morachan, Y.B. 1986, Crop production and management, Oxford &IBH Publishing Co.,New-Delhi.
5. Porwal, B.L. and Sharma, D.D. 1991. Sashya Vigyan Ke Adhunic Siddhant (Hindi) Alka Publishers,Ajmer.
6. Darashikoh – Nuskha Dar Fanni – Falahat (The Art of Agriculture). Translated from Persian to English by Razia Akbar (2000) with commentaries by K.L. Mehra, K.L. Chadhan, J.S. KanwarandY.L. Nene. Asian Agri- History Foundation, Secunderabad, Bull No. 3, pp : 136.
7. Kashyapa – Kashuliya Krishisukti (A Treatise on Agriculture by Kashyapa). Translated from Sanskritto English by S.M. Ayachit (2002) with commentaries by Nalini Sadhale and Y.L. Nene, Asian Agri-History Foundation, Secunderabad, Bull No. 4. pp :168.
8. NCA (1976), Reports of the National Commission on Agriculture, Govt. of India, New Delhi. Ojha, Madhusudan (1942), Kadambini (Sanskrit), Pub. Pradyumna Sarma Ojha,Jaipur.
9. Parashara – Krishi Parashara (Agriculture by Parashara). Translated from Sanskrit to English by Nalini Sadhale (1999) with commentaries by H.V. Balkundi and Y.L. Nene. Asian Agri-History Foundation, Secunderabad, Bull No. 2, pp :104.
10. Rapala – Vrikshayurveda (The Science of Plant life). Translated from Sanskrit to English by Nalini Sadhale (1996) with commentaries by K.L. Mehra, S.M. Virmani and Y.L. Nene. Asian Agri-History Foundation, Secunderabad, Bull No. 1, pp :104.
11. Nene, Y.L. and Choudhary, S.L. 2002. Agricultural Heritage in India. Asian Agri-History Foundation (AAHF), Secunderabad, Rajasthan Chapter of AAHF,Udaipur.
12. Nene, Y.L. 2007. Glimpses of the Agricultural Heritage of India. Asian Agri- Histroy Foundation, Secunderabad, AndhraPradesh.

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13. Choudhary, S.L., Sharma, G.S. and Nene, Y.L. 2000. Ancient and Medieval History of Indian Agriculture. Rajasthan College of Agriculture, Udaipur,Rajasthan.

Course Outcome - 1.Students will be able to understand the fundamental concept in genetics and have depth knowledge about chromosome structure and genetic code.
2.Students will be able to use punnet square to predict possible offspring variations.
3.Students will be able to understand the knowledge of genetic testing and able to analyze as well as construct the family pedigree.
4.Students will know the structure and function of genetic material.
5.Students will be able to develop their analytical, quantitative and problem solving skills from classical to molecular skills.
6.Students will be known about basics concept of the genes and their implementation in the development of new variety with distinct and desirable features.

BAG112 **Principlesof Genetics** **3(2+1)**

Theory:
History of Genetics, ultra structure of cell. Cell organelles and their function. Chromosomes structure, function and their chemical composition-karyotype and ideogram. Cell division: types and their significance. Mendel's law of inheritance. Gene interaction and their types. Multiples alleles and some classical examples. Inheritance of qualitative and quantitative characters and difference between them. Multiple factor hypothesis.Pleiotropism, penetrance and expressivity. Mechanism of crossing over and cytological proof of crossing over. Linkage types and importance. Estimation of linkage. DNA and its structure, function, types, mode of replication and repair.RNA and its structure,function and its types, transcription,translation,genetic code and protein synthesis.cytoplasmic inheritance-its characteristics features and difference between chromosomal and cytoplasmic inheritance.Structural chromosomal aberrations.Numerical chromosomal aberrations(polyploidy) and evolutionof different crop species like cotton,wheat,tobacco and brassicas.Mutation -characteristics , classification andinduction.

Practical:
Introduction to microscopy-simple and compound microscope. study of typical plant cell. Preparation and use of fixatives and stains. Preparation of micro slides and identification of various stage of cell division. Monohybrid ratio and its modification. Test of goodness of fit of genetic ratio. Study of different types of gene interaction and modifications of typical dihybrid f2 ratio. Study and detection of linkage in f2 and test cross progeny. Demonstration of structural aberrations andpolyploidy.

Lecture schedule: Theory

S. No.	Topic	No. of lectures
1.	History of Genetics, ultra structure of cell.	2
2.	Cell organelles and their function.	2
3.	Chromosomes structure, function and their chemical composition-karyotype and ideogram.	2
4.	Cell division: types and their significance.	1
5.	Mendel's law of inheritance.	2
6.	Gene interaction and their types. Multiples alleles and some classical examples.	2
7.	Inheritance of qualitative and quantitative characters and difference between them. Multiple factor hypothesis.	1
8.	Pleiotropism, penetrance and expressivity. Mechanism of crossing over and cytological proof of crossingover.	2
9.	Linkage types and importance. Estimation of linkage.	1
10.	DNA and its structure, function, types, mode of replication and repair.	3
11.	RNA and its structure, function and its types,	2
12.	Transcription, translation, genetic code and protein synthesis.	2
13.	Cytoplasmic inheritance-its characteristics features and difference between chromosomal and cytoplasmic inheritance.	2
14.	Structural chromosomal aberrations. Numerical chromosomal aberrations (polyploidy)	3
15.	Evolution of different crop species like cotton, wheat, tobacco and brassicas.	3
16.	Mutation -characteristics, classification and induction.	2

Lecture schedule: Practical

S. No.	Topic	No. of lectures
1	Introduction to microscopy-simple and compound microscope.	1
2	Study of typical plant cell.	1
3	Preparation and use of fixatives and stains.	2

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4	Preparation of micro slides and identification of various stage of cell division.	4
5	Monohybrid ratio and its modification.	1
6	Test of goodness of fit of genetic ratio.	1
7	Study of different types of gene interaction and modifications of typical dihybrid f2 ratio.	3
8	Study and detection of linkage in f2 and test cross progeny.	1
9	Demonstration of structural aberrations and polyploidy.	2

References:

1. Gupta P.K.2004. Cytology, Genetics and evolution. Rastogi Publications, Meerut. (HindiEdition)
2. Kaushik, M.P.2003. A text Book of Modern Botany. Prakash publications, Muzaffarnagar(UP)
3. Klug, W.W.AndCummings, M.R.2005.Concepts of genetics Pearson Education (Singapore) pvt. Ltd., Indian Branch, Pratap Ganj, NewDelhi.
4. Singh,B.D.2001.Kalyani Publishing House, NewDelhi.
5. Strickberger, M.W.2001.Genetics. Prentice Hall of India. Pvt. Ltd., NewDelhi.

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6. Shekhawat, A.S.andTripathi, B.K., 2009. A practical manual on Element of Genetics. Publish by College of Agriculture,Bikaner.

Course Outcome -1 Students will be able to understand the soil genesis and how the rocks are forming in the soil. The students will able to understand about the availability of various minerals.
2 Students will be able to understand the soil structure and texture during forming with their porosity.
3 Students will be able to understand about the different type of the soil in the different region of the country.
4 Students will be able to understand the soil reaction-pH, acidity and alkalinity, buffering, effect of pH on nutrient availability; soil colloids - inorganic and organic.
5 Students will be able to illustrate the macro and micro-organism availability in the soil and they are polluted the soils.

BAG113 Introduction toSoilScience 3(2+1)

Theory:

Soil: Pedological and edaphological concepts. Origin of the earth, Earth's crust, Composition, Rocks and minerals. Weathering, Soil formation factors and processes, Components of soils. Soil profile, Soil physical properties, Soil texture, Textural classes, Particle size analysis, Soil structure, Classification, Soil aggregates, significance, Soil consistency, Soil crusting, Bulk density and particle density of soils & porosity and their significance and manipulation. Soil colour, Soil water,Retentionandpotentials,Soilmoistureconstants,Movementofsoilwater,Infiltration,Percolation,Permeability, Drainage. Methods of determination of soil moisture.Thermal properties of soils, Soil temperature, Soil air, Gaseous exchange, Influence of soil temperature and air on plant growth. Soil colloids: Properties, nature, types and significance; Layer silicate clays, and sources of charges. Adsorption of ions, Ion exchange, CEC&AEC,Soilreactionandbufferingcapacity.Factorsinfluencingionexchangeand itsSignificance.Problemsoils – acid, salt affected and calcareous soils, characteristics. Reclamation – mechanical, chemical and biological methods. Irrigations water – Quality of irrigation water and its appraisal. Indian standards for water quality. Use of saline water for agriculture.

Practical:

Collection and processing of soil sample. Identification of rocks and minerals. Determination of bulk density and particle density, Soil moisture determination, Soil moisture constants – Field capacity, permanent wilting point, Water holding capacity Infiltration rate, Soil texture and mechanical analysis, Soil temperature, Soil analysis for CEC, pH, EC, soluble cations & anions.

Lecture schedule: Theory

S.No.	Topic	No. of lectures
1.	Pedological and edaphological concepts	1
2.	Origin of earth crust, definition and composition	1
3.	Rocks and minerals and their classification	1
4.	Physical, chemical and biological weathering of rocks	2
5.	Factors of soil formation, fundamental and specific soil forming processes	2
6.	Components of soil and soil profile	1
7.	Soil Texture, classifications of soil separates, importance of soil texture, particle size analysis. Stoke's law	1
8.	Soil structure and types of soil structure, mechanism of soil structure formation, management of soil structure.	2
9.	Soil aggregate and its significance in agriculture and factors alternating stable soil aggregates	1
10.	Dry, moist and wet soil consistence, agricultural significance, factors affecting it, Atterberg's limit and constants of soil consistency	1
11.	Soil crusting and its formation and management	1
12.	Bulk density, particle density and porosity, factors affecting them, agricultural significance and manipulation	1
13.	Soil colour and expression of soil colour with munsell soil colour chart	1
14.	Soil water classification, forces of soil water retention and potential	2
15.	Movement of soil water-Infiltration, percolation, permeability and drainage and factors affecting it	2
16.	Methods of soil moisture determination :- Gravimetric method, Electrical resistance and Neutron scattering method	1
17.	Thermal capacity, conductivity and diffusivity, Soil temperature: and factors affecting soil temperature in relation to plant growth soil temperature in relation to plant growth	1
18.	Soil aeration ,gaseous exchange and its composition in relation to plant growth	1
19.	Soil colloids, types of soil colloids and their significance	2

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20.	1:1, 2:1and 2:1:1 types of layer silicates, their structure and characteristics, sources of charges on soil colloids.	2
21.	Cation and anion exchange phenomenon and factors influencing ion exchange and significance	1
22.	Adsorption of ions, soil reaction and buffering capacity	1
23.	Characteristics of acid, salt affected and calcarious soils	1
24.	Reclamation of acid, salt affected and calcarious soils	1
25.	Quality of irrigation water, appraisal, standards and use in agriculture	1

Lecture schedule—Practical

S. No	Topic	No. of lectures
1.	Collection and processing of soil samples and identification of rocks and minerals.	1
2.	Determination of soil aggregates	1
3.	Determination of bulk density of undisturbed soil by core sampler method.	1
4.	Determination of bulk density of disturbed soil by R D bottle methods	1
5.	Determination of particle density of soil by R D bottle and computation of porosity of soil	1
6.	Determination of lower and upper plastic limit of soil	1
7.	Determination of field capacity, permanent wilting point of soil and WHC	2
8.	Determination of infiltration rate of soil	1
9.	Mechanical analysis of soil by hydrometer method	1
10.	Determination of soil temperature	1
11.	Determination of CEC of soil	2
12.	Determination of pH and EC of soil and estimation of soluble cations and anions in soil extract	2
13.	Determination of gypsum requirement of sodic soil	1
14.	Determination of lime requirement of acid soil	1

References:-

1. Sharma, N.L. & Singh, T.B. (1996) Soil Science (Hindi ed.) Rama pub. House, Barot Merrut (U.P)
2. Baver, L.D. Gardener, W.H. and gardener W.R.(1976) Soil Physics Wiley Eastern Ltd,NewDelhi
3. Biswas, T.D. and Mukherjee, S.K. (2006) Text book of soil science.Tata McGraw Hill publishing Co. Ltd, NewDelhi
4. Brady, N.C. and Weil, R.R. (2002) The nature and properties of soils, prentiee hall of India Pvt. Ltd, M-97, Connaught Circus, NewDelhi
5. Das, D.K. (2002) Introductory Soil Science, Kalyani publisher, NewDelhi
6. Rai, M.M. (2002) Principal of Soil Science Mac Millan India Ltd, NewDelhi
7. Mehra R.K. (2004) Text book of Soil Science, ICAR, NewDelhi
8. ISSS (2002) Fundamentals of Soil Science, Div. of Soil Science, IARI,NewDelhi
9. Chopra S.L. and Kanwar, J.S. (1991) Analytical Agricultural Chemistry, Kalyani publisher,Ludhiana
10. Jackson, M.L. (1973) Soil chemical analysis, Prentice Hall of India, Pvt. Ltd NewDelhi
11. Piper, C.S. (1950) Soil and plant analysis. .Hans publications,Bombay
12. Richards, L.A. (1960) Diagnosis and improvement of saline and alkali soils., USDA agriculture Hand book 60, Washington D.C.,USA
13. Gupta, I.C. & Sharma, S.K. (1988) Crop production in salt affected soils, Oxford and IBH Publication, NewDelhi.
14. Agrawal, R.R., Yadav, J.S.P. & Gupta, R.N. (1982) Saline and alkali soils of India. ICAR, New Delhi.

Course Outcome - 1.Students will be able to evaluate and apply key concepts related to socio economic conditions of the rural people by utilizing the natural resources.
2.Students will be able to critically assess that how the rural societies are living in the various community, culture and traditions.
3.Students will be able to familiar with the back ground of the rural area and their institutions by applying critical analysis.
4.Students will able to identify about rural family life, their folkways, culture and survival of people with the nature.
5.Students will be known about the psychology of the people in rural area by adopting psychomotor method that will help to identify the basic needs of the people.
6. Students will be able to implement their idea to promote the various policies and programme for betterment of the society in practically.

BAG114 **Dimensions ofAgriculturalExtension** **2(1+1)**

Theory:

Education- Meaning, Definition, Types-Formal, Informal and Non-formal Education. Extension Education - Meaning,

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Definition, Concept, Objectives, Principles, Scope and Importance. Development programmes of pre- independence era – Sriniketan, Marthandam, Gurgaon experiment and Gandhian constructive programme with special reference to year of start, objectives and activities. Development Programmes of post-independence era- Etawah Pilot Project, Community Development Programme–Meaning, Definition, Concept, Objectives, Difference between Community Development and Extension Education, National Extension Service. Panchayati Raj System/Democratic Decentralization/Three tiers system of Panchayati Raj–Concept,Meaning, Organizational set-up and Functions. Agricultural Development Programmes with reference to year of start, objectives & salient features- Institution Village Linkage Programme (IVLP), National Agricultural Technology Project (NATP), ATMA, ATIC, KVK &NAIP. Poverty Alleviation Programmes- Integrated Rural Development Programme (IRDP), Swarna Jayanti Gram Swarojgar Yojana (SGSY),National Rural employment act (NREGA). Reorganized Extension System (T & V System) – Concept &Methodology.

Practical:

Visit to KVK/ Extension Wing/ ATIC/ ATMA to study their functioning. Visit to Panchayati Raj Institutions to study the functioning of Gram Panchayat (GP) & Other Institutions. Visit and study the District Rural Development Agency (DRDA). Visit to a village to study the Self Help Groups (SHG). Visit to a voluntary organization to study the developmental activities. Organizing PRA techniques in a village to identify the agricultural problems.

Lecture schedule:Theory

S.No.	Topic	No.of lectures
1.	Education- Meaning, Definition, Types-Formal, Informal and Non-formal Education.	1
2.	Extension Education - Meaning, Definition, Concept, Objectives, Principles, Scope and Importance.	2
3.	Development programmes of pre-independence era– Sriniketan, Marthandam, Gurgaon experiment and Gandhian constructive programme with special reference to year of start, objectives and activities.	2
4.	Development Programmes of post-independence era-Etawah Pilot Project,	1
5.	Community Development Programme–Meaning, Definition, Concept,	1
	Objectives,Difference between Community Development and Extension Education,	
6.	National Extension Service.	1
7.	Panchayati Raj System/ Democratic Decentralization/ Three tiers system of Panchayati Raj – Concept, Meaning, Organizational set-up and Functions.	1
8.	Agricultural Development Programmes with reference to year of start, objectives & salient features- Institution Village Linkage Programme(IVLP),	1
9.	National Agricultural Technology Project (NATP), ATMA, ATIC, KVK & NAIP.	2
10	Poverty Alleviation Programmes- Integrated Rural Development Programme (IRDP), Swarna Jayanti Gram Swarojgar Yojana (SGSY)	2
11	National Rural employment act (NREGA).	1
12	Reorganized Extension System (T & V System) – Concept & Methodology.	1

Lecture schedule: Practical

S.No.	Topic	No.of lectures
1.	Visit to KVK/ Extension Wing/ ATIC/ ATMA to study their functioning.	3
2.	Visit to Panchayati Raj Institutions to study the functioning of Gram Panchayat (GP) & Other Institutions	3
3.	Visit and study the District Rural Development Agency (DRDA).	3
4.	Visit to a village to study the Self Help Groups (SHG).	2
5.	Visit to a voluntary organization to study the developmental activities.	3
6.	Organizing PRA techniques in a village to identify the agricultural problems.	2

References:

1. Dhama, O.P. & Bhatnagar, O.P.1985. Education and Communication for Development, Oxford &IBH Publishing Co. New-Delhi.
2. Kelsey, L.D. & Hearne, C.C. 1963. Cooperative Extension Work: Cornell University Press, New York,USA.
3. Ray, G.L. 2003. Extension Communication and Management, Naya Prakash, 206 Bidhan Sarni,Calcutta-6.
4. Reddy, A.A. 1993. Extension Education, Shri Laxmi Press,Baptala.

Course Outcome -1. Demonstrate theory and practical skills in microscopy and their handling techniques and staining procedures

2. Know various culture media and their applications and also understand various physical and chemical means of sterilization

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3. Understand the basic microbial structure and function and study the comparative characteristics of prokaryotes and eukaryotes and also understand the structural similarities and differences among various physiological groups of bacteria
4. Know about role of microbes in soil fertility and crop production
5. Develop an understanding about the beneficial effect of soil microorganisms on plant community
6. **Understand the nutrient sources and cycles**

BAG115 AgriculturalMicrobiology 3 (2+1)

Theory:

History of microbiology: Theory of spontaneous generation, role of microbes in fermentation, germ theory of disease, protection against infections. Applied areas of microbiology, Metabolism in bacteria: ATP generation, chemoautotrophy, photoautotrophy, respiration, fermentation. Bacteriophages: structure and properties - Lytic and lysogenic cycles: viroids, prions. Bacterial genetics: Genetic recombination, transformation, conjugation and transduction. Genetic engineering, plasmids, episomes, genetically modified organisms. Soil microbiology: microbial groups in soil; microbial transformations of carbon, nitrogen, phosphorus and sulphur; Biological nitrogen fixation. Plant microbe interaction.Rhizosphere and phyllosphere microflora. Beneficial microorganism in agriculture: biofertilizers – Rhizobium, mycorrhiza, azolla; microbial insecticides, microbial agents for control of plant diseases .Microbes in composting. Microbiology of water: marine water, fresh water, potable water; Food microbiology: microbial spoilage and food preservation. Biodegradation of pesticides.Biogasproduction.

Practical:

Acquaintance with equipments, glasswares *etc*. in microbiology laboratory. Acquaintance with microscope. Disinfection and sterilization methods. Preparation of culture media for fungi and bacteria. Isolation of microbes from infected plant parts. Isolation and purification of bacteria by streak plate method. Staining and slide preparation of fungi. Staining of bacteria-simple and differential staining. Staining of endospore. Determination of quality of milk sample by methylline blue reductase test. Enumeration of bacteria present in soil and water.

Lecture schedule: Theory

S.No.	Topic	No. of lectures
1	History of microbiology : Theory of spontaneous generation, role of microbes in fermentation, germ theory of disease, protection against infections	2
2	Applied areas of microbiology	1
3	Metabolism in bacteria: ATP generation	1
4	Chemoautotrophy, photoautotrophy, respiration, fermentation	3
5	Bacteriophages : structure and properties - Lytic and lysogenic cycles	2
6	Viroids, prions	1
7	Bacterial genetics: Genetic recombination, transformation, conjugation and transduction	3
8	Genetic engineering, plasmids, episomes, genetically modified organisms	2
9	Soil microbiology : microbial groups in soil	1
10	Microbial transformations of carbon, nitrogen, phosphorus and sulphur	3
11	Biological nitrogen fixation: symbiotic and non symbiotic nitrogen fixation	2
12	Plant microbe interaction. Rhizosphere and phyllosphere microflora	2
13	Beneficial microorganism in agriculture : biofertilizers – *Rhizobium*, mycorrhiza, *Azolla*	2
14	Microbial insecticides	1
15	Microbial agents for control of plant diseases	1
16	Microbes in composting	1
17	Microbiology of water : marine water, fresh water, potable water	1
18	Food microbiology : microbial spoilage and food preservation	1
19	Biodegradation of pesticides	1
20	Biogas production	1

Lecture schedule: Practical

S.No.	Topic	No. of lectures
1	Acquaintance with equipments, glasswares etc. in microbiology laboratory	1
2	Acquaintance with microscope	1
3	Disinfection and sterilization methods	1
4	Preparation of culture media for fungi	1
5	Preparation of culture media for bacteria	1
6	Isolation of microbes from infected plant parts	2
7	Isolation and purification of bacteria by streak plate method	1
8	Staining and slide preparation of fungi	2
9	Staining of bacteria- simple and differential staining	2
10	Staining of endospore	1

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11	Determination of quality of milk sample by methylene blue reductase test	1
12	Enumeration of bacteria present in soil	1
13	Enumeration of bacteria present in water	1

References:

1. Biswas, T.D. and Mukherjee, S.K. 1990. Text Book of Soil Sciences, Tata McGraw-Hill Publishing Company Limited, NewDelhi.
2. Mukherjee, N. and Ghosh T. 1998. Agricultural Microbiology, Kalyani Publishers, NewDelhi.
3. Pelczar, Jr. Michel J. Chan, E.C.S. and Krieg, Noel R. 1997. Microbiology. Tata McGraw - Hill Edition, 1993.India.
4. Rangaswami,G.andBagyaraj,D.J.1993.AgriculturalMicrobiology.PrenticeHallofIndiaPvt.Limited,NewDelhi.
5. Rao, N.S. 2000. Soil Microbiology, Oxford &IBH Publishing Co. Pvt. Ltd., NewDelhi.
6. Vishunavat, K. and Kolte, S.J. 2005. Essentials of Phytopathological Techniques. Kalyani Publishers, NewDelhi

Course Outcome – 1. Knowledge about computer and how it is helpful in agriculture field.
2. Technology friendly , improve in students personality.
3. help in agricultural based industrial job
4. practically knowledge giving which help there seminar, complete other project.
5. The ability to present oneself in the business, corporate and digital world.

BAG116 Introduction toComputerApplications 2(1+1)

Theory:

Historical Evolution of Computers, Computer System Concepts, Capabilities and Limitations, Types of computer: Analog, Digital, Hybrid, General Purpose, Special Purpose, Micro, Mini, Mainframe, Super, Generations of Computers, Type of PCs- Desktop, Laptop, Palmtop etc. their Characteristics, Computer Security, Basic Components of Computer System CPU, Input/Output and Memory, their Functions and Characteristics. Memory-RAM, ROM, EPROM, PROM and other type of Memory, Keyboard, Mouse, Digitizing Tablets, Scanners, Digital Cameras, MICR, OCR, OMR, Bar Code Reader, Voice Recognition, Light Pen, Touch Screen, Input/Output Devices, Monitors-Analog, Digital and Characteristics-size, Resolution, Video Standard-VGA, SVGA, XGA etc. Printers-Dot Matrix, Inkjet, Laser, Line Printer, Plotter, Sound Card and Speakers, Various Storage Devices- Magnetic Tape, Magnetic Disk, Cartridge Tape, Hard Disk Device, Floppy Disk, Optical Disk- CD, VCD, CD-R, CD-RW, DVD, Zip Drive, MS-Windows: Introduction to MS-Windows, Concept of GUI, Desktop and its elements, Windows explorer, Control Panel, Accessories, Running Application under MS Windows, Advantages and LimitationofWindows,variousVersionsofwindowsLike(Win95,98,WinME,

2000 XP), Hardware requirement for Windows XP, Basic concept of MS Word Processor, MS Excel, MS Power Point, Features of word processing packages, MS Excel packages, Power Point Package. Internet: world Wide Web (WWW), Concept, Web Browsing and Electronic Mail, concept of Networking.

Practical:

Study of Computer Components; Booting of Computer and its Shut Down; Practicing WINDOWS Operating System, Use of Mouse and Keyboard, Title Bar, Start Menu, Minimum, Maximum and Close Buttons, Scroll Bars, Menus and Tool Bars; Setting time and date, Starting and Shutting down of Window, WINDOWS Explorer, Creating File and Folders, COPY and PASTE functions, MS-Word: Introduction to MS Word. Creating a Document, Saving and Editing, Word Proofing Tools- Using Spelling Checker, Working with Grammar Checker, Using Thesaurus, Working with Auto Text Feature in Word, Using Auto Correct Feature, Word Count. Text Formatting, Document Formatting (Page Formatting), Alignment of text, Creating Tables, Merging of Cells, Column and Row width and Chart in Word, Working with Mail Merge, Graphics and Web Pages in word, MS-Power Point: Introduction to MS Power Point. Power Point Slide Creation, Slide Show, Editing, Animation,AddingaPicture,AddingGraphics,Formatting,Customizing,PrintingandOtherinbuiltAdditionalFunction.

MS Excel: Introduction to MS Excel. Creating a Spreadsheet, Editing and saving. Working with Toolbars, Formatting, Formulas, Data Management, Graphs & Chart, Macros, Goal Seek Pivot Table, Financial Functions and Other inbuilt Additional Function. Data Analysis using inbuilt Tool Packs, Correlation & Regression. Internet Browsing: Browsing a Web Page and Creating of E-MailID.

Lecture schedule:Theory

S. No.	Topics	No.of lectures
1.	Historical Evolution of Computer, Computer System Concepts, Capabilities and Limitations	1
2.	Types of computer: Analog, Digital, Hybrid, General purpose, Special Purpose, Micro, Mini, Mainframe, Super, Generations of Computer, Type of PCs- Desktop, Laptop, Palmtop etc. their characteristics	2
3.	Computer Security, Basic Components of Computer System CPU, Input/output and Memory, their Functions and Characteristics. Memory-RAM, ROM, EPROM, PROM and other type of Memory	1
4.	Keyboard, Mouse, Digitizing Tablets, Scanners, Digital Cameras, MICR, OCR, OMR, Bar code Reader, Voice Recognition, Light Pen, Touch Screen, Input/output Devices	2

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5.	Monitors-Analog, digital and Characteristics-size, Resolution, Video Standard- VGA, SVGA, XGA etc.	2
6.	Printers-Dot Matrix, Inkjet, Laser Line Printer, Plotter, Sound Card and Speakers	2
7.	Various Storage Devices- Magnetic Tape, Magnetic Disk, Cartridge Tape, Hard Disk Device, Floppy Disk-CD, VCD, CD-R, CD-RW, DVD, Zip Drive	2
8.	MS-Windows: Introduction to MS-Windows, Concept of GUI, Desktop and its elements, Windows explorer, Control Panel, Accessories, Running Application under MS Windows, Advantages and limitation Of Windows, various Versions of windows Like (win 95,98,Win ME,2000 XP), Hardware requirement for Windows XP	2
9.	Basic concept of MS Word Processor, MS Excel, MS Power point, Features of word processing Packages, MS Excel packages, Power Point Package. Internet: World Wide Web (WWW), Concept, Web Browsing and Electronic Mail, Concept of Networking	2

Lecture schedule:Practical

S. No.	Topics	No. of lectures
1.	Study of Computer Components; Booting of Computer and its Shut Down; Practicing WINDOWS Operating System, Use of Mouse and Keyboard, Title bar, Start menu, Minimum, Maximum and Close Buttons, Scroll Bars, Menus and Tool Bars; Setting time and date, Starting and Shutting down of Window, WINDOWS Explorer, Creating File and Folders, COPY and PASTE Functions	2
2.	Introduction to MS Word. Creating a Document, Saving and Editing, word Proofing Tools-Using Spelling Checker, Working with Grammar Checker,	2
3.	Using Thesaurus, Working with Auto Text Feature in Word Using Auto Correct Feature, Word Count. Text Formatting, Document Formatting (Page Formatting), Alignment of text,	2
4.	Creating Tables, Merging of Cells, Column and Row width and Chart in Word, Working with Mail Merge, Graphics and Web pages in word	2
5.	Introduction to Power Point. Power point Slide Creation, Slide Show, Editing, Animation	2
	Adding a Picture, Adding Graphics, Formatting, Customizing, Printing and Other inbuilt Additional Function	
6.	Introduction to MS Excel. Creating a Spreadsheet, Editing and saving. Working with Toolbars, Formatting, Formulas, Data Management, Graphs &	2
7.	Chart, Macros, Goal Seek Pivot Table, Financial functions and other inbuilt Additional Function. Data Analysis using inbuilt Tool Packs, Correlation & Regression	2
8.	Internet Browsing: Browsing a Web Page and Creating of E-Mail ID.	2

References:

1. Sinha, P.K. Computer Fundamentals (BPBPublications).
2. Niranjan Mansal and Jayshri Saraogi Computer Made Easy For Beginners(Hindi)
3. Satish Jain, Shashank Jain and Madhullika Jain. It Tools and Applications (BPBPublications)
4. MS Office 2000. JoeHabraken
5. Rapidex Computer Course (PustakMahal)
6. Davinder Singh Minhas- Dynamic Memory Computer Course (Fusin Books), NewDelhi.

Course Outcome -1. Understand and calculate the different matrix
CO 2. Understand the concept of determinates, matrices, matrix, addition and matrix multiplication etc.
CO 3. Know the basis of evolution
CO 4. Learn the solution of linear equations using by crammers rule.

BAG117 **ElementaryMathematics** **2(2+0)**

Functions and limits, continuity, differentiation of various types of functions; sum, product and quotient of functions, function of functions, parametric equations, successive differentiation, equations of tangent and normal, maxima and minima, methods of integration including integration by parts, definite integrals, application of definite integrals in finding areas under curves. Determinants, matrices, matrix addition and matrix multiplication, transpose of matrix, solution of linear equations using crammer'srule.

Lecture schedule: Theory

S. No.	Topic	No. of lectures
1.	Functions, Evaluation of Functions, Operations with functions	2
2.	Limits,continuity, $\lim_{x \to a} \frac{x^n - a^n}{x - a}$	2

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3.	Limits $\lim_{x \to 0} \frac{\sin x}{x}$, $\lim_{n \to \infty} \left(1 + \frac{1}{n}\right)^n$	2
4.	Differentiation Formulas for various types of functions, differentiation of sum and product of functions	2
5.	Quotient Rule, function of functions	2
6.	Differentiation of function of functions, Parametric Equation	2
7.	Equations of Tangent and Normal	2
8.	Successive differentiation	1
9.	Maxima and minima	2
10.	Integration Formulae	1
11.	Integration by Substitution	2
12.	Integration by Parts	2
13	Definite Integration	1
14	Area under curves	2
15	Matrices, Matrix Addition, equality of matrices, square matrix, identity, null matrix	2
16	Subtraction, Scalar Multiplication, Matrix Multiplication, Transpose of a Matrix	2
17	Determinants 2*2, 3*3	1
18	Symmetric, skew-symmetric matrix, Cramer's rule for solving system of linear equations,	2

Course Outcome -1: Ability to design a language component or process to meet desired need within realistic, Constraints such as economic, environmental, social, political, ethical, scenario
2: Ability to use English practically in everyday life and professional life.
3: An understanding of academic writing skills to be used in the corporate field.
4: The ability to present oneself in the business, corporate and digital world.

BAG118 Comprehensive and Communication SkillsinEnglish 3 (2+1)

Theory:

Comprehension: Text for Comprehension: **Current English for Colleges**, by N.Krishnaswami & T. Sriraman (Macmillan India Limited, Madras, 1995), **Grammar & usage:** Tenses, Active/Passive Voice, Reported Speech, Prepositions, Phrasal Verbs, Concord, Determiners, **Vocabulary:** Synonyms, antonyms, homonyms, homophones, **Composition:** a) Letter and Application Writing: Personal/Business Correspondence, Preparation of Curriculum vitae and job applications. b) Précis writing.

Practical:

Phonetics (symbols) and transcriptions. Listening Comprehension: Listening to at least two tape recorded conversations aimed at testing and listening comprehension of students. Spoken English practice by using Audiovisual aids ,oral presentation of reports, one presentation by individual on the given topics related to Agriculture like WTO , developing new technology in Agriculture, , Bio fertilizers etc. Reading skills: using dictionary, rapid reading, intensive reading. Practice of Presentation by using Power Point and DataProjector

.Group discussion and debates on current topics.

Lecture schedule: Theory

S.No.	Topic	No. of lectures
1.	Textfor Comprehension: **Current English for Colleges**, by N.Krishnaswami & T. Sriraman (Macmillan India Limited, Madras,1995	10
2.	**Grammar & usage:** Tenses	2
3.	Active/Passive Voice	2
4.	Reported Speech, Prepositions,	2
5.	Phrasal Verbs,	1
6.	Concord	1
7.	Determiners	1
8.	**Vocabulary:** Synonyms	1
9.	antonyms,	2
10.	homonyms, homophones	2
11.	**Composition:** a) Letter and Application Writing:	2
12.	Personal/Business Correspondence,	2
13.	Preparation of Curriculum vitae and job applications. b)	2
14.	Précis writing	2

Lecture schedule: Practical

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S. No.	Topic	No. of lectures
1.	Phonetics (symbols) and transcriptions.	2
2.	Listening Comprehension: Listening to at least two tape recorded conversations aimed at testing and listening comprehension of students	2
3.	Spoken English practice by using Audiovisual aids,	1
4.	Oral presentation of reports,	2
5.	One presentation by individual on the given topics related to Agriculture like WTO ,	2
6.	Developing new technology in Agriculture, like Bio fertilizers etc.	1
7.	Reading skills: using dictionary	1
8.	Rapid reading, intensive reading	1
9.	Practice of Presentation by using Power Point and Data Projector	2
10.	Group discussion and debates on current topics	2

References:

1. Thomson and Martinet (1995) *"A Practical English Grammar" OUPPublication*
2. Thomson and Martinet (1997) *"A Practical English Grammar, Exercise Books Vol. I & II"OUPPublication*
3. Michal Swan(1995) *"A Practical English Grammar"OUPPublication*
4. David Green (1990) *"Contemporary English Grammar Structure Composition"*McMillan.
5. A.S. Hornby (1997) *"Advance Learner's Dictionary" OUPPublication*
6. S. Allen (1997) *"Living English Structure"* OrientLongman
7. Daniel Jones (1997) *"Drills and Tests in English Sounds"*ELBS
8. Krishnamohan " *Speaking English Effectively"*McMillan
9. *Work Book of Indira Gandhi National Open University, Delhi.* (Course No. Feg.1,Feg.2 andFeg.3)

Audiovisual tapes prepared by British Council, New Delhi and CIEFL, Hyderabad.

Course Outcome - 1. Understand various streams of Yoga.
2.Know procedure and techniques of doing various Asansas.
3.Know the benefits of Asanas with various types of Pranayams.
4. Practice Asanas Pranayams and Meditation.
5. Understand relaxing Yogic Asanas and Exercises.
6. Know concept of Yogic food.

BAG119 **NCC/NSS/PhysicalEducation** **1(0+1)**

NSS: Orientation of students in national pprogrammes, study of philosophy of NSS, fundamental rights, directive principles of state policy, socio-economic structure of Indian society, population problems, brief of five year plan. Functional literacy, non formal education of rural youth, eradication of social evils, awareness programmea, consumer awareness, highlights of consumer act. Environment enrichment and conservation, health, family welfare andnutrition.

NCC: Introduction to NCC, defence services, system of NCC training, foot drill, sizing, forming up in three ranks, open and close order march, dressing, getting on parade, dismissing and falling out, saluting, marching, arms drill, shoulder arm, order arm, present arm, guard of honour, ceremonial drill, weapon training- rifle bayonet, light machine gun, sten machine carbine. Introductionand characteristic stripping, assembling and cleaning, loading, unloading and firing. Field craft, visual training, targets, judging distance, fire discipline and fire control orders, battle craft, field signals, description of ground, secti on formation, section battle drill, scouts and patrols, ambush, field engineering, map reading, conventional signs, grid systems, use of service protractor, prismatic compass and its use, self defence, general principles, precautions and training, attacks and counter attacks, marching and searching, first aid, hygine and sanitation, civil defence, leadership and NCC song.

Physical Education: Introduction to physical education. Posture, exercise for good posture, physical fitness exercises agility, strength, coordination, endurance and speed. Rules and regulations of important games, skill development in any one of the games- football,hockey, cricket, volleyball,, badminton, throw ball, tennis. Participation in one of the indoor games- badminton, chess and table tannis. Rules and regulations of athletic events, participation in any one of the athletic events- long jump, high jump, triple jump, javlin throw, discuss throw, shot put, short and long distance runnings. Safety education, movement education, effective way of doing day to day activities. First - aid training, coaching for major games and indoor games. Asans and indigenous way for physical fitness and curative exercises. Exercises and games for leisure time, use and experiences.

Note: *Warming up and conditioning exercises are compulsory before the commmencemewnt of each class.*B.

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Course Outcome - 1.Students will be able to articulate and retain knowledge relevant to agro meteorology.
2. Students will be able to gain the information of weather and climate which are considered as basic input in agriculture planning viz. land preparation, ploughing, harrowing etc.
3. Students will be able to explain weather hazards, weather forecasting and impact of climate change on agriculture.
4. Students will be able to acquaint with the meteorological instruments and recording the observation from the agro meteorological observatory.

BAG121 **AgriculturalMeteorology** **2(1+1)**

Theory:

Atmosphere- its composition, extent and structure; Atmospheric weather variables; Atmospheric pressure, its variation with height; Daily and seasonal variation of wind speed and direction, cyclones, anticyclones and air masses; Nature and properties of solar radiation, solar constant, depletion of solar radiation, short wave and thermal radiation ,net radiation, albedo; Atmospheric temperature, daily and seasonal variations of temperature, heat balance of earth and global warming; Atmospheric humidity, concept of saturation, vapor pressure, process of condensation, formation of dew, fog, mist, frost, snow, rain and hail; Precipitation, cloud formation and movement; Agriculture and weather relations; Introduction to monsoon; Use of weather data for irrigation scheduling, pesticide sprays, fertilizer application; Climatic normals for crop production, Basics of weatherforecasting.

Practical:

Agro-meterological observatory – its site selection, installation and exposure of instruments, weather data recording; Measurement of total solar radiation, short wave and long wave radiation, albedo and sunshine duration; Maximum and minimum air temperature, soil temperature, dew point temperature; Determination of vapor pressure, relative humidity, atmospheric pressure, wind speed and wind direction; Measurement of rain, open pan evaporation and evapo-transpiration; Processing, tabulation and presentation of weather data.

Lecture schedule :Theory

S.No.	Topic	No. of lectures
1.	Atmosphere its composition, extent and structure.	1
2.	Introduction to atmospheric weather variables.	1
3.	Introduction to atmospheric pressure, its variation with height, cyclones and anticyclones	1
4.	Daily and seasonal variation of wind speed and direction and air masses	1
5.	Nature and properties of solar radiation, solar constant, depletion of solar radiation	1
6.	Short wave and thermal radiation, net radiation, albedo of soil and crops.	1
7.	Atmospheric temperature and global warming.	1
8.	Daily and seasonal variations of temperature, heat balance of earth.	1
9.	Atmospheric humidity, concept of saturation and vapor pressure	1
10.	Process of condensation, formation of dew, fog, mist.	1
11.	Formation of frost, snow and rain and hail	1
12.	Precipitation, cloud formation and movement.	1
13.	Agriculture and weather relations, use of weather data for irrigation scheduling, pesticide spray & fertilizer application.	1
14.	Monsoon – meaning, types and characteristics	1
15.	Climatic normals for crop production.	1
16.	Basics of weather forecasting	1

Lecturer schedule: Practical

S.No.	Topic	No. of Lectures
1.	Agro-meteorological observatory site selection, installation and exposure of instruments	1
2.	Handling of meteorological instruments and weather data recording	1
3.	Measurement of total solar radiation	1
4.	Measurement of long and short wave radiation	1
5.	Measurement of albedo and sunshine duration	1
6.	Measurement of maximum and minimum air temperature	1
7.	Measurement of soil temperatures	1
8.	Measurement of dew point temperature	1

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9.	Determination of vapor pressure and calculation of relative humidity	1
10.	Measurement of atmospheric pressure	1
11.	Measurement of wind direction and speed	1
12.	Measurement of rainfall	1
13.	Measurement and determination of open-pan evaporation	1
14.	Processing of weather data	1
15.	Tabulation of weather data	1
16.	Presentation of weather data	1

References:

1. Sacheti,A.K. 1985. Agricultural Meteorological Instructional Cum Practical Manual (Ed.) NCERT Publication, NewDelhi.
2. Mavi, H.S. 1994, Introduction to Agrometeorology, Oxford &IBH Publishing Co., NewDelhi.
3. Lal, D.S. 2005 Climatology, Sharda Pustak Bhawan,Allahabad..
4. Barry ,R.G. and Chorley, R.C. 1985. Atmosphere Weather and Climate. English Language Book Soc.Publication.
5. Varshneya, M.C. and Balakrishna, Pillai, 2003. Text book of Agricultural Meteorology. ICAR, New-Delhi.
6. Sahu, D.D., 2003. Agrometeorology and Remote sensing: Principles and Practices , Agrobios (India) ,Jodhpur.
7. Murithy, K, and Radha, V. 1995. Practical Manual on Agricultural Meteorology , Kalyani Publishers,New-Delhi

Course Outcome -1. Students will be able to extend the mode of reproduction and genetic consequences.
2. Students will be learning about the breeding procedures in self and cross pollinated crops.
3. Students will be able to use enumerate exploitation of heterosis utilizing male sterility and other methods.
4. Students will be learn about the discuss of fundamentals of mutation, polyploidy etc. in crop improvement
5. Students will be learn about the associate role of biotechnology in crop improvement.

BAG122 **Principles of PlantBreeding** **3(2+1)**

Theory:

Introduction to ecological and taxonomical classification of plants. Historical development, nature and role of plant breeding. Modes of reproduction (Sexual, asexual and vegetative) and their relation with plant breeding. Fertility regulatory mechanisms (incompatibility, male sterility and apomixes),their classification and importance in plant breeding. Inheritance of qualitative and quantitative characters and heritability. Pure line theory and genetic basis of selection. Hardy- Weinberg law. Heterosis and theories of Heterosis and inbreeding depression. Germplasm resources and center of diversity. Domestication, introduction and acclimatization in relation to plant improvement. Improved genotypes of different crop plant- variety, Different breeding methods oftheirdevelopment. Inbred line, different hybrids, synthetic, composite, multiline, clone, etc Polyploidy in relation to plant breeding. Mutation breeding –types, role and methods of mutation breeding. Use of biotechnology in plant breeding. Procedure for release of new variety.

Practical:

Identification of plants of different ecological groups. Floral biology of different crop plants. T.S. of ovary. Mounting of different types of ovules. Study of microsporogenesis and megasporogenesis. Study of pollen viability. Study of pollen size. Emasculation and hybridization techniques in important self and cross pollinated crops. Study of male sterility in sorghum/bajra. Calculation of mean, range, variance and standard deviation.

Lecture schedule: Theory

S. No.	Topic	No. of lectures
1	Introduction to ecological and taxonomical classification of plants.	2
2	Historical development, nature and role of plant breeding.	2
3	Modes of reproduction (Sexual, asexual and vegetative) and their relation with plant breeding.	3
4	Fertility regulatory mechanisms (incompatibility, male sterility and apomixes), their classification and importance in plant breeding.	3
5	Inheritance of qualitative and quantitative characters and heritability.	2
6	Pure line theory and genetic basis of selection.	1
7	Hardy- Weinberg law.	1
8	Heterosis and theories of Heterosis and inbreeding depression	2
9	Germplasm resources and center of diversity.	2
10	Domestication, introduction and acclimatization in relation to plant improvement.	2
11	Improved genotypes of different crop plant- variety,	2
12	Different breeding methods of their development. inbred line, different hybrids, synthetic, composite, multiline, clone, etc	3
13	Poly ploidy in relation to plant breeding.	2
14	Mutation breeding –types, role and methods of mutation breeding.	2

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15	Use of biotechnology in plant breeding	2
16	Procedure for release of new varieties	1

Lecture Schedule: Practical

S. No.	Topic	No. of lectures
1	Identification of plants of different ecological groups.	2
2	Floral biology of different crop plants.	4
3	T.S. of ovary. Mounting of different types of ovules.	1
4	Study of microsporogenesis and megasporogenesis.	2
5	Study of pollen viability. Study of pollen size.	1
6	Emasculation and hybridization techniques in important self and cross pollinated crops.	4
7	Study of male sterility in sorghum/bajra.	1
8	Calculation of mean, range, variance and standard deviation.	1

References:

1. Alard, R.W. 2000.Principles of Plant Breeding. John Willey & Sons, NewYork.
2. Chahel, G.S. and S.S. Ghosal.2002.Principles and Procedures of Plant Breeding, Biotechnological and Conventional Approaches. Narosa Publishing House, NewDelhi.
3. Singh, B.D. 2005. Plant Breeding. Kalyani Publishing House,NewDelhi.
4. Singh, P. 2001.Essentials of Plant Breeding-Principles andMethods.Kalyani Publishing House, New Delhi.
5. Jain, H.K. and M.C. Kharackwal.2004. Plant Breeding- Mendelian to Molecular approach. Narosa Publishing House, NewDelhi.

Course Outcome - 1. Understand and accurately apply terminology used in the field of plant pathology, and understand the fundamental differences between different types of microorganisms including bacteria, viruses, fungi, prions and protozoa.

2. Identify major principles of plant pathology and recognize the etiological agents of disease

3. Describe the concepts of what constitutes disease in plants

4. Know about concept of disease, causal agents of plant diseases, identification methods and management of crop diseases.

5. Employ methods to diagnose and manage a wide range of plant diseases

6 Understand the different factors disease spread, favorable environmental conditions and control of plant diseases

BAG123 Plant Pathogens and Principles ofPlantPathology 4 (3+1)

Theory:

Introduction, Important plant pathogenic organisms, different groups, fungi, bacteria, fastidious vesicular bacteria, phytoplasmas, spiroplasmas, viruses, viriods, algae, protozoa and phanerogamic parasites with examples of diseases caused by them. Prokaryotes: classification of prokaryotes according to Bergey's Manual

of Systematic Bacteriology. General Characters of fungi, Definition of fungus, somatic structures, types of fungal thalli, fungal tissues, modifications of thallus, reproduction in fungi (asexual and sexual). Nomenclature, Binomial system of nomenclature, rules of nomenclature, classification of fungi. Key to kingdoms and phylum, Introduction: Definition and objectives of Plant Pathology. History of Plant Pathology. Terms and concepts in Plant Pathology. Phenomenon of infection - pre-penetration, penetration and post penetration. Pathogenesis – Role of enzymes, toxins, growth regulators and polysaccharides. Defense mechanism in plants – structural and biochemical. Plant disease epidemiology. Plant Disease Forcasting - Remote sensing - General principles of plant diseases management - Importance, general Principles - Avoidance, exclusion, protection - Plant Quarantine and Inspection -Quarantine Rules and Regulations. Cultural methods - Rougeing, eradication of alternate and collateral hosts, crop rotation, manure and fertilizer management, mixed cropping, sanitation, hot weather ploughing, soil amendments, time of sowing, seed rate and plant density, irrigation and drainage. Role and mechanisms of biological control and PGPR classification of fungicides and their uses. Host plant resistance – Application of biotechnology in plant disease management -Development of disease resistant transgenic plants through gene cloning. Integrated plant disease management (IDM) - Concept, advantages andimportance.

Practical:

Acquaintance to plant pathology laboratory and equipments; Preparation of culture media for *fungi* and *bacteria;* Isolation techniques, preservation of disease samples; Study of *Pythium, Phytophthora* and *Albugo;* Study of *Sclerospora, Peronosclerospora, Pseudoperonospora, Peronospora, Plasmopara* and *Bremia;* Study of genera *Mucor* and *Rhizopus.* Study of *Oidium, Oidiopsis, Ovulariopsis, Erysiphe, Phyllactinia, Uncinula and Podosphaera;* Study of *Puccinia* (different stages), *Uromyces, Hemiliea;* Study of *Sphacelotheca, Ustilago and Tolyposporium;* Study of *Agaricus, Pleurotus and Ganoderma;* Study of *Septoria, Colletotrichum, Pestalotiopsis and Pyricularia;* Study of *Aspergillus, Penicillium, Trichoderma, and Fusarium;* Study of *Helminthosporium, Drechslera, Alternaria, Stemphyllium, Cercospora, Phaeoisariopsis, Rhizoctonia and Sclerotium;* Demonstration of Koch's postulates. Preparation of fungicides – Bordeaux mixture, Bordeaux paste. Chestnut compounds; Methods of application of fungicides – seed, soil and foliar. Visit of quarantine station and remote sensing laboratory.

Lecture schedule: Theory

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S.No.	Topics	No. of lectures
1.	Definition and objectives of plant pathology, history of plant pathology	1
2.	Terms and concepts in plant pathology	6
3.	Important Plant Pathogenic Organisms: fungi, bacteria, phytoplasma, spiroplasma, viruses, viroids, algae, protozoa and Phanerogamic parasites with examples of diseases caused by them.	2
4.	Prokaryotes: classification of prokaryotes according to Bergey's manual of systematic bacteriology.	6
5.	Definition of fungus, general characters of fungi, somatic structures, types of fungal thalli, reproduction in fungi (asexual & sexual).	2
6.	Nomenclature and classification of fungi, key to divisions and sub-divisions. Survival and dispersal of plant pathogens	1
7.	Phenomenon of infection, pre-penetration, penetration and post penetration	2
8.	Pathogenesis : Role of enzymes, toxins, growth regulators and polysaccharides	4
9.	Defense mechanism in plants – structural & bio-chemical (Pre and post infection)	2
10.	Plant disease epidemiology. Plant disease forecasting, remote sensing-General principles of plant disease management: importance, avoidance, exclusion, protection, plant quarantine and inspection, quarantine rules andregulations	4
11.	Cultural methods – rouging, eradication of alternate and collateral hosts, crop rotation, manure and fertilizer management, mixed cropping, sanitation, hot weather, ploughing, soil amendments, time of sowing, seed rate and plant density, irrigation and drainage	2
12.	Role and mechanisms of biological control and PGPR	5
13.	Physical methods– heat & chemical methods- methods of application of fungicides.	2
14.	Host plant resistance. Application of biotechnology in plant disease management.	2
15.	Development of disease resistance transgenic plants through gene cloning	4
16.	Integrated plant disease management :concepts, advantages and importance	3

Lecture schedule: Practical

S.No.	Topic	No. of lectures
1.	Acquaintance to plant pathology laboratory and equipments	1
2.	Preparation of culture media for *fungi* and *bacteria*	2
3.	Isolation techniques	1
4.	Preservation of disease samples	1
5.	Study of *Pythium, Phytophthora, Plasmopara* and *Bremia*	1
6.	Study of genera *Mucor* and *Rhizopus.*	1
7.	Study of *Oidium, Oidiopsis, Erysiphe, Phyllactinia, Uncinula and Podosphaera*	2
8.	Study of *Puccinia, Uromyces, Hemiliea, Sphacelotheca, Ustilago and Tolyposporium*	2
9.	Study of *Agaricus, Pleurotus and Ganoderma*	1
10.	Study of *Septoria, Colletotrichum, Pyricularia, Pestalotiopsis, Helminthosporium, Alternaria, Stemphyllium, Cercospora, Phaeoisariopsis, Rhizoctonia and Sclerotium*	1
11.	Proven of Koch's postulates	1
12.	Preparation of Bordeaux mixture, Bordeaux paste. Chestnut compounds	1
	Visit of quarantine station and remote sensing laboratory.	1

References:

1. Agrios, G.N. 1996. Plant Pathology, Academic Press, NewDelhi.
2. Alexopolus, C.J., Mims, C.W. and Blackwell, M. 1996. Introductory Mycology, John Wiley Estern Private Limited, NewYork.
3. Mehrotra, R.S. and Aggarawal, A. 2007. Plant Pathology. Tata McGraw Hill Publishing Co. Ltd., NewDelhi.
4. Singh, R.S. 1996. An Introduction to Principles of Plant Pathology. Oxford &IBH,NewDelhi.
5. Nene Y.L. and Thapliyal, P.N. 1993. Fungicides in Plant Diseases Control. 3rd Edn. Oxford &IBH published Co. Pvt. Ltd., NewDelhi.

Course Outcome-1.Students will be able to evaluate and apply key concepts related to identify the importance of insects' role in the world to the functioning of the terrestrial ecosystems.
2.Students will be able to critically assess role that explain how insects deal with the world around them.
3.Students will be able to use insects as examples to apply concepts and comparisons with other organisms.
4.Students will know identification and nomenclature of insects.
5.Students will be known about basics of insect pest management which will reflect on the practical implementation of IPM Programme.

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6. Students will be able to create something which will be helpful in explaining which order an insect belongs to and will be able to identify insects to the level order.

BAG124 **Insect Morphology andSystematics** **3 (2+1)**

Theory:

History of Entomology in India. Factors for insect dominance. Classification of phylum Arthropoda upto classes. **Morphology:** Structure and functions of insect cuticle and moulting. Body segmentation; structure of head, thorax and abdomen of grasshopper. Structure and modifications of insect antennae, mouth parts and legs. Wing venation, modifications and wing coupling apparatus. Sensory organs. Metamorphosis in insects. Types of larvae and pupae. Structure and functions of digestive, circulatory, excretory, respiratory, nervous, secretory (endocrine) and reproductive systems in grasshopper. Types of reproduction in insects. **Systematics:** Taxonomy -importance, history and binomial nomenclature. Definitions of species, sub-species sibling species and biotype, Classification of class Insecta up tofamilies:

Orthoptera- Acrididae Isoptera-

Termitidae Thysanoptera-

Thripidae

Hemiptera-Pentatomidae,Coreidae,Pyrrhocoridae, Lygaeidae, Cicadellidae, Delphacidae, Aphididae, Coccidae, Aleurodidae, Pseudococcidae

Lepidoptera- Noctuidae, Sphingidae, Pyralidae, Gelechiidae, Arctiidae

Coleoptera- Coccinellidae, Galerucidae, Cerambycidae, Curculionidae, Bruchidae, Melonthidae

Hymenoptera-Tenthridinidae, Apidae, Trichogrammatidae, Ichneumonidae, Braconidae

Diptera- Cecidomyiidae, Trypetidae, Tachinidae, Agromyzidae. Dictyoptera-

Mantidae, Blattidae

Practical:

Methods of collection and preservation of insects including immature stages; External features of Grasshopper/Cockroach; Types of insect antennae, mouthparts and legs; Wing venation, types of wings and wing coupling apparatus; Dissection of digestive and nervous system in insects; Study of characters of orders Orthoptera, Dictyoptera, Isoptera, Thysanoptera, Hemiptera, Lepidoptera, Coleoptera, Hymenoptera, Diptera and their families of agricultural importance.

Lecture Schedule: Theory

S.No.	Topic	No. of lectures
1.	History of Entomology in India.	1
2.	Factors for insect dominance.	1
3.	Classification of phylum Arthropoda upto classes.	1
4.	Structure and functions of insect cuticle and moulting.	2
5.	Body segmentation; structure of head, thorax and abdomen of grasshopper	2
6.	Structure and modifications of insect antennae	1
7.	Structure and modifications of insect mouth parts	2
8.	Structure and modifications of insect legs	1
9.	Wing venation, modifications and wing coupling apparatus.	2
10.	Sensory organs	1
11.	Metamorphosis in insects	1
12.	Types of larvae and pupae	1
13.	Structure and functions of digestive system in insects.	1
14.	Structure and functions of circulatory system in insects.	1
15.	Structure and functions of excretory system in insects.	1
16.	Structure and functions of respiratory system in insects.	1
17.	Structure and functions of nervous system in insects.	1
18.	Structure and functions of secretory (endocrine) system in insects.	1
19.	Structure and functions of reproductive system in insects.	1
20.	Types of reproduction in insects	1
21.	Taxonomy -importance, history and binomial nomenclature	1
22.	Definition of species, sub-species sibling species and biotype	1
Classification of class Insecta up to families		
23.	Orthoptera-Acrididae; Isoptera-Termitidae; Thysanoptera-Thripidae	1
24.	Hemiptera-Pentatomidae,Coreidae, Pyrrhocoridae, Lygaeidae, Cicadellidae, Delphacidae, Aphididae, Coccidae, Aleurodidae, Pseudococcidae	1
25.	Lepidoptera- Noctuidae,Sphingidae,Pyralidae,Gelechiidae, Arctiidae	1
26.	Coleoptera- Coccinellidae, Galerucidae, Cerambycidae, Curculionidae, Bruchidae, Melonthidae	1
27.	Hymenoptera-Tenthridinidae, Apidae, Trichogrammatidae, Ichneumonidae, Braconidae	1
28.	Diptera- Cecidomyiidae, Trypetidae, Tachinidae, Agromyzidae; Dictyoptera-Mantidae,Blattidae	1

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Lecture Schedule: Practical

S.No.	Topic	No. of lectures
1.	Methods of collection and preservation of insects including immature stages	1
2.	External features of Grasshopper/ Cockroach	1
3	Insect antennae and their modifications	1
4.	Insect mouthparts and their modifications	1
5.	Dissection of insect mouthparts	1
6.	Insect legs and their modifications	1
7	Wing venation, types of wings and wing coupling apparatus	1
8	Dissection of digestive system in insects	1
9	Dissection of nervous systems in insects	1
10	Study of characters of orders Orthoptera and Dictyoptera and their families	1
11	Study of characters of orders Isoptera, Thysanoptera and their families	1
12	Study of characters of order Hemiptera and its families	1
13	Study of characters of order Lepidoptera and its families	1
14	Study of characters of order Coleoptera and its families	1
15	Study of characters of order Hymenoptera and its families	1
16	Study of characters of order Diptera and its families	1

References:

1. Nayar. K.K, Ananthakrishnan .T.N. and David. B.V. 1976. General and Applied Entomology. Mc graw Hill publishing Co. Ltd. NewDelhi.
2. Richards O.W. and Davies R.G. 1977. Imm's General Text Book of Entomology, Vol. I &II. Chapman and Hall, London.
3. Pant. N.C. and Ghai, S. 1981. Insect Physiology and Anatomy, ICAR, NewDelhi.
4. Chapman .R.F.1974. Insect Structure and Function, ELBS Publishers NewDelhi.
5. Snodgrass.R.E .2001. Principles of InsectMorphology.
6. Mathur and Upadhyay, 2000. A Text Book of Entomology, Aman Publishing House,Meerut.

Course Outcome -1. Students would be able to know the basic terms of Economics
2. They will learn about law of diminishing marginal utility, law of equip-marginal utility
3. They will be acquainted about demand, supply, law of demand, law of supply, elasticity of demand and elasticity of supply
4. They will be familiarize about market ,classification of markets, market competition.
5. Students would be able to know national income, GDP, per capita income, Net National product, public finance etc.
6. Students will be acquainted in respect of inflation and taxation.

BAG125 **Principles ofAgriculturalEconomics** **2 (2+0)**

Theory:

Meaning, definition, subject matter, Division and Importance of economics. Meaning, definition of Agricultural Economics. Basic concepts of goods, service, utility, value, price, wealth & welfare economics. Meaning, characteristics, importance and classification of wants. Theory of consumption. Law of diminishing marginal utility – meaning & importance. Demand - meaning, definition and kinds of demands, Demand schedule and demand curve. Law of demand - extension and contraction Vs increase and decrease in demand. Elasticity of demand – meaning and definition, types of elasticity of demand, degree of price elasticity of demand, Method of measuring elasticity – factors influencing elasticity of demand and importance of elasticity of demand. Laws of supply – meaning & definition, supply schedule, supply curve, elasticity of supply and factor influencing in elasticity of supply. National income–concepts & measurement. Meaning and classification of taxes and cannons of taxation. Inflation- meaning, definition, kinds of inflation .

Lecture schedule -Theory

S.No.	Topic	No. of lectures
1.	Economics – Meaning, definition, subject matter	1
2.	Division of economics, Importance of economics	2
3.	Agricultural Economics, meaning, definition	1
4.	Basic concepts of goods, service, utility, value, price, wealth, welfare	2
5.	Wants – meaning, characteristics, importance and classification of wants	2
6.	Theory of consumption	2
7.	Law of diminishing marginal utility, meaning, importance	2
8.	Demand meaning, definition, kinds of demands	2

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9.	Demand schedule, demand curve	1
10.	Law of demand, extension and contraction Vs increase and decrease in demand	2
11.	Elasticity of demand, types of elasticity of demand, degree of price elasticity of demand	2
12.	Method of measuring elasticity – factors influencing elasticity of demand, importance of elasticity of demand	2
13.	Laws of supply, supply schedule, supply curve, elasticity of supply, factor influencing elasticity supply	3
14.	National income – concepts, measurement	3
15.	Meaning and classification of taxes, cannons of taxation	3
16.	Inflation- meaning, definition, kinds of inflation	2

References:

1. K.K. Dewett and J.D. Verma (1986) Elementary Economic Theory, S.Chand &Company, NewDelhi
2. P.A. Samuelson &W.D. Nordhaus (1987) Economics, McGraw-Hill,Singapore
3. S.K. Mishra and V.K. Puri (1996) Indian Economy, Himalaya Publishing House, NewDelhi
4. G.B. Jathar and S.G. Beri (1996) Elementary Principles of Economics, Oxford University Press(10th Edition), Delhi
5. Berkeley Hill (1980) An Introduction to Economics for students of agriculture, Pergaman Press,Oxford

Course Outcome - 1 Students will be able to Knowledge gained about the analytical methods of soil, plant, water and seed testing.
2 Students will be able to know about basic principles of analytical instruments i.e. pH, EC, Spectrophotometer and Flame photometer etc.
3 Students will be able to interpretation with analytical values of soil, plant and water to standards.
4 Students will be able to learn about soil health quality and irrigation water quality parameters.
5 Students enabled in identifying seed structure and morphology, physical characteristics of seed and biochemical tests
6 Students capacitated in seed sampling, seed storage and methods of seed testing.

BAG126 Fundamentals of Soil and Water Conservation Engineering 2(1+1)

Theory:

Classification of irrigation projects and components of canal system; Ground water sources- types of aquifers; Centrifugal pumps; Measurement of irrigation water; Water conveyance system; Pressurized irrigation methods- sprinkler and drip; Soil erosion- types and factors affecting soil erosion; Brief description about erosion control

structures for agricultural lands; for non-agricultural, denuded and wastelands; Temporary gully control structures.

Practical:

Power calculation for pumps; Field measurement of irrigation water; Design of open channels; Determination of fertilizers doses, uniformity coefficient and capacity of a sprinkler irrigation system; Visit to farmers adopting sprinkler and drip irrigation systems; Visit to watershed areas.

Lecture schedule: Theory

S.No.	Topic	No. of lectures
1.	Classification of irrigation projects- major, medium and minor irrigation projects; Related terminology - Gross command area, Culturable Command Area, Intensity of irrigation, Delta, Base, Duty, Irrigationpotential	1
2.	Components of canal irrigation system- reservoir, barrage, head works, ridge canal, contour canal, main canal, branch canal, major distributary, minor distributary, canal outlets, water course, field channel.	1
3.	Ground water sources- Lithosphere, zone of saturation, zone of aeration; types of aquifers- unconfined, confined, semi-confined and perched aquifers.	1
4.	Centrifuged pumps- volute and diffuser types; Principle of operation of centrifugal pumps; Performance characteristic curves.	1
5.	Related terms- capacity, suction lifts, suction heads, discharge heads, friction head, pressure head, total head, velocity head, net positive suction head, maximum practical suction lift of pumps, water horsepower, shaft horse power, pump efficiency, brake horsepower.	2
6.	Measurement of irrigation water- volume method, velocity- area methods, water meter, weirs- rectangular, cipolletti, 90^{o} v- notch; standard conditions for installing a weir; Parshall flume and cutthroat flume.	2
7.	Water conveyance system- open channels; Definition of wetted perimeter, hydraulic radius, hydraulic slope, free board, angle of repose.	1
8.	Estimation of velocity of flow in open channels by Manning's equation and design of open channel.	1

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9.	Sprinkler irrigation method- adoptability, limitations, types, components and layout, fertilizer application, moisture distribution pattern and uniformity of coverage, evaluation of sprinkler irrigation system.	2
10.	Drip irrigation method- Adoptability, limitation, components and layout.	1
11.	Soil erosion, types of soil erosion- rain drop, sheet, rill, and gully erosion; factors affecting soil erosion.	1
12.	Brief description about contour bunds, graded bunds, bench terraces; Contour trench, staggered trench, box cum pit; Grassed waterways.	1
13.	Brief description about temporary gully control structures.	1

Lecture schedule: Practical

S.No.	Topic	No. of lectures
1.	Numerical problems on friction head, velocity head, total head and horse power calculation of pumps.	2
2.	Measurement of irrigation water in the field by different methods and related numerical.	2
3.	Numerical on design of open channels.	2
4.	Numerical on estimation of fertilizer doses and capacity of a sprinkler irrigation system.	1
5.	Determination of uniformity coefficient of a sprinkler irrigation system.	1
6.	Visit to farmers using sprinkler and drip irrigation systems- their experiences, problems and remedies.	2
7.	Visit to nearby canal irrigation system.	3
8.	Visit to nearby watersheds.	3

Suggested Readings:

1. Land and Water Management Engineering. 1982. Murthy V.V.N. Kalyani Pubhliers, NewDelhi.
2. Irrigation:TheoryandPractices.1989.Michael A.M. VikasPublishingHousePvt. Ltd.,NewDelhi.
3. Principles of Agricultural. Engineering. Vol. II. 1993. Michael A.M. and T.P. Ojha. Jain Brothers, New Delhi.

Course Outcome - 1. Understand the chemical aspects of life at molecular life
2. Learn the structure and functional aspects of important biomolecules
3. Understand the mechanism of different enzymatic reactions
4. Understand the physiological details of carbohydrate metabolism
5. Understand the biochemical nature of nucleic acids, their role in living systems

BAG127

Biochemistry **3 (2+1)Theory:**

Biochemistry – Introduction and importance. Plant cell, cell wall and its role in livestock, food and paper industries. Structure, properties & applications of biomolecules: amino acids, peptides and proteins. Plant proteins and their quality. Enzymes – classification, factors affecting the activity, immobilization and other industrial applications. Lipids – classification, properties and their industrial application in soaps, paints, lubricants, plastics including biodegradable plastics, bio-diesel etc. Carbohydrates – classification, structure and functions. Nucleotides and nucleic acids. Metabolism – basic concepts, glycolysis, citric acid cycle, pentose phosphate pathway, oxidative phosphorylation and fatty acid oxidation. General reactions of amino acids. Biosynthesis – carbohydrates, lipids, proteins and nucleic acids. Metabolic regulation. Secondary metabolites - terpenoids, alkaloids, phenolics and their applications in food and pharmaceuticalindustries.

Practical:

Preparation of standard solutions and buffers. Determination of pH. Qualitative tests for carbohydrates, lipid, amino acids and proteins. Identification of plant pigments by paper chromatography. Thin layer chromatography of lipids. Assay of enzyme and effect of pH. Demonstration of column chromatography. Extraction of oil from oil seeds. Quantitative determination of carbohydrates (sugars), proteins and phenols. Extraction of nucleic acids. **Lecture Schedule :Theory**

S. No.	Topic	No.of lectures
1.	Biochemistry – introduction and importance	1
2.	Plant cell and cell wall-structure and functions	1
3.	Role of plant cell in livestock, food and paper industries.	1
4.	Structure, properties and application of amino acids and peptides	1
5.	General reactions of amino acids	1
6.	Structure of proteins - primary, secondary, tertiary and quaternary	1
7.	Classification of proteins and quality of plant proteins	1

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8.	Enzyme classification and factors affecting enzyme action	1
9.	Cofactor, coenzyme and enzyme inhibitions	1
10.	Mechanism of enzyme action	1
11.	Enzyme immobilization and other industrial applications	1
12.	Carbohydrate-classification and stereoisomerism	1
13.	Structure and functions of carbohydrates	1
14.	Chemical properties of carbohydrates.	1
15.	Structure, properties and classification of lipids and fatty acids	1
16.	Structure and function of triglycerides, phospholipids and sphingolipids	1
17.	Industrial application of lipids in soaps, paints, lubricants, plastics including biodegradable plastics, bio-diesel etc.	1
18	Nucleosides, nucleotides and structure of DNA	1
19	Structure, types and functions of RNA	1
20	Basic concept of metabolism and glycolysis,	1
21	Citric acid cycle and pentose phosphate pathway	1
22	Fatty acid oxidation and oxidative phosphorylation	1
23	Photosynthesis –light and dark reactions	1
24	Biosynthesis of sucrose, starch	1
25	Biosynthesis of fatty acids and acylglycerols	1
26	Elementary concept of protein synthesis	1
27	Elementary concept of DNA replication	1
28	Metabolic regulation	1
29	Secondary metabolites–types and their applications in food and pharmaceutical industries.	1
30	Structure and function of terpenoids	1
31	Structure and function of alkaloids.	1
32	Structure and function of phenolics	1

Lecture Schedule: Practical

S. N.	Topic	No.of lectures
1.	Preparation of standard solutions and buffer solutions.	1
2.	Determination of pH.	1
3.	Qualitative test of carbohydrates	1
4.	Qualitative test for lipids	1
5.	Qualitative test for amino acids and proteins	1
6.	Quantitative estimation of sugars	1
7.	Quantitative estimation of amino acids	1
8.	Quantitative estimation of proteins.	1
9.	Estimation of phenols	1
10.	Identification of plant pigments by paper chromatography.	1
11.	Thin layer chromatography of lipids	1
12.	Demonstration of column chromatography	1
13.	Assay of enzyme	1
14.	Effect of ph on enzyme activity	1
15.	Extraction of oil from oil seeds	1
16.	Extraction of nucleic acids	1

References:

1. Lehninger AL (2004). Principles of Biochemistry, Freeman and Company,USA
2. Conn EE, Stumpf PK, Bruining G and Doi RH (2007). Outlines of Biochemistry. John Wileyand Sons, NewYork
3. Nelson DL and Cox MM (2000). Lehninger Principles of Biochemistry 3rd edn, Printed in India by Replica Press Pvt. Ltd., New Delhi for Worth Publishers, NewYork.
4. Goodwin, TW and Mercer EI (1998). Introduction to Plant Biochemistry, Progamon Press Inc. DefferedUK
5. De Robertis EDP and De Robertis EMF (2006). Cell and Molecular Biology, B I Publications Pvt Ltd, NewDelhi
6. SahneySKandSinghRR(2002). IntroductoryPracticalBiochemistry,NarosaPublishing House, NewDelhi
7. Yadav VK and Yadav N (2007). Biochemistry and Biotechnology-A Laboratory Manual, Pointer Publishers,Jaipur

Course Outcome - 1 Students will be able to Knowledge gained about the analytical methods of soil, plant, water and seed testing.

2 Students will be able to know about basic principles of analytical instruments i.e. pH, EC, Spectrophotometer and Flame photometer etc.

3 Students will be able to interpretation with analytical values of soil, plant and water to standards.

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4 Students will be able to learn about soil health quality and irrigation water quality parameters, nutrient management of soil.
5 Students enabled in identifying seed structure and morphology, physicalcharacteristics of seed and biochemical tests.
6 Students capacitated in seed sampling, seed storage and methods of seed testing.

BAG128 Soil Chemistry, Soil Fertility andNutrientManagement 2(1+1)

Theory:

Essential and beneficial elements, criteria of essentiality, forms of nutrients in soil, mechanisms of nutrient transport to plants, factors affecting nutrient availability to plants. Measures to overcome deficiencies and toxicities, nutrient availability to plants in Acid, salt affected and calcarious soils: Concept of soil fertility, different approaches/methods for soil fertility evaluation -- Biological method. Plant analysis method: DRIS methods, critical levels in plants. Rapid tissue tests. Indicator plants. Soil analysis methods: critical levels of different nutrients in soil. Soil test based fertilizer recommendations to crops. Factors influencing nutrient use efficiency (NUE) in respect of N, P, K, S, Fe and Zn fertilizers. Integrated nutrient management.

Practical:

Analytical chemistry – Basic concepts, techniques and calculations, Principles of analytical instruments and their calibration and applications, Estimation of available N, P, K, S, Zn and Fe in soil, Estimation of N, P and K in plants.

Lecture schedule: Theory

S. No.	Topic	No. of lectures
1.	Essential and beneficial elements, essentiality criteria , forms of nutrients in soil	1
2.	Role of essential nutrient in plant growth	1
3.	Deficiency and toxicity symptoms of nutrients in plant	1
4.	Measures to overcome deficiencies and toxicities of essential nutrients in plant	1
5.	Mechanisms of nutrient uptake and transport from soil to plant	2
6.	Factors affecting nutrient availability to plants	1
7.	Nutrient availability in acid, salt affected and calcarious soils	1
8.	Soil fertility concept : Law of minimum, law of diminishingreturn,Baule units, Bray's nutrient mobilityconcept.	1
9.	Soil fertility evaluation : Biological methods, use of visual symptoms of nutrient deficiency or toxicity	1
10.	Soil fertility evaluation : Plant analysis method – DRIS methods, critical levels in plants, rapid tissue tests, indicator plants	1
11.	Soil fertility evaluation: Soil analysis methods – critical levels of different nutrients in soil.	1
12.	Interpretation and calibration of soil test values and fertilizer recommendations to crops	1
13.	Factors influencing nutrient use efficiency (NUE) in respect of N, P, K, S, Fe and Zn fertilizers.	2
14.	Integrated nutrient management (concept, components and importance)	1

Lecture schedule: Practical

S. No.	Topic	No. of lecture
1.	Analytical chemistry – Basic concepts, techniques and calculations	2
2.	Principle of analytical instruments and their calibration for soil and plant analysis	2
3.	Determination of available nitrogen in soil	1
4.	Determinationof available phosporus in soil	2
5.	Determination of available potassium in soil	1
6.	Determination of available sulphur in soil	1
7.	Determination of available zinc in soil	1
8.	Determination of available iron in soil	1
9.	Rapid plant tissue test	1
10.	Estimation of N,P,and K in plant	4

References:

1. Biswas, T.D. and Mukherjee, S.K. (2006) Text book of soil science.Tata McGraw Hill publishing Co. Ltd, NewDelhi
2. Das, D.K. (2002) Introductory Soil Science, Kalyani publisher, NewDelhi
3. Rai, M.M. (2002) Principal of Soil Science, Mac Millan India Ltd, NewDelhi
4. Mehra R.K. (2004) Text book of Soil Science, ICAR NewDelhi
5. ISSS (2002) Fundamental of Soil Science Div. of Soil Science, IARI, NewDelhi
6. Jackson,M.L.(1973)Soilchemicalanalysis,PrenticeHallofIndia,Pvt. LtdNewDelhi
7. Piper, C.S. (1950) Soil and Plant analysis, .Hans publications,Bombay
8. Singh Dhyan, Chhonkar, P. K. and Dwivedi V.S. (2005) Manul on Soil Plant and water analysis. Westville Publishing

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House, NewDelhi

9. Tisdale, S.L. Nelson, W.L. Beaton, J.D. and Havlin, J.L. (1991) Soil fertility and fertilizers (5th ed.).Prentice Hall of India, Pvt .Ltd, NewDelhi.
10. Singh Vinay (1996) (Hindi) Soil Science, fertilizer & Manures , V.K. Prakashan Barot Merrut (U.P)

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Semester

Course Outcome -1. Economic importance of kharif crops understood
2.The student gains a thorough knowledge on basic production technology.
3. Acquaintance on commercial oriented cultural practices.
4. Basic management for kharif crops production learned
5. Students will understand factors affecting the need to find sustainable practices for production of kharif crops and how to implement and evaluate them.
6. Familiarize on modern production techniques

BAG231 **FieldCrops-I(*Kharif*)** **3(2+1)**

Theory

Origin, geographic distribution, importance, soil and climatic requirement, varieties; cultural practices *viz.* seed and sowing , intercultural operations, fertilizer, water and weed management, plant protection ; harvesting and yield of – rice, maize, sorghum, (grain and forage), pearl millet(grain and forage); pigeonpea, groundnut.soybean and cotton ; Package of practices of mungbean ,urdbean, cowpea, mothbean, clusterbean, sunhemp, castor, sesame, minor millets and napier .Acquaintance about *Panicum, Lasiura*sand*Cenchrus.*

Practical:

Rice nursery preparation ,seed bed preparation and sowing of *kharif* crops; Calculations on seed rate; Sowing of mungbean, pearl millet, and cotton; Effect of seed size on germination and seedling vigour ; Identification of weeds in pearl millet and other crops ; Fertilizer application and top dressing of nitrogen in pearl millet and study on fertilizer experiments ; Study of yield contributing characters, yield calculations, harvesting and yield estimation ; Study of crop varieties and important agronomicexperiments.

Lecture schedule :Theory

S.No.	Topic	No. of lectures
1.	Pearl millet-importance, origin, distribution ,production, soil and climatic requirement (grain & forage).	1
2.	Pearl millet- improved varieties,(grain and forage) seed and sowing, intercultural operation/weed management, mid-season corrections, intercropping and fertilizer management (grain & forage).	1
3.	Pearl millet-water management, plant protection measures, harvesting, yield and cutting management in forage	1
4.	Maize- importance, origin, distribution, production , soil and climatic requirement, improved varieties, seed and sowing	1
5.	Maize- intercultural operations/weed management, fertilizer and water management, plant protection measures, harvesting and yield	1
6.	Sorghum- importance, origin, distribution, production, soil and climatic requirement and improved varieties for grain and forage	1
7.	Sorghum- seed and sowing, intercultural operations/weed management, fertilizer, and water management for grain and forage	1
8.	Sorghum- plant protection measures, harvesting, yield and cutting management in forage	1
9.	Rice- importance, origin, distribution, production, soil and climatic requirement.	1
10.	Rice-improved varieties, nursery raising, seed and sowing, intercultural operations/ weed management, fertilizer and water management	1
11.	Rice-plant protection measures, harvesting, processing and yield	1
12.	Groundnut – importance of oilseeds and groundnut, origin, distribution, production, soil and climatic requirements	1
13.	Groundnut-growth habits , improved varieties, seed and sowing, pegging	1
14.	Groundnut –intercultural operations/ weed management , fertilizer, and water management, plant protection measures, harvesting shelling andyield	1
15.	Soybean – importance, origin, distribution, production, soil and climatic requirement, improved varieties, seed and sowing	1
16.	Soybean- fertilizer, water and weed management, plant protection measures, harvesting and yield	1

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17.	Pigeon pea- importance of pulses and pigeon pea , origin, distribution, soil and climatic requirement, improved varieties	1
18.	Pigeon pea- seed and sowing, intercultural operations/weed management fertilizer and water management, plant protection measures, harvesting and yield	1
19.	Cotton- importance, origin, distribution, production, soil and climatic requirements, types of cotton, improved varieties	1
20.	Cotton- seed and sowing, intercultural operations; weed management, fertilizer, and water management	1
21.	Cotton- plant protection measures, harvesting, quality and yield	1
22.	Clusterbean – package of practices	1
23.	Sesame- package of practices	1
24.	Castor – package of practices	1
25.	Mothbean- package of Practices	1
26.	Urdbean -package of practices	1
27.	Mungbean package of practices	1
28.	Cowpea – package of practices	1
29.	Napier - package of practices	1
30.	Minor millets - package of practices	1
31.	Sunhemp – package of practices	1
32.	Acquaintance about *Panicum* , *Lasiuras and Cenchrus*	1

Lecturer schedule: Practical

S.No.	Topic	No. of lectures
1.	Identification of seeds, crops and other inputs	1
2.	Sowing methods of different *kharif* crops	1
3.	Seed bed preparation of *kharif* crops	1
4.	Working out seed rate, real value and related numerical	1
5.	Seed treatment and preparation of seed material for sowing	1
6.	Preparation of seed material for planting of grasses	1
7.	Fertilizer application in crops, including top dressing	1
8.	Identification of weeds in pearl millet and other crops	1
9.	Acquaintance with plant protection measures in different crops	1
10.	Irrigation operation in various crops	1
11.	Judging physiological maturity in standing crops	1
12.	Cotton seed treatment	1
13.	Effect of seed size on germination and seedling vigour	1
14.	Yield attributes and calculation on theoretical yield and harvest index	1
15.	Crop harvesting and yield estimation	1
16.	Visit of experiments at farm	1

References:

Singh, Chhidda; Singh P. and Singh, R. 2003. Modern Techniques of Raising Field Crops, Oxford & IBH Publishing Co., New Delhi.

Singh, S.S. 1998, Crop Management: Under irrigated and rainfed conditions.

Singh, S.S. 1993, Principles and Practices of Agronomy, Kalyani Publishers, New Delhi. Reddy,T.Y. and Reddi, G.H.S. 1993. Principles of Agronomy, Kalyani Publishers, New Delhi.

Maiti, S. , Hedge,M.R. and Chhattopadhyay, S.B. 1988. Handbook of Annual Oil Seed Crops. Oxford & IBH Publishing Co., New Delhi.

Jaiswami, L.H. and Baldeo, B. 1990. Advances in Puulse Production Technology, ICAR, New Delhi. Thakur, C. 1979. Crop Production, Vol. I & II. Metropolitan Book Pvt. Ltd., New Delhi.

Ahlawat, I.P.S. , Sharma, O.P. & Saini., G.S. 1998 Scientific Crop Production in India. Aman Publishing House, Madhu Market, Budhana gate, Meerut.

Rathore, P.S. 1999-2000. Techniques and Management of Field Crop Production. Agrobios (India), Jodhpur. Rathore, P.S. and Sharma, S.K. 2003. Scientific Pulse Production. Yash Publishing House, Bikaner.

Sharma, Kalicharan 1990 Bharat ki promokh faslea. G.B. Pant Agricultural & Technology University, Nanital. Reddy, S.R. 2004. Agronomy of Field Crops. Kalyani Publishers, New Delhi.

Course Outcome -1. To know weed definitions and their characteristics
2.To study the harmful and beneficial effects of weeds.
3.To discuss about different classifications of weeds.
4.To study different methods of propagation and dissemination of weeds

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5.To study the biology and ecology of different weed species

6.To study the weed competition with main crops for nutrients, moisture, light, space and losses caused by weeds

7.To study the factors affecting crop weed competition/interference and allelopathic effects.

BAG232 **WeedManagement** **2(1+1)**

Theory:

Weeds- introduction, harmful and beneficial effects, classification, propagation and dissemination; Weed biology and ecology, crop weed association, crop weed competition and allelopathy; Concepts of weed prevention, control and eradication; Methods of weed control- physical, cultural, chemical and biological methods; Integrated weed management; Herbicides- advantages and limitation of herbicide usage in India; Herbicide classification, formulations, methods of application; Introduction to Adjuvants and their use in herbicides; Introduction to selectivity of herbicides; Compatibility of herbicides with other agro chemicals; Weed management in major field crops. Aquatic weeds and theirmanagement.

Practical:

Identification of weeds; Preparation of herbarium of weeds; Study of crop weed competition ; Herbicide label information; Computation of herbicide doses; Study of herbicide application equipment and calibration; Demonstration of methods of herbicide application; Preparation of list of commonly available herbicides; Study of phytotoxicity symptoms of herbicides in different crops; Biology of nut sedge, bermuda grass, *Parthenium* and *Celosia;* Economics of weed control practices; visits of problemareas(field).

Lecture schedule :Theory

S.No.	Topic	No. of lectures
1.	Weeds – definition , harmful and beneficial effects and classification	1
2.	Ecology of weeds	1
3.	Weed - reproduction and seed dissemination	1
4.	Crop-weed competition-concept and allelopathy	1
5.	Concepts of weed prevention, eradication and weed control	1
6.	Physical and cultural methods of weed control	1
7.	Chemical and biological methods of weed control	1
8.	Integrated weed management - An introduction	1
9.	Introduction to herbicides, advantages and limitations of herbicides usages	1
10.	Classification of herbicides	1
11.	Introduction of adjuvants-surfactants, stabilizing agents and solvents	1
12.	Adjuvants - stickers, activators and compatibility agents	1
13.	Interaction of herbicides with other agro chemicals	1
14.	Weed management in rice, wheat, barley, maize, sorghum and bajra	1
15.	Weed management in oil seeds & pulses – groundnut , soybean, mustard, gram , lentil,,mungbean and urdbean	1
16.	Aquatic weeds and their management	1

Lecturer schedule: Practical

S.No.	Topic	No. of lectures
1.	Identification of common weeds and their characteristics	1
2.	Biology of nut sedge and bermuda grass	1
3.	Biology of *Parthenium* and *Celosia*	1
4.	Collection of common *kharif* weeds and their preservation	1
5.	Collection of common *rabi* seeds and their preservation	1
6.	Collection of perennial weeds and their preservation	1
7.	To study crop weed competition	1
8.	Identification of common herbicide with their trade name and uses	1
9.	To become familiar with herbicide spray equipments	1
10.	Calibration of herbicide spray equipments	1
11.	Calculation on herbicideal requirement for field crops and aquatic situation	1
12.	Application of pre plant , pre-emergence and post emergence herbicides in the field	1
13.	Application of herbicides under aquatic situation	1
14.	Study of phytotoxicity symptoms of herbicides in different crops	1
15.	Economics of weed control practices	1
16.	Visit to problem areas (field) of weeds	1

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References:

1. Gupta , O.P. 2005. Weed Management: Principles and Practices (2nd Ed) Agribios (India)Jodhpur.
2. Gupta, O.P. 2002 . Modern Weed Management , Agribios (India)Jodhpur.
3. Rao, V.S. 2000. Principles of Weed Science (2nd Ed) , Oxford &IBH Publishing Co.,New-Delhi.
4. Saraswat, V.N., Bhan, V.M. and Yaduraju, N.T. 2003. Weed Management , ICAR,New-Delhi.

Course Outcome -1.Students will be able to evaluate and apply key concepts related to identify the importance of nematodes ' role in the world to the functioning of the terrestrial ecosystems.
2.Students will be able to critically assess role that explain how nematode deal with the world around them.
3.Students will be able to use nematode as examples to apply concepts and comparisons with other organisms.
4.Students will know identification and nomenclature of nematode.
5.Students will be known about basics of nematode management which will reflect on the practical implementation of INM Programme.
6. Students will be able to create something which will be helpful in explaining which order of nematode belongs to and will be able to identify insects to the level order.

BAG233 **IntroductoryNematology**

2(1+1)Thoery:

History and economic importance of plant parasitic nematodes; Characters of Phylum Nematoda and systematic position of plant parasitic nematodes (outline classification upto Generic level); General morphology, ecology and biology; Plant nematode relationship; Kinds of parasitism and symptomology; Nematode interaction with other micro-organisms; Nematode diseases of crop plants of economic importance in State with special reference to *Meloidogyne* spp; *Heterodera avenae, Anguina tritici* and *Rotylenchulus reniformis* Tylenchulus *semipenetrans;* Principles of nematodemanagement.

Practical:

Study of compound microscope alongwith other laboratory necessaries, Survey and Collection of soil and plant samples, extraction of nematodes from soil and roots, killing and fixing of nematodes, staining and separation of nematodes in plants tissue, preparation of temporary and semi-permanent mounts of nematodes, identification of important plant parasitic nematodes, collection and preservation of nematode diseased plant samples; Nematicides and their uses.

Lecture schedule:Theory

S. No.	Topic	No. of lectures
1.	Introduction and economic importance of plant parasitic nematodes.	1
2.	Historic development of Nematology in Indian and Abroad.	1
3.	Salient features and structures of nematode.	1
4.	Outer body tube and related sensory structures.	1
5.	Inner body tube and Digestive system of nematode.	1
6.	Reproductive, excretory and nervous systems.	1
7.	Characters and outline classification of Phylum Nematoda	1
8.	Kinds of parasitism in nematodes.	1
9.	Nematode interaction with other micro-organism.	1
10.	Nematode ecology and Biology.	1
11.	Root-knot disease of vegetables caused by *Meloidogyne* spp.	1
12.	Molya disease of wheat and Barley caused by *Heterodera avenae.*	1
13.	Ear cockle and yellow ear rot diseases of wheat caused by *Anguina tritici* alone and with association of bacterium.	1
14.	Nematode diseases caused by *Rotylenchulus reniformis* and *Tylenchulus semipenetrans.*	1
15.	Principles and various methods of nematode management.	1
16.	Introduction and economic importance of plant parasitic nematodes.	1

Lecture schedule: Practical

S.No.	Topic	No. of lectures
1.	Study of compound microscope alongwith other laboratory necessaries.	1
2.	Survey, collection of soil samples and plant materials.	1
3.	Extraction of nematodes from soil by direct method.	1
4.	Extraction of nematodes from soil by sieving and decantation method followed by Baermann's funnel technique.	1
5.	Killing and fixing of nematodes.	1
6.	Counting of extracted nematodes.	1
7.	Picking of nematodes.	1

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8.	Method of preparation of temporary mount of nematodes.	1
9.	Method of preparation of semi permanent mount.	1
10.	Identification of *Meloidogyne* spp.	1
11.	Identification of *Heterodera avenae.*	1
12.	Method of staining of roots.	1
13.	Preparation of temporary mount of nematodes by teasing the stained root material.	1
14.	Identification of *Anguina tritici.*	1
15.	Types of Nematicides and their uses.	1
16.	Collection, preservation and identification of important nematode plant disease samples.	1

References

1. Reddy, P.P. (1993). A treatise on phyto nematology, Agricol. Publ. Academy, N.Delhi.
2. Walia, R.K. and Bajaj, H.K. (2003). Introduction plant Nematology, ICAR Publication, Krishi Bhawan, New Delhi.
3. Laboratory Manual of Elementary Nematology (Correspondence to course No. NEMAT-411) by Dr. R.L. Midha and Dr. G.L. Sharma(2007).
4. Mk-xksikyLo : ikS1982]ikniid'f"kfoKkuaijktLFkkuikfgR;vdkneh] t;iqjA
5. Mk-lq'khydekj,oaMk-ch-ih-flagikniilw=dfefoKkuk2003]ljkekifCyf'kaxgkml]esjBA

Course Outcome -1. To understand the concepts involved in data presentation, analysis and interpretation, probability distributions, parameter estimation, tests of significance, regression and multivariate analytical techniques.
2. Students will know sampling methods, collection of data and appropriate analysis for planning and management of field crops.
3. To use practical applications of ratio and regression method of estimation.
4. To apply various sampling methods for agricultural data.
5. To draw a conclusion about the best sampling procedure.
6. To apply various designs for agricultural data/agricultural field.

BAG234 **STATISTICS** **3(2+1)**

Theory:

Introduction: Definition of statistics by seligman and Horac Secrist. Aims, Scope and limitation of statistics. Classification: Definition and its type (According to attributes and class intervals). Measures of central tendency: A.M., G.M., H.M. median, mode, Properties of A.M. Merits, demerits and uses of above measures. Dispersion: range, M.D. Q.D., S.D., variance and c.v., Merits and demerits of above measures. Correlation and regression: scatter diagram, Karl pearson's correlation coefficient, Simple linear regression; regression lines and theirfitting,

properties of correlation and regression coefficients. Probability and simple problems based on probability. Test of significance: Null and alternative hypothesis, two types of errors, level of significance, critical region, d.f. standard normal deviate test and students. t-test for single mean and difference between two means, paired t-test. Test of significance of correlation and regression coefficients. Chisquare test for Goodness of fit and fortesting independence of attributes, Yates correction (No mathematical derivatives).

Practical:

Preparation of frequency table of quantitative data. Computation of A.M. for raw data and frequency distribution by direct method and short cut method. Computation of G.M. and H.M. for raw data and frequency distribution. Computation of median and mode for raw data and frequency distribution. Computation of M.D.; Q.D. for raw data and frequency distribution. Computation of S.D. and C.V. for raw data and frequency distribution. Computation of correlation coefficient. Estimation of regression lines, t & S.N.D. test for single mean and difference between two means, paired t-test. Test of significance of correlation and regression coefficients. Chisquare test for Goodness of fit & test of independence in 2x2 contingency table and m x n contingency table.

Lecture Schedule: Theory

S.No.	Topic	No. of lectures
1	Introduction, definition of statistics, scope & limitation of statistics	2
2	Measure of central tendency: A.M., G.M., H.M.	4
3	Mode and median	2
4	Merits and demerits of above measure.	2
5	Measure of dispersion, Range, M.D. and Q.D.	3
6	S.D., variance and C.V.	2
7	Correlation, scatter diagram and Karl pearson's correlation coefficient.	2
8	Regression, regression lines and their fittings.	3
9	Properties of regression coefficient.	1

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10	Probability	2
11	Test of significance, hypothesis, type of errors, level of significance, C.R.	2
12	SND test and student's, t-test for single mean.	2
13	SND and t-test for difference between two means.	2
14	Pair t-test.	1
15	Significance test of correlation and regression co-efficient	1
16	Chi-square test for testing independence of attributes and Goodness of fit.	2

Lecture schedule: Practical

S.No.	Topic	No. of lectures
1	Classification of data	1
2	Computation of A.M.	1
3	Computation of Median	1
4	Computation of Mode	1
5	Computation of G.M. and H.M.	1
6	Computation of range & Q.D.	1
7	Computation of M.D.	1
8	Computation of S.D. & C.V.	1
9	Computation of product moment correlation coefficient	1
10	Estimation of line of regression	1
11	Large sample test (S.N.D. test)	1
12	One sample 't' test	1
13	Independent 't' test for two samples	1
14	Paired 't' test	1
15	Test for significance of correlation coefficient and regression coefficient	1
16	Chi-square test	1

References;

1. Chandel, S.R.S. 1998. Handbook of Agril. Statistics. Achal Prakashan Mandir,Kanpur.
2. Gupta S.P. 2002. Statistical Methods. Sultan Chand & Sons, NewDelhi.
3. Agarwal B.L. 1991. Basic Statistics Wiley Eastern, NewDelhi.

Course Outcome - 1.Students will be able to evaluate and apply key concepts related to socio economic conditions of the rural people by utilizing the natural resources.
2.Students will be able to critically assess that how the rural societies are living in the various community, culture and traditions.
3.Students will be able to familiar with the back ground of the rural area and their institutions by applying critical analysis.
4.Students will able to identify about rural family life, their folkways, culture and survival of people with the nature.
5.Students will be known about the psychology of the people in rural area by adopting psychomotor method that will help to identify the basic needs of the people.
6. Students will be able to implement their idea to promote the various policies and programme for betterment of the society in practically.

BAG235 Fundamentals of Rural Sociology and EducationalPsychology (2+0) Theory:

Sociology and Rural Sociology- Meaning, Definition, Scope, Importance of rural sociology in Agricultural Extension and Interrelationship between Rural Sociology and Agricultural Extension. Indian Rural Society, Important characteristics, differences & Relationship between Rural and Urban societies. Social Groups: Meaning, Definition, Classification, Factors considered in formation and organization of groups. Social Stratification – Meaning, Definition, Functions, Forms of Social stratification. Cultural concepts - Culture, Customs, Folkways, Mores, Taboos, Rituals and Traditions - Meaning, Definition and their role in Agricultural Extension. Social Values and Attitude - Meaning, Definition, Types and Role of social values and Attitudes in Agricultural Extension. Social Institutions - Meaning, Definition, Major Institutions in Rural society, Functions. Social Control - Meaning, Definition, Need and Means of Social control. Social change - Meaning, Definition, Nature of Social change and factors of social change. Leadership- Meaning, Definition, Classification, Roles of Leader, Methods of selection of leaders. Psychology and Educational psychology- Meaning, Definition, Scope and Importance of

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Educational Psychology in Agricultural Extension. Intelligence - Meaning, Definition, Types, Factors affecting intelligence. Personality- Meaning, Definition, Types, Factors influencing the Personality and Role of Personality in Agricultural Extension. Teaching- Learning process- Meaning and Definition of Teaching, Learning, Learning experience and Learning situation, Elements of learning situation and itscharacteristics.

Lecture schedule :Theory

S.No.	Topic	No.of lectures
1.	Sociology and Rural Sociology-Meaning, Definition, Scope,	1
2.	Importance of rural sociology in Agricultural Extension and Interrelationship between Rural Sociology and Agricultural Extension.	1
3.	Indian Rural Society, Important characteristics, differences & Relationship between Rural and Urban societies.	2
4.	Social Groups: Meaning, Definition, Classification, Factors considered in formation and organization of groups.	2
5.	Social Stratification – Meaning, Definition, Functions, Forms of Social stratification.	2
6.	Cultural concepts - Culture, Customs, Folkways, Mores, Taboos, Rituals and Traditions - Meaning, Definition and their role in Agricultural Extension.	2
7.	Social Values and Attitude - Meaning, Definition, Types and Role of social values and Attitudes in Agricultural Extension.	2
8.	Social Institutions - Meaning, Definition, Major institutions in Rural society, Functions.	3
9.	Social Control - Meaning, Definition, Need and Means of Social control.	2
10.	Social change - Meaning, Definition, Nature of Social change and factors of social change.	2
11.	Leadership- Meaning, Definition, Classification, Roles of Leader, Methods of selection of leaders.	2
12.	Psychology and Educational psychology- Meaning, Definition, Scope and Importance of Educational Psychology in Agricultural Extension.	3
13.	Intelligence - Meaning, Definition, Types, Factors affecting intelligence.	2
14.	Personality- Meaning, Definition, Types, Factors influencing the Personality and Role of Personality in Agricultural Extension.	3
15.	Teaching- Learning process- Meaning and Definition of Teaching, Learning, Learning experience and Learning situation, Elements of learning situation and its characteristics.	3

References:

1. Bhatia, H.R. 1965. A Text Book of Educational Psychology, Asia Publishing House,NewDelhi.
2. Chitamber, J.B., 1990. Introductory Rural Sociology: Willey Easter Ltd. NewDelhi.
3. Dhama, O.P. & Bhatnagar, O.P.,1985. Education & Communication for Development, Oxford and IBH Publishing Company, NewDelhi,
4. Desai, A.R. 1953. Rural Sociology in India, Vora &Co. Publisher Pvt. Ltd.,Bombay.
5. Pujari, D. 2002 Educational Psychology in Agriculture, Agrotech Publishing Academy,Udaipur(Raj.)

Course Outcome -1. Students will able to identify the different fruits and plantation crops.
2. Students will able to know about production technology of different fruits and plantation crops
3. Students will know about the nutritional and economic value of fruits and plantation crops
4. Students will able to understand about the cost of cultivation of different fruits and plantation crops

BAG236 Production Technology of Fruit andPlantationCrops 3(2+1)

Theory:

Importance, introduction and scope of horticulture. Classification of fruits according to climate. Selection of site, planning, establishment and layout of orchard. Propagation methods of fruit crops. Methods of training and

pruning in fruit crops. Use of growth regulators in fruit production. Package of practices for the cultivation of major fruits with the emphasis on botanical name, family, origin, distribution, climate, soil, varieties, propagation, planting, manures and fertilizers, irrigation, training and pruning, intercultural operation, harvesting, yield and plant protection measures including physiological disorders – mango, banana, citrus, grape, guava, sapota, apple, papaya, pineapple, pomegranate, ber, jack, aonla, bael, date palm; plantation crops -coconut, areca nut, cashew, oil palm andtea.

Practical:

Identification of fruit and plantation crops. Study of horticultural tools and implements and their uses; Plant propagation methods, by seeds, cuttings (soft wood, hard wood and semi-hardwood), budding and grafting, layering (simple layering, Air layering,); Layout and planting systems, Methods of pruning and training of important fruit crops. Irrigation methods in fruit crops including drip – Micro irrigation methods for establishment of orchard. Methods of fertilizer application in fruit crops. Visit to local commercial orchards with in state; Preparation of growth regulator solutions for propagation; Application of

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growth regulators for improving fruit set, fruit size and quality.

Lecture schedule- Theory

S.No.	Topic	No. of lectures
1.	Importance, introduction and scope of horticulture	2
2.	Classification of fruits according to climate.	1
3.	Selection of site	1
4.	Planning, establishment and layout of orchard	1
5.	Propagation methods of fruit crops.	2
6.	Methods of training and pruning in fruit crops	1
7.	Use of growth regulators in fruit production.	1
8.	Package of practices for the cultivation of major fruits with the emphasis on botanical name, family, origin, distribution, climate, soil, varieties, propagation, planting, manures and fertilizers, irrigation, training and pruning intercultural operation, harvesting, yield and plant protection measures including physiological disorders- Mango	2
9.	Banana	1
10.	Citrus	1
11	Grape	1
12	Guava	1
13	Sapota	1
14	Apple	1
15	Papaya	1
16	Pineapple	1
17	Pomegranate	1
18	Ber	1
19	Jack fruit	1
20	Aonla	1
21	Bael	1
22	Date palm	1
	Plantation crops –	
23	Coconut	2
24	Cashew	1
25	Areca nut	1
26	Oil palm	1
27	Tea	2

Lecture schedule-Practical:

S.No.	Topic	No. of lectures
1.	Identification of fruit and plantation crops.	1
2.	Study of horticultural tools and implements and their uses	1
3.	Plant propagation methods by seeds	1
4.	Cuttings (soft wood, hard wood and semi-hardwood)	1
5.	Method of Budding	1
6.	Method of Grafting	1
7.	Method of Layering	1
8.	Simple layering, Air layering other method of Layering	1
9.	Layout and planting systems	1
10	Methods of pruning	1
11	Training of important fruit crops	1
12	Irrigation methods in fruit crops including drip – Micro irrigation	1
13	Methods for establishment of orchard	1
14	Methods of fertilizer application in fruit crops	1
15	Visit to local commercial orchards with in state	1

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16	Preparation of growth regulator solutions for propagation; Application of growth regulators for improving fruit set, fruit size and quality.	1

References:

1. Bose. T.K., Kabir.J., Das.P. and Joy.P.P.(2000)Tropical Horticulture. Naya Prokash.Calcutta
2. Singh, Amar (1986) Fruit Physiology And Production. Kalyani Publishers, NewDelhi
3. Singh. S.P. (1997) Commercial Fruits. Kalyani Publishers, NewDelhi
4. Mitra. S.K., Bose. T.K. and Rathore. D.S. (1991) Temperate Fruits. Horticulture &Allied Publishers,Calcutta
5. Parthasvathy. V. A. Chattopadhyay. P.K. and Bose. T.K. (2006). Plantation Crpos. Naya Prokash, Kolkatta
6. Bal. J.S. (1997) Fruit Growing. Kalyani Publisher, NewDelhi
7. Chandra, Atul and Chandra, Anju. Production and Post harvest technology of Fruits. NBS Publisher & Distributers,Bikaner

Course Outcome -1. To "apply agriculture in the broadest sense, including the way people tend soils, water, plants and animals in order to produce, prepare and distribute goods.
2.They concern the way people interact with living landscapes, relate to one another and shape the legacy of future generations.
3. To guide our development of positions, programs and standards
4. The time concept relates to increasing the intensity of cropping under assured irrigated conditions.
5. Space utilization pertains to building up of vertical dimension through multi-tier cropping and farming system approach.

BAG237 Production Economics andFarmManagement 2 (1+1)

Theory:

Production Economics: Meaning, Definition, Nature and Scope of Agricultural Production Economics. Basic concepts and terms. Concepts of Production. Production Functions: Meaning, Definition, Types. Laws of returns: Increasing, Constant and decreasing. Factor Product Relationship. Determination of optimum input and output. Factor relationship. Product relationship. Types of enterprise relationships. Returns to scale: Meaning, Definition, Importance. Farm Management. Economic principles applied to the Organisations of farm business. Types and systems of farming. Farm planning and budgeting. Risk and uncertainty. Farm budgeting. Linear programming: Assumptions, Advantages and Limitations of Linear programming.

Practical:

Computation of cost concepts; Methods of computation of depreciation; Analysis of Net worth statement; Farm inventory analysis; Preparation of farm plans and budgets; Types of farm records and accounts; Preparation of profit and loss account; Break, Even analysis; Economics analysis of different crop and livestock enterprises; Application of Farm Management Principles.

Lecture schedule – Theory

S. No.	Topics	No. of lecture
1.	Meaning, definition, nature and scope of agricultural economics	1
2.	Basic concepts and terms used in production economics and concepts of production	1
3.	Meaning, definition and type of production functions – Linear and Cobb Douglas	1
4.	Law of returns : Increasing, constants, and decreasing	1
5.	Factors – product relationship and determination optimum input and output	1
6.	Factor – factor relationship	1
7.	Product – product relationship	1
8.	Types of enterprise relationship	1
9.	Meaning, definition and importance of returns to scale	1
10.	Meaning and definition of farm management	1
11.	Economic principles applied to the organization of farm business	1
12.	Types and system of farming	1
13.	Farm planning and budgeting	1
14.	Risk and uncertainty	1
15.	Linear programming: assumptions, advantages and limitations of linear programming	2

Lecture schedule – Practical

S.No.	Topics	No. of lecture
1.	Computation of cost concepts	2
2.	Method of computation of depreciations	1

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3.	Analysis of Net worth statement	2
4.	Farm inventory analysis	2
5.	Preparation of farm plans and budgets	2
6.	Preparation of farm records and accounts	1
7.	Preparation of profit and loss account	1
8.	Break even analysis	1
9.	Economic analysis of different crop and livestock enterprise	2
10.	Application of various farm management principles	2

References:

1. Mittal, S.K. and Sethi, C.P. "LinearProgramming."
2. Tandan R.K. and Dhondiyal, S.P. "Principles and Methods of FarmManagement".
3. Heady, E.O. and Candler, W. "Linear ProgrammingMethods".
4. Johl, S.S. and Kapoor, T.R. "Fundamental of Farm Business Management, Kalyani Publishers, Ludhiana and NewDelhi.
5. Sankhayan, P.L. "Introduction to the Economics of AgriculturalProduction".
6. Singh, I.J. "Elements of FarmManagement".
7. Dorfman, R. and Samuelson and Solow, R. "Linear Programming and EconomicAnalysis".
8. Heady, E.O. and Dillors, J.L. "Agricultural ProductionFunction".
9.
10. Karam, A.S. and Karan Singh "Economics of Farm Management inIndia".

Course Outcome -1. The students will be able to learn about different sources of farm power, construction and functioning of CI and SI engines, IC engine fuels, Coolants, anti freeze and anti corrosion materials
2. To identify the need of farm mechanization in India. Also equip the students with technical knowledge and skills required for the operation
3 The students will be able to learn about maintenance and evaluation of Tillage, Sowing and intercultural operational machinery needed for agricultural farms..
4. To abreast the students with mathematical, experimental and computational skills for solving different field problems
5. To develop skills in the students required to develop and modification of indigenous farm machines as per the requirements.
6. Also to give a brief introductory idea of importance of testing of agricultural machines and tractors.

BAG238 **Farm PowerandMachinery** **2(1+1)**

Theory:

Sources of farm power; Scope and development of farm mechanization; Elementary knowledge of principle, operation, types and components of I.C. engines; I.C. engine terminology and related numerical. Different systems of I.C. engines- Air supply and exhaust system; Fuel supply system; Lubricating system; Cooling system; Transmission system; Daily and periodic maintenance of tractors; Tractor driving; Numerical on field capacity and draw bar horse power requirements of implements; Primary tillage implements- tractor drawn mould board plough and disk plough; Secondary tillage implements- cultivators, harrows and hoes; Ferti-seed drill- parts and calibration (including numerical).

Practical:

Identification of engine parts; Study of air and fuel supply system; Study of lubricating and cooling system; Study of transmission system; Tractor driving; Daily and periodic maintenance of tractor; Study of tractor drawn mould board plough and disk plough; Study of different cultivators, harrows and hoes; Study and calibration of seed cum ferti- drill; Estimation of tractor operational cost; Numerical problems on field capacity, field efficiency and power requirement of implements; and numericals on engineterminology.

Lecture schedule: Theory

S. No.	Topic	No. of lectures
1	Sources of farm power; Scope and development of farm mechanization.	1
2	Principle, operation and components of internal combustion engines.	1
3-4	Types of I.C. engines- S.I. and C.I. engines; 2 and 4 stroke engines; valve operating system and valve timing diagram.	2
5-7	I.C. engine terminology and related numerical.	3
8	Air supply and exhaust system- Pre cleaners, oil soaked element type and oil bath type air cleaners; Fuel supply system.	1
9	Lubricating system- splash system and forced feed system; Cooling system-thermosiphon system and forced circulation system.	1
10-11	Transmission system- clutch, gear box, differential, final drive, p.t.o. shaft.	2
12	Daily and periodic maintenance of tractors; Tractor driving.	1

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13	Numerical on field capacity and draw bar horse power requirements.	1
14	Primary tillage implements- tractor drawn mould board plough (parts and accessories), plough adjustments; Disk plough.	1
15	Secondary tillage implements- cultivators, harrows and hoes.	1
16	Ferti-seed drill- parts and calibration including numerical.	1

Lecture schedule :Practical

S.No.	Topic	No. of lectures
1.	Identification of engine parts.	1
2.	Study of air and fuel supply systems.	1
3.	Study of lubricating and cooling systems.	1
4.	Study of transmission system.	1
5.	Tractor driving	3
6.	Hitching of implements. (11 Oct.)	1
7.	Daily and periodic maintenance of tractor. (27 Sept.)	1
8.	Study of tractor drawn mould board plough and disk plough.	1
9.	Study of different cultivators, harrows and hoes.	1
10.	Study and calibration of ferti-seed drill.	1
11.	Estimation of tractor operational cost	1
12.	Numercal problems on field capacity, field efficiency and power requirement of implements and engine terminology.	3

Suggested Readings:

1. Principles of Agricultural Engineering. Vol. I. 1987. Michael, A.M. and T.P. Ojha. Jain Brothers,Jodhpur.
2. Farm Tractors, Maintenance and Repair.1989. Rai and Jain. Tata Mc Graw Hill Publ. NewDelhi.
3. Elements of Farm Machinery.1989. Srivastava, A.C. Oxford IBH Publ. Company, NewDelhi.
4. Elements of Agricultural Engineering, Vol. I &III. 1989. Singhal, O.P. Suraj Prakashan,Allahabad.
5. Element of Agricultural Engineering. 1990. Sahay, Jagdishwar. Agro. Book Agency, New Chitragupta Nagar,Patna.

Course Outcome -1: Students will be able understand the importance of organic manures, green/leaf manuring and Integrated nutrient management.
2: Students will be able to study various chemical fertilizers and their classification which helps them to apply appropriate fertilizer dose to the field.
3: Students will be able to understand history of soil fertility and plant nutrition and criteria of essentiality which helps them to understand the nutrient deficiency in soil.
4: Students will be able to understand the chemistry of soil nutrient. They must be able to evaluate soil fertility for critical levels of different nutrients analysis
5: Students will be able to understand use of indicator plants and various factors

influencing nutrient use efficiency (NUE).

BAG239 **ManuresandFertilizers** **2(1+1)**

Theory

Soil organic matter, Composition, Decomposability, C: N ratio. Soil biology, Biomass, Soil organisms and their beneficial and harmful roles. Raw materials – Manures – Bulky and concentrated – FYM, Composts – Different methods, Mechanical compost plants, Vermicomosting, Green manures, Oil cakes, Sewage and sludge – Biogas plant slurry, Plant and animal refuges. Fertilizers – classifications, Chemistry of manufacturing and properties of major nitrogenous (ammonium sulphate, urea, calcium ammonium nitrate, ammonium nitrate, ammonium sulphate nitrate) phosphatic (single super phosphate, enriched super phosphate, diammonium phosphate, ammonium poly phosphate), potassic and complex fertilizers, their fate and reactions in the soil, Secondary and micronutrients fertilizers, amendments, Fertilizer Control Order, Fertilizer storage; Important Biofertilizers and theiradvantage.

Practical

Determination of organic carbon and microbial biomass C, N and P. Total nitrogen and phosphorus in manures / composts – Ammoniacal and nitrate nitrogen – Water soluble P_2O_5, potassium, calcium, sulphur and zinc contents of fertilizers, Adulteration infertilizer.

Lecture schedule: Theory

S. No.	Topic	No. of lectures

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1.	Soil organic matter, Composition, Decomposability, C: N ratio.	1
2.	Soil biology, Biomass, Soil organisms and their beneficial and harmful roles. Carbon cycle and C:N ratio and its significance in agriculture	1
3.	Importance and Role of Manures in Sustainable Agriculture	1
4.	Bulky Manures – Raw materials of FYM, compost and vermicompost, method of preparation, uses and nutrient contents	1
5.	Bulky Manures – Raw materials of green manuring and mechanical compost plant, their uses and importance	1
6.	Use of oilcakes, sewage and sludge, bio gas slurry, plant and animal refuges as concentrate organic manure, their importance and nutrient contents	1
7.	Fertilizers – Their importance and classification	1
8.	Chemistry of manufacture of urea, ammonium sulphate and CAN along with their properties, uses and.fate in soil	1
9.	Chemistry of manufacture of ammonium nitrate sulphate, their importance, properties, uses and fate in soil	1
10.	Chemistry of manufacture of SSP and enriched super phosphate, their properties, uses and fate in soil	1
11.	Chemistry of manufacture of DAP and ammonium polyphosphate, their properties, uses and fate in Soil	1
12.	Chemistry of manufacture of MOP and sulphate of potash, their properties , uses and fate in soil	1
13.	Complex fertilizer – Chemistry of manufacture of nitrophosphate and their properties, uses and fate in soil	1
14.	Secondary and micronutrient fertilizers and their sources and composition	1
15.	Fertilizer control order and fertilizer storage	1
16.	Important bio-fertilizer and their advantages	1

Lecture schedule--Practical

S. No.	Topic	No. of lectures
1.	Determination of organic carbon in soil	1
2.	Determination of microbial biomass C, N & P in soil	3
3.	Determination of total nitrogen in manures	1
4.	Determination of total phosphorus in manures	1
5.	Determination of total potassium in manures	1
6.	Determination of ammonical and nitrate nitrogen in fertilizers	1
7.	Determination of water soluble P_2O_5 in fertilizers	1
8.	Determination of potassium in fertilizers	1
9.	Determination of calcium in fertilizers	1
10.	Determination of sulphur in fertilizers	1
11.	Determination of zinc in fertilizers	1
12.	Determination of adulteration in fertilizers	1
13.	Determination of moisture in fertilizers	1
14.	Methods of inoculation of biofertilizers in seed	1

References:

1. Yawalkar, K.S. and Agarwal. J.P. (1992). Manure and fertilizers. Agriculture- Horticulture Publishing House, Nagpur.
2. Tisdale, S.L. and Nelson, W.L. (1990). Soil Fertility and fertilizers, McMillan Pub. Co. N.Y.pp.754.
3. Sanchalli, V.K. (1960). Chemistry and Technologyof Fertilizers. Reinhebl publishing corporation, New York,USA.
4. Chopra, S.L. and Kanwar, J.S. (1991). Analytical Agriculture, Chemistry, Kalyani Publishers, NewDelhi.
5. Tandon, H.L.S. (1989). Soil water and fertilizers analysis, Fertilizer Development and Consultant organization, NewDelhi
6. FAI. (1999). Fertilizer (Control) Order, 1985 and the essential commodities Act, 1995. FAI, New Delhi, pp.203.
7. Kanwar, J.S. (1976). Soil Fertility: theory and practice. (ed) ICAR, New Delhi pp.583.
8. McVicker, M.H. (1952). Using commercial fertilizers, Interstate Danvilk,US.

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B. Sc. (Hons.) Agriculture, Part- II IV

Semester

Course Outcome -1. The student gains a thorough knowledge on basic production technology of Rabi crop production.

2. To aquatint the students with modern technologies right from field preparation to marketing by allotting specific crop to each students.

3. Familiarize on basic techniques of field production of Rabi crops.

4. Students will be able to apply different field techniques for the production of Rabi crops.

5. Students will be able to apply their knowledge to solve problems related to plant growth, crop production and natural resource management of Rabi crops

6. Practical knowledge on management of Rabi crops.

BAG241 **Field Crops-II(*Rabi*)** **3(2+1)**

Theory:

Origin, geographical distribution, importance, production in Rajasthan and India, soil and climatic requirements, varieties, cultural practices *viz.* seed and sowing , intercultural operations, fertilizer, water and weed management, plant protection measures; harvesting and yield of wheat, barley; chickpea,; rapeseed and mustard, potato, sugarcane and lucerne; Package of practices of tobacco, sunflower, safflower, linseed, sugarbeet, isabgol , lentil ,berseem ,oats, opium poppy, frenchbean, taramiraandpeas.

Practical:

Identification of seeds of *rabi* crops ,Seed bed preparation and sowing of wheat and sugarcane ; Calculations on seed rate; Top dressing of nitrogen in wheat and study of fertilizer experiments on *rabi* crops ; Identification of weeds in wheat and other *rabi* crops; Application of herbicides and study of weed control experiments; Morphological characteristics of wheat, barley, oats, rapeseed and mustard ; Yield contributing characters of crops, Judging sugarcane maturity and quality tests.

Lecture schedule :Theory

S.No.	Topic	No. of lectures
1.	Wheat- importance, origin, distribution, production, soilandclimatic requirement	1
2.	Wheat- improved varieties, seed and sowing, intercultural operations/ weed management	1
3.	Wheat- water and fertilizer management and importance of CRI stage.	1
4.	Wheat- plant protection , harvesting and yield andacquaintanceabout triticale.	1
5.	Barley- Importance , origin, distribution, production, soilandclimatic requirement and improvedvarieties	1
6.	Barley- seed and sowing, intercultural operations/ weed management, fertilizer and water management, plant protection measures, harvesting and yield .	1
7.	Rapeseed and mustard – importance , origin, distribution, production, classification , soil and climatic requirement .	1
8.	Rapeseed and mustard – improved varieties, seed and sowing, intercultural operations/ weed management and fertilizer management	1
9.	Rapeseed and mustard – water management, plantprotectionmeasures, harvesting andyield	1
10.	Chickpea- importance, origin, distribution, production, soil and climatic requirement and improved varieties.	1
11.	Chickpea –seed and sowing, intercultural operations/ weed management, fertilizer and water management, plant protection measures, harvesting and yield.	1
12.	Sugarcane- importance, origin, distribution, production, soil and climatic requirement.	1
13.	Sugarcane- improved varieties, seed and transplanting , intercultural operations/weed management and fertilizer management.	1
14.	Sugarcane- water management and plant protection measures.	1
15.	Sugarcane- maturity, harvesting and yield and factors affecting quality.	1
16.	Potato- importance, origin, distribution, production, soil and climatic requirement, improved varieties, seed and sowing .	1
17.	Potato- seed plot technique, intercultural operations/weed management, fertilizer and water management, plant protection measures , harvesting and yield .	1
18.	Lucerne – importance , soil and climatic requirement, improved varieties and seed and sowing	1
19.	Lucerne- weed, fertilizer and water management , cutting management and yield.	1
20.	Tobacco-.package of practices	1
21.	Sunflower- package of practices	1

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22.	Linseed- package of practices	1
23.	Safflower – package of practices	1
24.	Taramira - package of practices	1
25.	Sugarbeet- package of practices	1
26.	Lentil- package of practices	1
27.	Pea- package of practices	1
28.	Frenchbean - package of practices	1
29.	Berseem - package of practices	1
30.	Isabgol - package of practices	1
31.	Oats - package of practices	1
32.	Opium poppy- package of practices	1

Lecture schedule: Practical

S.No.	Topic	No. of lectures
1.	Identification of seeds, crops and other inputs of *rabi* crops.	1
2.	Seed bed preparation, germination and purity tests of seed	1
3.	Preparation of seed material for sowing and sowing methods	1
4.	Seed rate and related numerical	1
5.	Seed treatment of crops.	1
6.	Sowing of wheat and planting of sugarcane.	1
7.	Application of herbicides and related numericals.	1
8.	Judging physiological maturity of various crops	1
9.	Fertilizer application in crops and related numerical	1
10.	Morphological difference in wheat, barley and oat, rapeseed and mustard, berseem and lucerne.	1
11.	Judging sugarcane maturity based on brix ratio and related calculation	1
12.	Theoretical yield and related numerical	1
13.	Comparative study of initial and final plant population in the field condition	1
14.	Crop harvesting and related numericals on harvest index.	1
15.	Working out seed index (test weight) and cost of cultivation.	1
16.	Visit of experiments in field	1

References:

1. Singh, Chhidda; Singh P. and Singh, R. 2003. Modern Techniques of Raising Field Crops, Oxford &IBH Publishing Co., NewDelhi.
2. Singh, S.S. 1998, Crop Management: Under irrigated and rainfedconditions.
3. Singh, S.S. 1993, Principles and Practices of Agronomy, Kalyani Publishers, NewDelhi.
4. Reddy,T.Y. and Reddi, G.H.S. 1993. Principles of Agronomy, Kalyani Publishers, NewDelhi.
5. Maiti, S. Hedge,M.R. and Chhattopadhyay, S.B. 1988. Handbook of Annual Oilseed Crops. Oxford &IBH Publishing Co., NewDelhi.
6. Jaiswami, L.H. and Baldeo, B. 1990. Advances in Puulse Production Technology, ICAR, NewDelhi.
7. Thakur, C. 1979. Crop Production, Vol. I &II. Metropolitan Book Pvt. Ltd., NewDelhi.
8. Ahlawat, I.P.S. , Sharma, O.P. & Saini., G.S. 1998 Scientific Crop Production in India. Aman Publishing House, Madhu Market, Budhana gate,Meerut.
9. Rathore, P.S. 1999-2000. Techniques and Management of Field Crop Production. Agrobios (India),Jodhpur.
10. Rathore, P.S. and Sharma, S.K. 2003. Scientific Pulse Production. Yash Publishing House,Bikaner.
11. Sharma, Kalicharan 1990 Bharat ki promokh faslea. G.B. Pant Agricultural & Technology University,Nanital.
12. Reddy, S.R. 2004. Agronomy of Field Crops. Kalyani Publishers, New Delhi.

Course Outcome -1. Understand and learn definition, meaning, scope Importance of water in plants & irrigation.

2 Know significance, introduction of, role of IndianWater resources and Rajasthan.

3 Learn the forms of soil water and Soil moisture constants.

4 Observation and learn the methods soil moistureDetermination, crop water requirement.

5 Know about methods of evapo-transpiration,

6.Develop and understand of irrigation,Water requirement.

7 Understand the role of crop vs. waterrequirement

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Theory:

Irrigation: definition and objectives; Water resources and irrigation development in India and Rajasthan; Soil moisture constants and theories of soil water availability; Methods of soil moisture estimation; Evapotranspiration and crop water requirement; Scheduling of irrigation; Methods of irrigation: surface, sprinkler and drip irrigation; Irrigation efficiency and water use efficiency, Irrigation water quality and its management including conjunctive use of water; Water management of different crops (rice, wheat, maize, groundnut, sugarcane, pearlmillet, chickpea, mustard); Agricultural drainage

Practical:

Determination of bulk density by field method; Determination of soil moisture content by gravimetric, tensiometer, electrical resistance blocks and neutron moisture meter methods; Determination of field capacity by field method; Determination of permanent wilting point; Measurement of irrigation water using different devices; Calculations on irrigation water requirement and irrigation efficiencies (problems); Determination of infiltration rate; Demonstration of border method of irrigation ; Demonstration of furrow method of irrigation; Demonstration of check basin and basin method of irrigation; Acquaintance and upkeep of sprinkler and drip irrigation systems; Determination of EC, pH, carbonates biocarbonates and Ca+ Mg in irrigation water (qualityparameters).

Lecture schedule: Theory

S.No	Topic	No. of lectures
1.	Irrigation : definition and objectives	1
2.	Water resources and irrigation development in India and Rajasthan.	1
3.	Soil moisture constants and theories of soil water availability	1
4.	Methods of soil moisture estimation: gravimetric , tensiometric , electrical resistance blocks ,neutron moisture meter and pressure plate apparatus.	1
5.	Evapotranspiration-difference between ET and consumptive use and methods of measuring evapotranspiration under field condition	1
6.	Crop water requirement and factors affecting it	1
7.	Scheduling of irrigation : meaning and different approaches for scheduling irrigation in field crops.	1
8.	Surface methods of irrigation ; border , furrow , check basin and basin methods	1
9.	Sprinkler and drip methods; their layout, adaptability , advantages and limitations.	1
10.	Irrigation efficiency ; different terms used and their importance.	1
11.	Water use efficiency -factors affecting and agronomic techniques to boost WUE	1
12.	Irrigation water quality- different criteria and limits used, effect of poor quality water on plant growth .	1
13.	Management practices for efficient use of poor quality waters including conjunctive use of water.	1
14.	Water management in rice, maize, pearlmillet and groundnut.	1
15.	Water management in wheat, chickpea, mustard and sugarcane	1
16.	Agricultural drainage- definition, benefits and different methods of drainage.	1

Lecture schedule: Practical

S.No.	Topic	No. of lectures
1.	Determination of bulk density by field method	1
2.	Determination of soil moisture content by gravimetric and tensiometric methods	1
3.	Determination of soil moisture content by electrical resistance blocks and pressure plate apparatus	1
4.	Determination of field capacity by field method	1
5.	Determination of permanent wilting point	1
6.	Measurement of irrigation water using different devices.	1
7.	Calculations on irrigation water requirement of crops	1
8.	Calculations on various irrigation efficiencies	1
9.	Determination of infiltration rate of soil	1
10.	Demonstration of border method of irrigation	1
11.	Demonstration of furrow method of irrigation	1
12.	Demonstration of check basin and basin method of irrigation.	1
13.	Acquaintance and upkeep of sprinkler and drip irrigation systems.	1
14.	Determination of EC and pH of irrigation water	1
15.	Determination of carbonates and bicarbonates in irrigation water	1
16.	Determination of Ca + Mg in irrigation water	1

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References:

1. Michael, A.M. 1987. Irrigation - Theory and Practice, VikasPublishingHouse Pvt. Ltd., New-Delhi.
2. Parihar, S.S. and Sandhu, B.S. 1978. Irrigation of Field Crops-Principlesand Practices, ICAR, New- Delhi.

3. Lenka, D. 1999. Irrigation and Drainage . Kalyani Publishers,New-Delhi.
4. Sankara Reddy, G.H. and Yellamanda Reddi, T. 1995. Efficient use of Irrigation Water . Kalyani Publishers, New Delhi.
5. Reddy,S.R. 2000. Principles of Crop Production , Kalyani Publishers,New-Delhi.
6. Majumdar, D.K. 2004. Irrigation Water Management- Principles and Practice.Prentice Hall of India ,New-Delhi.
7. Mishra, R.D. and Ahmed, M. 1987. Manual on Irrigation Agronomy, Oxford &IBH Publishing Co.Pvt..Ltd., New-Delhi.

Course Outcome – 1. Student learn about soil profile development.
2. Student able to apply different method of soil survey and soil mapping.
3. Student will able to land use planning of different type of soil which found in India.
4. Student learn about remote sensing concept.

BAG243 Soil Survey, Land Use Planning and RemoteSensing 2(1+1)

Theory

Soil profile development, soil survey: Significance and purpose of soil survey, methods of soil survey and mapping. Types of soil surveys: Detailed, Reconnaissance, and Detailed—reconnaissance soil survey. Land use planning: Land capability classification, Soil mapping units. Soil survey interpretations and soil survey report. Major soil groups of India with special reference to Rajasthan. Soil taxonomy – a comprehensive US system of soil classification. Remote sensing: concept of remote sensing. Aerial photography, Aerial and satellite sensor imaginary, image processing and interpretations.

Practical

Examinations and description of typical soil profile. Interpretation of topographic map and delineation of physiographic boundaries based on important characters, typifying pedon excavation, examination and classification, interpretation of the identified soil characteristics and their evaluation for land use planning. Preparation of the soil survey report, interpretation of remote sensinginformation.

Lecture schedule–Theory

S.No.	Topic	No. of lectures
1.	Soil profile development and description	2
2.	Objective and uses of soil survey	1
3.	Purpose and methods of soil survey and mapping procedure	1
4.	Kind of soil surveys: Detailed, Reconnaissance and detailed reconnaissance survey.	1
5.	Soil mapping unit, Soil Survey interpretations for agricultural and non agricultural lands, soil survey report	1
6.	Land use planning: Land capability classification, land capability classes, sub classes and management units	2
7.	Major soil groups of India with special reference to Rajasthan.	1
8.	Soil classifications : Concept and purpose of classification.	1
9.	Soil taxonomy – a comprehensive US system of soil classification	1
10.	Purpose and advantages of 7^{Th} approximation	1
11.	Higher and lower categories of soil classification i.e. order, suborder, great group, sub group, family, series, type and phases, soil moisture and temperature regimes.	2
12.	Aerial photography: Definition, types of aerial photography and satellite, sensor	1
13.	Remote sensing : Definition, type, use and concept of remote sensing Image processing and Interpretations	1

Lecture schedule--Practical

S.No.	Topic	No. of lectures
1.	Examinations and description of typical soil profile	2
2.	Interpretation of topographic map and delineation of physiographic boundaries	1
3.	Demarcations for delineation of soil boundaries based as important characters.	1
4.	Determination of EC and pH of soil	1
5.	Determination of calcium carbonate of soil	1
6.	Determination of per cent base saturation	1
7.	Determination of soil colour by munsell soil colour chart	1
8.	Determination of bulk density	1
9.	Determination of particle density and calculation of porosity	1
10.	Determination of hydraulic conductivity and infiltration rate	2

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11.	Soil moisture retention at 1/3 and 15 bar	1
12.	Mechanical composition of soil separates by feel method	1
13.	Preparation of soil survey report and interpretation	1
14.	Interpretation of remote sensing information	1

References:

1. Brady, N.C. (1996) The nature and properties of soil Mac Millan, Publishing company Newyork.
2. Buol, S.W., Hole, H.D.and Mc Crackoh, R.J. (1980) Soil genesis and classification, Oxford and IBH publishing Co. NewDelhi.
3. Cursau Paul, J. (1985) Principal of remote sensing, Loymen, NewYork.
4. lilles, T.m. and Kiefer, R.W. (1979) Remote sensing and image interpretation John willey and sons, NewYork.
5. Patel, A.N. and Singh Surendra (1999) Principal of remote sensing, Scientific publishers (India)Jodhpur.
6. Sehgal, J. (2000) Pedology: Concepts and applications, Kalyani publisher,Ludhiana
7. ISSS (2002) Fundamental of Soil Science Div. of Soil Science, IARI, NewDelhi

Course Outcome - 1.Students will familiarized with various categories of pest
2.Students will know various field as well as laboratory methods of detection and diagnosis of arthropodan pests and plant pathogens
3.Students will know principles and utilization of integrated pest management of field crops
4.Students will know identification and nomenclature of pests of field crops and their management
5.Students will be able apply knowledge gained to solve actual pest management problems
6. Students will be able to explains the different methods of IPM with examples.
7. Students will be able to define the concept of Integrated Pest and Disease Management (IPDM) and enlists its components.

BAG244 Insect Ecology and Integrated Pest Management Including Beneficial Insects

3 (2+1)

Theory:

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Insect Ecology: Definition, scope and concept. Environment and its components. Agroecosystem. Effect of abiotic factors- temperature, moisture, humidity, rainfall, light, atmospheric pressure and air currents. Effect of biotic factors – positive and negative interactions. Causes of pest outbreak. Pest surveillance and forecasting. Categories of pests. **IPM:** Introduction, importance, scope, concepts and limitations. Tools of IPM- Host plant resistance, cultural, mechanical and physical, legislative and biological control (parasites, predators and pathogens such as bacteria, fungi and viruses). Chemical control- Classification, toxicity and formulations of insecticides. Study of important insecticides- Botanicals, chlorinated hydrocarbons, organophosphates,carbamates, synthetic pyrethroids and novel insecticides, chitin synthesis inhibitors, rodenticides, acaricides and fumigants. Hormones and pheromones, repellents, antifeedants, attractants, gamma radiation and genetic control. Insecticides Act 1968- Important provisions. Application techniques of insecticides. Symptoms of insecticide poisoning, first aid and antidotes. **Beneficial insects:** Honeybee- Important species, rearing techniques, diseases and natural enemies. Silkworm- Important species, rearing techniques, diseases and natural enemies. Lac insect- rearing techniques, diseases and naturalenemies.

Practical:

Visit to meteorological observatory and IPM laboratory. Pest surveillance through light traps, pheromone traps and field incidence. Study of sampling techniques for the estimation of insect population. Practicable IPM practices-Mechanical, physical and cultural methods Identification and application of parasites and predators. Botanical insecticides- Neem based products Chemical control- Insecticides and their formulations. Handling of plant protection equipments. Calibration of spray equipments. Calculation of doses/concentrations of insecticides. Calculation of doses/concentrations of insecticides. IPM case studies of one important field crop. Poison bait preparation for rodent control and its application. Safe handling of pesticides. Rearing technique for honeybees. Rearing technique for silkworm. Rearing technique for lac insect.

Lecture schedule: Theory

S.No.	Topic	No. of lectures
1.	**Insect Ecology:** Definition, scope and concept.	1
2.	Environment and its components.	1
3.	Agroecosystem.	1
4.	Effect of abiotic factors- temperature, moisture, humidity, rainfall, light, atmospheric pressure and air currents.	1
5.	Effect of biotic factors – positive and negative interactions.	1
6.	Causes of pest outbreak	1
7.	Pest surveillance and forecasting	1
8.	Categories of pests	1
9.	**IPM:** Introduction, importance, scope, concepts and limitations.	2
10.	Tools of IPM- Host plant resistance, cultural, mechanical and physical, legislative and biologicalcontrol(parasites,predatorsandpathogenssuchas bacteria,fungiandviruses).	3
11.	Chemical control- Classification, toxicity and formulations of insecticides.	2
12.	Study of important insecticides- Botanicals, chlorinated hydrocarbons, organophosphates, carbamates, synthetic pyrethroids and novel insecticides, chitin synthesis inhibitors, rodenticides, acaricides andfumigants.	5
13.	Hormones and pheromones	2
14.	Repellents, antifeedants, attractants,	1
15.	Gamma radiation and genetic control.	1
16.	Insecticides Act 1968- Important provisions, quarantine rules.	1
17.	Application techniques of insecticides.	1
18.	Symptoms of insecticide poisoning, first aid and antidotes	1
19.	**Beneficial insects:** Honeybee- Important species, rearing techniques, diseases and natural enemies.	2
20.	Silkworm- Important species, rearing techniques, diseases and natural enemies.	2
21.	Lac insect- rearing techniques, diseases and natural enemies.	1

Lecture schedule: Practical

S.No.	Topic	No. of lectures
1.	Visit to meteorological observatory and IPM laboratory	1
2.	Pest surveillance through light traps, pheromone traps and field incidence	1
3.	Study of sampling techniques for the estimation of insect population	1
4.	Practicable IPM practices-Mechanical, physical and cultural methods	1
5.	Identification and application of parasites and predators	1
6.	Botanical insecticides	1
7.	Chemical control- Insecticides and their formulations	1
8.	Handling of plant protection equipments	1
9.	Calibration of spray equipments	1
10.	Calculation of doses/concentrations of insecticides	1

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11.	IPM case studies of one important field crop	1
12.	Poison bait preparation for rodent control and its application	1
13.	Safe handling of pesticides	1
14.	Rearing technique for honeybees	1
15.	Rearing technique for silkworm	1
16.	Rearing technique for lac insect	1

References:

1. Metcalf, R.L and Luckman W.H. 1982. Introduction to Insect Pest Management. Wiley Inter Science publishing, New York.
2. G.S.Dhaliwal and Ramesh Arora 2001. Integrated Pest Management. Concepts and Approaches. Kalyani publishers, New Delhi.
3. LarryP.Pedigo.1991.EntomologyandPestManagement.McMillanpublishingcompany,Newyork.
4. Yazdani G.S. and Agarwal M.L. 1979. Elements of Insect Ecology. Naroji publishing house, NewDelhi.
5. David,B.V.2003.ElementsofEconomicEntomology,PopularBookDepot,Chennai.

Course Outcome - 1.Students will be known about the importance and scope of vegetable and flowers.
2.Students will be able to know about cultivation of different vegetable crops like tomato, brinjal, chilli etc.
3.Students will be able to know about the different vegetable gardening which is used in the world.
4.Students will know about cultivation of different flowerslike rose, jasmine, jerbera, archids etc
5.Students will know about morphological characters of different vegetables and flower.
6. Students will be able to understand about economics of vegetables and flower

BAG245 Production Technology of VegetablesandFlowers 4(3+1)

Theory:

Importance and scope of Olericulture. Types of vegetable gardening. Classification of vegetables. Package of practices with reference to botanical name, family, origin, distribution, climate, soil, varieties, sowing, manure and fertilizers, irrigation, intercultural operations, harvesting, yield and plant protection measures including physiological disorders for fruit vegetables– tomato, brinjal, chilies, and okra; Cucurbitaceous vegetables- cucumber, ridge gourd, bottle gourd, bitter gourd, melons– water melon, musk melon and round melon, Cole crops– cabbage, cauliflower and knol-khol. Bulb crops– onion and garlic. Beans and peas– French bean, cluster bean, dolichos bean, peas and cowpea. Tuber crops– potato, sweet potato, colocasia,; Root crops– carrot, radish, turnip and beet root; Leafy vegetables– amaranths and palak. Introduction to protected cultivation of important vegetables viz. cucumber, capsicum and tomato. Importance and scope of floriculture. Principles of landscape gardening. Types and styles of ornamental gardening. Planting, care and management of lawn, ornamental trees, shrubs, climbers, palms, indoor- plants and seasonal flowers in the gardens. Package of practices for rose, jasmine, chrysanthemum, marigold and gladiolus. Introduction to protected cultivation of important flower crops viz. rose and gerbera.

Practical:

Planning and layout of kitchen garden; Identification of important vegetable and ornamental plants; trees (shrubs, climbers, house plants, palms etc.,) Raising of vegetable nurseries. Transplanting of vegetable seedlings in main field; Layout of lawns and maintenance; Potting, repotting and maintenance of house plants; Visit to commercial vegetable farms ;Training and pruning of rose (standards, hybrid 'T' roses scented roses) and chrysanthemum (pinching and disbudding); Planning and layout of gardens and garden designs for public and private areas; Harvesting indices of different vegetable crops; Grading and packing of vegetables; Prolonging the shelf life of cut flowers. Visit to different styles and types ofgardens.

Lecture schedule- Theory

S.No.	Topic	No. of lectures
1.	Importance and scope of Olericulture	2
2.	Types of vegetable gardening	1
3.	Classification of vegetables	1
4.	Package of practices with reference to botanical name, family, origin, distribution, climate, soil, varieties, sowing, manure and fertilizers, irrigation, intercultural operations, harvesting, yield and plant protection measures including physiological disorders for fruit vegetables – Tomato	2
5.	Brinjal	1
6.	Chilies	1
7.	Okra	1
	Cucurbitaceous vegetables-	
8.	Cucumber, ridge gourd, bottle gourd and bitter gourd	3
9.	**Melons** – water melon, Musk melon and round melon	3
	Cole crops	

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10	Cauliflower	1
11	Cabbage and knol-khol	2
	Bulb crops –	
12	Onion	1
13	Garlic	1
	Beans and peas –	
14	French bean, cluster bean and Dolichos bean	2
15	Peas and cowpea	2
	Tuber crops –	
16	Potato	2
17	Sweet potato, colocasia	1
	Root crops –	
18	Carrot and radish	2
19	Turnip and beet root	1
20	Leafy vegetables –	
21	Amaranths and palak	1
	Introduction to protected cultivation of important vegetables -	
22	Cucumber, capsicum and tomato	2
23	Importance and scope of floriculture	1
24	Principles of landscape gardening	1
25	Types and styles of Ornamental gardening	2
26	Planting, care and management of lawn	1
27	Ornamental trees, shrubs and climbers	2
28	Palms, indoor- plants	1
29	Seasonal flowers in the gardens	2
	Package of practices for-	
30	Rose	2
31	Jasmine	1
32	Chrysanthemum,	1
33	Marigold	1
34	Gladiolus	1
	Introduction to protected cultivation of important flower crops-	
31	Rose	1
32	Gerbera	1

Lecture schedule-Practical:

S. No.	Topic	No. of lectures
1.	Planning and layout of kitchen garden	1
2.	Identification of important vegetable	1
3.	Identification of Ornamental plants; trees (shrubs, climbers, house plants, palms etc.,)	1
4.	Raising of vegetable nurseries	1
5.	Transplanting of vegetable seedlings in main field	1
6.	Layout of lawns and maintenance	1
7.	Potting, repotting and maintenance of house plants	1
8.	Visit to commercial vegetable farms	1
9.	Training and pruning of rose (standards, hybrid 'T' roses scented roses) and chrysanthemum (pinching and disbudding);	2
10.	Planning and layout of gardens	1
11.	Garden designs for public and private areas	1
12.	Harvesting indices of different vegetable crops	1
13.	Grading and packing of vegetables	1
14.	Prolonging the shelf life of cut flowers	1
15.	Visit to different styles and types of gardens	1

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References:

1. Thompson, H. C. and Kelly, W.C. Vegetables Crops. Tata McGrawHill
2. Chauhan, D.V.S. Vegetable Production in India. Ram Prasad & sons,Agra
3. Bose, T.K. Vegetables. Naya Prokash,Calcutta
4. Singh, S.P. Production Technology of Vegetables Crops. Agril. Res. Communication centre,Karnel
5. Choudhary, B.Vegetables. NBT, New Delhi
6. Gopalaswamiengar, K.S. The Complete Gardening in India.The Hosali Press,Bangalore
7. Arora, J.S. Introductory Ornamental Horticulture. Kalyani Publisher,Ludhiana

Course Outcome - 1.Learn about sources of Agricultural Micro-Macro financing and credit systems.
2.Understand History of financing agriculture in India
3.Learn about Significance and limitations of Crop insurance.
4.Significance of Farming Cooperatives.
5.Toacquire Knowledge of successful cooperative systems in India and newly launched crop insurance schemes.
6. Estimation of Credit requirement of farm business

BAG246 **Agricultural FinanceandCo-Operation** **2 (1+1)**

Theory:

Agricultural finance: nature and scope. Time value of money, Compounding and Discounting. Agricultural credit: meaning, definition, need, classification. Credit analysis: 4R's 5C's and 7 P's of credit, repayment plans. History of financing agriculture in India. Commercial banks, nationalization of commercial banks. Lead bank scheme, regional rural banks, scale of finance. Higher financing agencies, RBI, NABARD, AFC, Asian Development Bank, World Bank, Insurance and Credit Guarantee Corporation of India. Assessment of crop losses, determination of compensation. Crop insurance, advantages and limitations in application, estimation of crop yields. Agricultural cooperation: philosophy and principles. History of Indian cooperative Movement, pre- independence and post independence periods, cooperation in different plan periods, cooperative credit structure: PACS, FSCS. Reorganisation of cooperative credit structure in Andhra Pradesh and single window system. Successful cooperative systems in Gujarat, Maharastra.Punjabetc.

Practical:

Factors governing use of Capital and identification of credit needs; Time value of money, Compounding and discounting; Tools of financial management, Balance sheet, Income statement and cash flow analysis;

Estimations of credit needs and determining unit costs; Preparations and analysis of loan proposals; Types of repayment loans; Study of financial institutions: PACS, DCCB, Apex Banks, RRBs, CBs, NABARD.

Lecture schedule – Theory

S.No.	Topics	No. of lectures
1.	Nature and scope of agricultural finance	1
2.	Meaning, definition, need and classification of credit	1
3.	4R's, 5C's and 7P's and Repayment plan of credit	1
4.	History of financing agriculture in India	1
5.	Commercial banks, Nationalization of Commercial banks	1
6.	Lead bank scheme, Regional Rural Banks, scale of finance	2
7.	Higher financing agencies, RBI, NABARD	1
8.	Crop insurance advantages and limitation in application, estimation of crop yield	1
9.	Agricultural cooperation philosophy and principles	2
10.	History of Indian co-operative movement Pre-independence and post-independence period	1
11.	Cooperation in different plan periods	1
12.	Cooperation in credit structure: PACS, FSCS	1
13.	Successful cooperation system in Gujarat and Andhra Pradesh	1
14.	Introduction to micro finance and Kishan Credit Cards	1

Lecture schedule – Practical

S.No.	Topics	No. of lectures
1	Estimation of credit needs	2
2.	Preparation and analysis of loan proposals	2
3.	Estimation of repaying capacity	2
4.	Analysis of financial statement	2
5.	Analysis of variance repayment plans of credit	2
6.	Estimation of interest rate and of credit	2
7.	Visit of financial institutions, PACS, RRB, DCCB etc.	4

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References :-

1. Reddy, S. and Raghu Ram, P. "Agricultural Finance and Management" Oxford and IBH, NewDelhi.
2. Singh, J.P. 1990. "Agricultural Finance – Theory and Practice" Ashish Publishing House,NewDelhi
3. Pandey, U.K. "An Introduction to Agricultural Finance" Kalyani Publishes, NewDelhi
4. Pandey, Mukesh and Tewari, Deepali "Rural and AgricultureMarketing"
5. Mamoria, C.B. "Agricultural Problems ofIndia"
6. Krishnaswami, O.R. "Fundamental ofCooperation"
7. Nelson, A.G. and Murray, W.G. 1988 "Agricultural Finance" IOWA State University Press, Amies, IOWA, USA

Course Outcome - 1. Learn and understand about mineral nutrition in plants.
2. Know about mechanism of water movement in plants
3. Understand the mechanism of transpiration
4. Understand the process of translocation of solutes in plants
5. Understand the physiological details of photosynthesis, photorespiration

BAG247 **CropPhysiology** **3 (2+1)**

Theory:

Introduction – Definition of Crop Physiology – Importance in Agriculture and Horticulture. Crop Water Relations– Physiological importance of water to plants – Water potential and its components, measurement of water status in plants. Crop water relations (contd.) Transpiration – Definition – significance – Transpiration in relation to Crop productivity – Water Use Efficiency – WUE in C3, C4 and CAM plants – Factors affecting WUE. Photosynthesis – Energy synthesis – Significance of C3, C4 and CAM pathway – Relationship of Photosynthesis and crop productivity – Translocation of assimilates – Phloem loading, apoplastic and symplastic transport of assimilates – Source and sink concept – Factors affecting Photosynthesis for productivity – Methods of measuring photosynthesis – Photosynthetic efficiency – Dry matterpartitioning – Harvesting index of crops. Photorespiration and crop productivity. Respiration and its significance – Importance of glycolysis, TCA cycle. Pentose Phosphate Pathway – Growth respiration and maintenance respiration, Alternate respiration– Salt respiration–wound respiration – measurement of respiration. Nutriophysiology– Definition – Mengel's classification of plant nutrients – Physiology of nutrient uptake– Functions of Plant nutrients – Deficience and todicity symptoms of plant nutrients – Foliar nutrition – Hydroponics – solution and sand culture. Physiology of flowering – Photoperiodism and Vernalisation in relation to crop productivity – Classification of plants – Commercial application of photoperiodism. Growth and Development – Definition – Types of growth–Determinate and Indeterminate growth – Monocarpic and Polycarpic species with examples, Measurement of growth – Growth analysis Growth characteristics – Definitions and mathematical formulae. Plant Growth Regulators – Occurrence – Biosynthesis – Mode of action of Auxins, Gibberellins, Cytokinins, ABA, Ethylene. Novel plant growth regulators – Commercial application of plant growth regulator in agriculture and horticulture. Senescence and abscission – Definition – Classification – Theories of mechanism and control of senescence – Physiological and biochemical changes and their significance. Abscission and its relationship with senescence. Seed Physiology – Seed dormancy – Definition – types of seed dormancy – Advantages and disadvantages of seed dormancy - Causes and remedial measures for breaking seed dormancy with examples – Optimum conditions of seed storage – Factors influencing seed storage (ISTA standards). Post Harvest Physiology - Fruit ripening – Metamorphic changes – Climacteric and non-climacteric fruits – Hormonal regulation of fruit ripening (with ethrel, CCC, Polaris, paclobuterozole) – Use of hormones in increasing vase life offlowers.

Practical:

Preparation of solutions. Growth analysis: Calculation of growth parameters. Methods of measuring water status in roots, stems and leaves. Estimation of water potential by Chardakov's method. Measurement of absorption spectrum of chloroplastic pigments and fluorescence. Measurement of leaf area by various methods. Stomatal frequency and index. Leaf anatomy of C3 and C4 plants (Demonstration by already prepared slides). Respirometer – measurement of respiration. Measurement of transpiration by different methods. Measurement of respiratory quotient (RQ). Optimum conditions for seed germination. Breaking seed dormancy (a.) Chemical method (b.) Mechanical method. Yield analysis. Seed viability and vigour tests. Effect of ethylene on regulation ofstomata.

Lecture Schedule: Theory

S.No.	Topic	No.of lectures
1.	Introduction – Definition of Crop Physiology – Importance in Agriculture and Horticulture	2
2.	Crop Water Relations – Physiological importance of water to plants – Water potential and its components, measurement of water status in plants.	2
3.	Crop water relations (contd.) Transpiration – Definition – significance – Transpiration in relation to Crop productivity – Water Use Efficiency – WUE in C3, C4 and CAM plants – Factors affectingWUE.	2
4.	Photosynthesis – Energy synthesis – Significance of C3, C4 and CAM pathway – Relationship of Photosynthesis and crop productivity – Translocation of assimilates – Phloem loading, apoplastic and symplastic transport of assimilates – Source and sink concept – Factors affecting Photosynthesis for productivity – Methods of measuring photosynthesis – Photosynthetic efficiency – Dry matter partitioning – Harvesting index of crops.	5
5.	Photorespiration and crop productivity.	1

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6.	Respiration and its significance – Importance of glycolysis, TCA cycle. Pentose Phosphate Pathway – Growth respiration and maintenance respiration, Alternate respiration – Salt respiration – wound respiration – measurement of respiration.	3
7.	Nutriophysiology – Definition – Mengel's classification of plant nutrients – Physiology of nutrient uptake – Functions of Plant nutrients – Deficience and todicity symptoms of plant nutrients – Foliar nutrition – Hydroponics – solution and sand culture.	3
8.	Physiology of flowering – Photoperiodism and Vernalisation in relation to crop productivity – Classification of plants – Commercial application of photoperiodism	2
9.	Growth and Development – Definition – Types of growth – Determinate and Indeterminate growth – Monocarpic and Polycarpic species with examples – Measurement of growth – Growth analysis Growth characteristics – Definitions and mathematical formulae.	3
10.	Plant Growth Regulators – Occurrence – Biosynthesis – Mode of action of Auxins, Gibberellins, Cytokinins, ABA, Ethylene. Novel plant growth regulators – Commercial application of plant growth regulator in agriculture and horticulture.	4
11.	Senescence and abscission – Definition – Classification – Theories of mechanism and control of senescence – Physiological and biochemical changes and their significance. Abscission and its relationship withsenescence.	1
12.	Seed Physiology – Seed dormancy – Definition – types of seed dormancy – Advantages and disadvantages of seed dormancy - Causes and remedial measures for breaking seed dormancy with examples – Optimum conditions of seed storage – Factors influencing seed storage (ISTA standards).	2
13.	Post Harvest Physiology - Fruit ripening – Metamorphic changes – Climacteric and non-climacteric fruits – Hormonal regulation of fruit ripening (with ethrel, CCC, Polaris, paclobuterozole) – Use of hormones in increasing vase life of flowers.	2

Lecture schedule: Practical

S. No.	Topic	No.of lectures
1.	Preparation of solutions	1
2.	Growth analysis: Calculation of growth parameters	1
3.	Methods of measuring water status in roots, stems and leaves	1
4.	Estimation of water potential by Chardakov's method	1
5.	Measurement of absorption spectrum of chloroplastic pigments and fluorescence	1
6.	Measurement of leaf area by various methods	1
7.	Stomatal frequency and index	1
8.	Leaf anatomy of C3 and C4 plants (Demonstration by already prepared slides)	1
9.	Respirometer – measurement of respiration	1
10.	Measurement of transpiration by different methods	1
11.	Measurement of respiratory quotient (RQ)	1
12.	Optimum conditions for seed germination	1
13.	Breakingseeddormancy a.Chemicalmethod b. Mechanicalmethod	1
14.	Yield analysis	1
15.	Seed viability and vigour tests	1
16.	Effect of ethylene on regulation of stomata	1

References:

1. N.K. Gupta & Sunita Gupta, 2004. Plant Physiology. Oxford &IBH Publication, NewDelhi
2. R.L. Agarwal, 1995. Seed Technology, Oxford &IBH Publication, NewDelhi
3. G.R. Noggle and G.J. Fritz, 1986. Plant Physiology, Prentic Hall of India Pvt.Ltd.
4. J.B. Salisbury and C.W. Ross (1992). Plant Physiology, Wadswar Publishing Company, Belmont, California
5. S.N. Pandey & B.K. Sinha (1995). Vikas Publishing House Pvt. Ltd., NewDelhi

Course Outcome -1. Understand theories of entrepreneurship and business development.
2. Understand the key resources required to develop an existing business such as ideas and finance, launch a new venture, or initiate a business enterprise.
3. Be able to state, understand and evaluate the key factors needed to develop a successful business.
4. Understand the central role of opportunity recognition and marketing to business development.
5. Understand the creation of business sustainability

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BAG248 Entrepreneurship Development and CommunicationSkills 2(1+1)

Theory:

Communication Skills: Meaning and Process of communication, verbal and non-verbal communication; listening and note taking, writing skills, oral presentation skills. Public speaking. Entrepreneurship Development: Concept & Meaning. Overview of Indian social, political and economic systems and their implications for decision making by individual entrepreneurs. Globalization and the emerging business / entrepreneurial environment. Entrepreneurial and managerial characteristics; managing an enterprise; motivational drives; entrepreneurial ethics; Entrepreneurship development Programmes- SWOT analysis, generation, incubation and commercialization of ideas and innovations. Government schemes and incentives for promotion of entrepreneurship. Government Policy on Small and Medium Enterprises (SMEs)/ SSIs. Export and Import Policies. Contract farming and joint ventures, public-privatepartnerships.

Practical :

Listening and note taking, writing skills, oral presentation skills; field diary and lad record; indexing, footnote and bibliographic procedures. Summarizing, abstracting; individual and group presentation. Practice on SWOT Analysis, visit to SMEs / SSIs.

Lecture schedule :Theory

S.No.	Topic	No.of lectures
1.	Communication Skills: Meaning and Process of communication, verbal and non-verbal communication;	1
2.	Listening and note taking, writing skills, oral presentation skills. Public speaking.	2
3.	Entrepreneurship Development: Concept & Meaning.	1
4.	Overview of Indian social, political and economic systems and their implications for decision making by individual entrepreneurs.	2
5.	Globalization and the emerging business / entrepreneurial environment.	2
6.	Entrepreneurial and managerial characteristics; managing an enterprise; motivational drives; entrepreneurial ethics;	2
7.	Entrepreneurship development Programmes- SWOT analysis, generation, incubation and commercialization of ideas and innovations.	2
8.	Government schemes and incentives for promotion of entrepreneurship.	1
9.	Government Policy on Small and Medium Enterprises (SMEs)/ SSIs.	1
10.	Export and Import Policies. Contract farming and joint ventures, public- private partnerships.	2

Lecture schedule :Practical

S.No.	Topic	No.of lectures
1.	Listening and note taking,	2
2.	Writing skills, oral presentation skills;	2
3.	Field diary and ledger record; indexing, footnote and bibliographic procedures.	3
4.	Summarizing, abstracting;	2
5.	Individual and group presentation.	2
6.	Practice on SWOT Analysis,	2
7.	Visit to SMEs / SSIs	3

References:

1. Akhouri, M.M.P., Mishra, S.P. and Sen Gupta, R. 1989. Trainers Manual onDeveloping Entrepreneurial Motivation, NIESBUD, NewDelhi.
2. Bidgoli, H. 1989. Decision Support Systems: Principles and Practices, St. Paul, West Publishing Co.,USA.
3. Goyal, D.P. 1994. Management Information System: Concept and Application, Deep & DeepPublisher , New Delhi.
4. Mancuso, J. 1974. The Entrepreneurs Handbook (Vol. 192(, Artech House, Inc.,USA.
5. Patel, V.G. 1987. Entrepeneurship Development Programme in India and Its Relevance toDeveloping Countries, Entrepreneurship Development Institute of India,Ahmedabad.
6. Rao, T.,V. 1974. Development of an Entrepreneur, Indian Institute of Management,Ahmedabad.
7. Dipak De & M.S. Rao.Entrepreneurial behaviour of farmers : An axiomatic theory. ISBN 81-85694-36- 2 , Ganga Kaveri Publishing House, D.35/77, Jangamawadimath, Varanasi-221001 (India), Ph.-0542-2451936.
8. Dipak De & Basavaprabhu Jirli.Entrepreneurship : Theory and practice in agriculture.ISBN 81-85694- 57-5, Ganga Kaveri Publishing House, D.35/77, Jangamawadimath, Varanasi-221001 (India), Ph.-0542-2451936

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Course Outcome -1. The student gains a thorough knowledge on basic production technology of kharif crop production.
2. To aquatint the students with modern technologies right from field preparation to marketing by allotting specific crop to each students.
3. Familiarize on basic techniques of field production of kharif crops.
4. Students will be able to apply different field techniques for the production of kharif crops.
5. Students will be able to apply their knowledge to solve problems related to plant growth, crop production and natural resource management of kharif crops
6. Practical knowledge on management of kharif crops.

BAG351 **Practical Crop Production-1(*Kharif*crops)** **1(0+1)**

Practical:
Crop planning, raising field crops in multiple cropping system, Field preparation, seed treatment, nursery raising, sowing, nutrient management, water management, weed management and management of insect pests and diseases of crops; Harvesting, threshing, drying, winnowing, storage and marketing of produce. Preparation of balance sheet including cost of cultivation, net returns per student as well as per team of a group of students.

Lecture schedule : Practical

S.No.	Topic	No. of lectures
1.	Introduction of the course, crop planning and allotment of field	1
2.	Field preparation, application of manures and fertilizers	1
3.	Selection of crop and varieties, seed treatment and sowing	1
4.	Sowing of crops.	1
5.	Observation of germination	1
6.	Thinning and gap filling	1
7.	Intercultural operations-hoeing and weeding	1
8.	Intercultural operations-hoeing and weeding	1
9.	Water management- application of irrigation water and demonstrating methods of irrigation	1
10.	Top dressing of fertilizer (urea).	1
11.	Insect and pest management (control)- application of insecticides	1
12.	Disease management (control)- application of fungicides	1
13.	Harvesting	1
14.	Threshing, winnowing and storage	1
15.	Marketing of produce	1
16.	Preparation of balance sheet including estimating cost of cultivation and net return per student as well as per team of a group of student	1

References:

1. Yawalkar, K.S. Agarwal J.P. and Bokde S., 1992, Manures and Fertilizers. Agri-Horticultural Pub. House, Nagpur – India.
2. Balasubramaniyam, P. And Palaniappan, S.P. 2001. Principles and Practices of Agronomy, Agrobios (India), Jodhpur.
3. Reddy, S.R. 2002, Principles of Agronomy, Kalyani Publishers, NewDelhi.
4. Singh, S.S. 1993, Principles and Practices ofAgronomy,Kalyani Publishers, NewDelhi

Course Outcome -1. The time concept relates to increasing the intensity of cropping under assured irrigated conditions.
2 .Effectively managing water to meet food andEnvironmental conditions.
3. The vast potential of rainfed agriculture through knowledge based management of natural resources for increasing productivity and income to achieve food security in the developing world.

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4. Convergence of actors and their actions at watershed level to harness the synergies and to maximize the benefits through efficient and sustainable use of natural resources, to benefit small and marginal farmers through increased productivity per unit of resource.

5. Low-cost and environment-friendly soil and water conservation measures throughout the top sequence for more equitable benefits to a large number of farmers.

6. **Income-generating activities for the landless and women through allied sector activities and rehabilitation of wastelands for improved livelihoods and protecting the environment.**

BAG352 **Rainfed Farming** **2(1+1)**

Theory:

History of rainfed agriculture and its importance in India with particular reference to Rajasthan, extent of problem and constraints related to climate, soil, technological and socio-economic conditions; Delineating criteria for rainfed and drylands; Efficient utilization of water through soil and crop management practices- reducing water losses through mulching (use of mulching), Use of antitranspirants- their kind and mode of action and effect on crop yield; Increasing water storage by reducing run off and increasing infiltration through mechanical and cultural measures; Water harvesting techniques; Watershed management- its concept, objectives and principles; Integrated watershed management for drylands; Efficient management of rainfed crops- land preparation, seeding and crop density, selection of crops and varieties for dryland, alternate cropping and land use strategies, soil fertility management and fertilizer use techniques, weed control and intercultural operations, mid season corrections for mitigating theaberrantweather.

Practical:

Delineating criteria for rainfed and drylands; Onset and withdrawal of the monsoon, amount, intensity and distribution in Rajasthan and India ; Critical analysis of rainfall and estimation of moisture index and aridity index, crops and cropping systems for drylands; Acquiring skill in tillage methods for *in situ* moisture conservation, effects of soil mulching and its effect on soil moisture. Spray of antitranspirants on dryland crops and their effects on crops; Seed soaking and seed treatment with chemicals for sowing under moisture stress conditions, methods of fertilizer application in dry land areas; Effect of plant density, thinning, leaf removal on crop growth under moisture stress condition; Study of the salient features of a model water shed; Alternate land use strategies-- Agro-forestry, grass legume forage and alley cropping systems; Visit to dry land experiments ; to expose students to the latest agro-techniques and watershed management practices; Study of run off plots and soil /nutrientlosses.

S.No.	Topic	No. of lectures
1.	Rainfed agriculture- definition, history and its importance in India with particular to references Rajasthan	1
2.	Problems of dryland agriculture related to climate, soil, technological and socio economic conditions	1
3.	Delineating criteria for rainfed and dryland farming	1
4.	Efficient utilization of water by reducing water losses through mulching	1
5.	Use of antitranspirants-their kind, mode of action and effect on crop yield.	1
6.	Increasing water storage and reducing run off and infiltration through mechanical measures	1
7.	Increasing water storage and reducing run off and infiltration through cultural measures	1
8.	Water harvesting techniques in dry farming areas	1
9.	Watershed management- concept, definition, objectives and principles	1
10.	Integrated watershed management for drylands	1
11.	Efficient management of dryland crops viz. land preparation, seeding and crop density	1
12.	Selection of efficient crops and their varieties for dryland farming	1
13.	Alternate cropping and land use strategies for dryland agriculture	1
14.	Soil fertility management and fertilizer use techniques for drylands	1
15.	Weed control and intercultural operations for dry lands	1
16.	Mid season corrections for mitigating the aberrant weather	1

Lecture schedule: Theory

Lecture schedule: Practical

S.No.	Topic	No. of lectures
1.	Climatic conditions prevalent at the various dry land research centers of the country and delineating criteria for rain fed and dry lands	1
2.	Pattern of rainfall in different dryland tracts of the country	1
3.	Onset and withdrawal of the monsoon, amount, intensity distribution and studies on the effective cropping season	1

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4.	Critical analysis of rainfall and estimation of moisture index and aridity index.	1
5.	Spray of antitranspirants on dryland crops and their effect on crops	1
6.	Crops and cropping systems for drylands	1
7.	Acquiring skill in tillage methods for *in-situ* moisture c onservation	1
8.	Mulching and its effects on soil moistures conservation	1
9.	Seed soaking, seed treatment with chemicals for sowing in dryland areas	1
10.	Methods of fertilizer application in dryland areas	1
11.	Effect of plant density, thinning, leaf removal under moisture stress condition on crop growth	1
12.	Study of salient features of a model watershed	1
13.	Alternate land use strategies for dryland areas.	1
14.	Agro forestry, grass legume forage and alley cropping systems.	1
15.	Visit to dryland experiments and watershed management practices	1
16.	Study of runoff plots and soil /nutrient losses	1

References:

1. Singh, R.P. 1995, Sustainable Development of Dryland Agriculture in India. Scientific Publishers,Jodhpur.
2. Singh, S.S., 1993, Crop Management Under Irrigated and Rainfed Conditions, Kalyani Publishers, NewDelhi.
3. De, G.C. 1989, Fundamentals of Agronomy Oxford and IBH Publishing Co., NewDelhi.
4. Reddy, T.Y. and Reddi, G.H.S. 1992, Principles of Agronomy, Kalyani Publishers, NewDelhi.
5. DhruvaNarayan,V.V.;Singh,R.P.,Bhardwaj,S.P.Sharma,M.SikkaA.K.,Vithal,K.P.R.andDas; S.K. 1947. Watershed Management for Drought Mitigation, ICAR Publication.
6. Murthy, J.V.S. 1994, Watershed Management Wiley, Eastern Limited, New Age International Limited, NewDelhi.

Course Outcome - 1. Understand the chemical aspects of life at molecular life
2. Learn the structure and functional aspects of important biomolecules
3. Understand the mechanism of different enzymatic reactions
4. Understand the physiological details of carbohydrate metabolism
5. Understand the biochemical nature of nucleic acids, their role in living systems

BAG353 **Principles of PlantBiotechnology** **3(2+1)**

Theory:

Concepts of Plant Biotechnology: History of Plant Tissue Culture and Plant Genetic Engineering: Scope and importance in crop Improvement : Totipotency and Morphogenesis, Nutritional requirements of in vitro cultures; Techniques of in vitro cultures, Micropropagation, anther culture, pollen culture, ovule culture, embryo culture, Test tube fertilization, Endosperm culture, factors effecting above in vitro cultures, Applications and achievements, somaclonal variation, Types, Reasons, somatic embryogenesis and synthetic seed production technology, Protoplast isolation, culture, manipulation and fusion, Products of somatic hybrids andcybrids,

Applications in crop improvements, Genetic Engineering, Restriction enzymes, Vectors for gene transfer-, gene cloning, Direct and Indirect method of gene transfer-Transgenic plants and their applications. Introductory knowledge about blotting techniques, molecular markers, QTL, Marker assisted selection and application in crop improvement.

Practical:

Requirements of Plant tissue culture laboratory: Techniques in Plant tissue culture- Media Components and preparation; sterilization techniques and inoculation of various explants, callus induction and plant regeneration; Demonstration of Micropropagation, Anther culture, embryo culture, Hardening/ Acclimatization of regenerated plants, somatic embryogenesis and synthetic seed production, Demonstration of isolation and culture of protoplast, demonstration of isolation of DNA, gene transfer technique and gel electrophoresis techniques.

Lecture schedule: Theory

S.No.	Topic	No. of lectures
1.	Concepts of Plant Biotechnology	1
2.	History of Plant Tissue Culture and Plant Genetic Engineering: Scope and importance in crop	2
3.	Totipotency and Morphogenesis	1
4.	Nutritional requirements of in vitro cultures	1
5.	Techniques of in vitro cultures	1
6.	Micropropagation	1
7.	Anther culture, pollen culture, ovule culture, embryo culture	1
8.	Test tube fertilization	1
9.	Endosperm culture	1
10.	Factors effecting above in vitro cultures	1

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11.	Applications and achievements	1
12.	Somaclonal variation Types, Reasons	1
13.	Somatic embryogenesis	1
14.	Synthetic seed production technology	1
15.	Protoplast isolation, culture, manipulation and fusion	1
16.	Products of somatic hybrids and cybrids	1
17.	Applications in crop improvements	2
18.	Genetic Engineering	2
19.	Restriction enzymes	1
20.	Vectors for gene transfer-, gene cloning	2
21.	Direct and Indirect method of gene transfer	2
22.	Transgenic plants and their applications	2
23.	Introductory knowledge about blotting techniques	1
24.	Molecular markers	1
25.	QTL, Marker assisted selection and application in crop improvement.	2

Lecture schedule: Practical

S.No.	Topic	No. of lectures
1.	Requirements of Plant tissue culture laboratory	1
2.	Techniques in Plant tissue culture	1
3.	Media Components and preparation	1
4.	Sterilization techniques	1
5.	Inoculation of various explants	1
6.	Callus induction	1
7.	Plant regeneration	1
8.	Demonstration of Micropropagation	1
9.	Anther culture	1
10.	Embryo culture	1
11.	Hardening/ Acclimatization of regenerated plants	1
12.	Somatic embryogenesis and synthetic seed production	1
13.	Demonstration of isolation and culture of protoplast	1
14.	Demonstration of isolation of DNA	1
15.	Gene transfer techniques	1
16.	Gel electrophoresis techniques	1

References:

1. Brown, T.A.2001 gene cloning and DNA Analysis-An Introduction, Blackwell Science,London
2. Gupta, P.K.2006. Biotechnology and Genomics, Rastogi Publication,Meerut
3. Prohit, S.S.1997, Biotechnology, Agrobotanical PublicationBikaner
4. Rajdan, M.K.1996, An introduction to, plant tissue culture, Oxford and IBH Publishing Company, NewDelhi
5. Ramawat, K.G. 2000, Plant Biotechnology, Kalyani Publishers,Ludhiana
6. Mascarenhas, A.F. 1991. Handbook of Plant Tissue Culture, Publications and Information Division, ICAR,Newdelhi.

Course Outcome - 1. Students will be able to identify the insect and mite pests, their symptoms, biology and bionomics, nature of damage and management of various field crops.

2. Students will be able to identify the insect and mite pests, their symptoms, biology and bionomics, nature of damage and management of various vegetable and ornamental crops.

3. Students will be able to identify the insect and mite pests, their symptoms, biology and bionomics, nature of damage and management of various fruit and plantation crops.

4. Students will be able to identify the insect and mite pests, their symptoms, biology and bionomics, nature of damage and management of various spice and condiments crops.

5. Students will be able to identify the insect, mite, rodent , birds and microorganisms pests associated with store grain pests and their management.

6. Students will be able to describe the concept of pest surveillance and its objectives.

BAG354 Crop and Stored Grain Pests andTheirManagement 4 (3+1)

Theory:

Polyphagous pests: Red hairy caterpillar, White grub, Termite, Locust, Grasshopper. **Crop pests:** Distribution, biology, nature and symptoms of damage, and management of insect pests of rice, pearlmillet, sorghum, maize, wheat, sugarcane, cotton, pulses (Gram and *Kharif* pulses), groundnut, castor, sesame, sunflower, mustard, soybean, brinjal, okra, tomato, cruciferous

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and cucurbitaceous vegetables, potato, chillies, onion, garlic, mango, citrus, pomegranate, guava, ber, apple, coconut and ornamental plants. **Stored grain pests:** Coleopteran and Lepidopteran pests, their identification, biology and damage. Preventive and curative methods for control of stored grainpests.

Practical:

Identification, damage symptoms and management of insect pests of rice, pearlmillet, sorghum, maize, wheat, sugarcane, cotton, pulses, castor, mustard, brinjal, tomato, okra, cruciferous and cucurbitaceous vegetables, onion, garlic, chillies, mango, guava, citrus, pomegranate, ber, coconut. Identification, biology, damage symptoms and management of stored grain and polyphagous insectpests.

Lecture Schedule: Theory

S.No.	Topic	No. of lectures
1	Distribution, biology, nature and symptoms of damage, and management of insect pests of crops Polyphagous pests: Red hairy caterpillar, White grub, Termite, Locust, Grasshopper	6
2	Rice: Brown plant hopper, Yellow stem borer, Rice hispa	3
3	Pearlmillet: White grub (Covered in Polyphagous pests)	
4	Sorghum: Sorghum shoot fly	1
5	Maize: Maize stem borer	1
6	Wheat: Termite (Covered in Polyphagous pests)	
7	Sugarcane: Sugarcane pyrilla, Whitefly, Shoot borer	3
8	Cotton: Jassid, Whitefly, Spotted bollworm, Pink bollworm, Red cotton bug	3
9	Pulses: Gram pod borer, Cutworm, Pea stem fly	3
10	Groundnut: Aphid, White grub (White grub covered in polyphagous pests)	1
11	Castor: Castor semilooper, Capsule borer	1
12	Sunflower: Head borer (Covered in pulses)	
13	Mustard: Aphid, Saw fly, Painted bug	2
14	Tobacco: Tobacco caterpillar (Covered in cruciferous vegetables)	
15	Soybean: Girdle beetle	1
16	Brinjal: Shoot and fruit borer	1
17	Tomato: Fruit borer (Covered in pulses)	
18	Okra: Shoot and fruit borer (Covered in cotton)	
19	Cruciferous vegetables: Cabbage caterpillar, Diamond back moth, Semilooper, Tobacco caterpillar	3
20	Cucurbitaceous vegetables: Melon fruit fly, Red pumpkin beetle, Red vegetable mite	2
21	Potato: Tuber moth	1
22	Chilies: Fruit borer (Covered in pulses)	
23	Onion and Garlic: Thrips	1
24	Mango: Mango hopper, Stem borer, fruit fly	2
25	Citrus: Citrus psylla, Citrus caterpillar	2
26	Guava: Fruit fly (Covered in mango)	
27	Pomegranate: Anar butterfly	1
28	Ber: Fruit fly	1
29	Coconut: Black headed caterpillar	1
30	Apple: San Jose scale, Woolly apple aphid	1
31	Ornamental plants: Rose aphid, hollyhock tinged bug, Jasmine budworm	2
32	Identification, biology and damage of stored grain pests:Khapra beetle, Lesser grain borer, Rice weevil, Red rust flour beetle, Pulse beetle, Rice moth and Angoumois grain moth.	4
33	Preventive and Curative methods for the control of stored grain pests.	1

Lecture Schedule: Practical

S.No.	Topic	No. of lectures
1.	Identification, biology, damage symptoms and management of polyphagous insect pests	3
2.	Identification, biology, damage symptoms and management of insect pests rice, pearlmillet, sorghum, maize, wheat, sugarcane, cotton, pulses, castor, mustard, brinjal, tomato, okra, cruciferous and cucurbitaceous vegetables, onion, garlic, chillies, mango, guava, citrus, pomegranate, ber, coconut.	6
3	Identification, biology, damage symptoms and management of stored grain insect pests.	2
4.	Collection, preservation of insect pests of stored grains, field crops, vegetables and fruit trees.	2
5.	Preparation of spray solutions and numerical problems	2
6.	Field visit of endemic areas	1

References:

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1. Atwal, A.S. and Dhaliwal, G.S. 2002. Agricultural Pests of South Asia and Their Management, Kalyani Publishers, NewDelhi.
2. DavidB.V.2003.ElementsofEconomicEntomology,PopularBookDepot,Chennai
3. Pradhan,S.1968.InsectPestsofCrops,NationalBookTrust,NewDelhi
4. Nayar,M.R.G.K.1986.InsectsandMitesofCropsin India,ICAR,NewDelhi.
5. Srivastava,K.P.2004.ATextBookofEntomology,Vol.II,KalyaniPublishers,NewDelhi.
6. Khare,B.P.1994.StoredGrainPestsandTheirManagement,KalyaniPublishers,NewDelhi.

Course Outcome - 1.Student will get aware from the theoretical and practical skills of plant breeding
2.Students will able to understand the development in plant breeding and the state of art of breeding practices
3.Students will able to identify the plants with desirable characters with the purpose of crop improvement.
4.Students will know principles and utilization of scientific approaches in the development of new verities.
5. Students will able to apply that e conventional and molecular breeding approaches with their innovative ideas in the distinct varieties
6.Students will be able to apply their knowledge from variety development to their certification via full filling the requirements.

BAG355 **Breeding of Field andHorticulturalCrops** **3 (2+1)**

Theory:

Botany and taxonomy, chromosome number, center of origin, species relationship, floral biology, breeding objectives and constraints, disease and pest resistance and quality (physical, chemical, nutritional and marketing) improvement, conventional and non-conventional breeding methods, important varieties and future thrust area in crops like wheat, rice, maize, pearlmillet, gram, moth, groundnut, mustard, cotton, potato, tomato, rose, chillies, cauli flower, coriander, fenugreek, and amla.

Practical:

Study of floral biology, hybridization technique, germplasm and segregating populations. Layout of breeding experiments. Observation recording, analysis and interpretation of breeding trials. Calculation of variability parameters, heterosis and inbreeding depression. Salient features of varieties recommended for the region for the crops as listed in theory portion.viz., rice, wheat, maize, sorghum, groundnut, cotton, potato, tomato, sugarcane, rose, marigold, mango and papaya (available at the timeofsemester).

Lecture schedule: Theory

S. No.	Topic	No. of lectures
1.	Botany and taxonomy, chromosome number,	2
2.	Center of origin, species relationship, floral biology,	2
3.	Breeding objectives and constraints	1
4.	Disease and pest resistance	2
5.	Quality (physical, chemical, nutritional and marketing) improvement,	2
6.	Conventional and non-conventional breeding methods,	6
7.	Important varieties and future thrust area in crop like wheat, rice, maize, pearl millet, gram, moth, groundnut, mustard,cotton,potato, tomato, rose, chillies, cauli flower,coriander,	17
	fenugreek and amla.	

Lecture Schedule: Practical

S.N.	Topic	No. of Lectures
1.	Study of floral biology, hybridization technique, germplasm and segregating populations.	3
2.	Layout of breeding experiments.	1
3.	Observation recording, analysis and interpretation of breeding trials.	2
4.	Calculation of variability parameters, heterosis and inbreeding depression.	1
5.	Salient features of varieties recommended for the region for the crops as listed in theory portion.viz.wheat, rice, maize, pearl millet, sorghum, groundnut, mustard, cotton, potato, tomato, sugarcane, rose, marigold.	9

References:

1. Chopra,V.L.2000Breedingof FieldCrops(Edt.).OxfordandIBHPublishingCo.Pvt.Ltd.,NewDelhi.
2. Chaddha. K.L. and Rajendra Gupta. 1995. Advances in Horticulture Vol. II Medicinal and Aromatic Plant. Malhotra Publishing House, NewDelhi.
3. Mandal, AK., P.K. Ganguli and S.P. Banerjee. 1991. Advances in Plant Breeding Vol. I and II. CBS Publishers and Distributors, NewDelhi.
4. Manjit S. Kang 2004. Crop Improvement: Challenges in the Twenti-First Century (Edt). International Book Distributing Co.Lucknow.
5. Poehlman, J.M. 1987. Breeding of Field Crops. AVI Publishing Co.. INC, East Port, Connecticut USA.
6. Ram, H.H. and H.G. Singh. 1994. Crop Breeding and Genetics. Kalyani Publishers, NewDelhi.

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7. Sharma,A.K.2005.BreedingTechnologyofCrop Plants(Edt.).Yash PublishingHouse,Bikaner.
8. Ram.H.H.2005.VegetableBreeding—PrinciplesandPractices.KalyaniPublishers,NewDelhi.

Course Outcome -1. To make the students aware about sectors of Agribusiness
2. To acquaint students with the concept of good management and its functions
3. To make the students develop the concept of planning process
4. To understand the financial management concept of agribusiness
5. To learn the marketing management and its concept
6. To acquaint with the appraisal and evaluation techniques.

BAG356 **Agricultural Marketing, TradeandPrices** **2 (1+1)**

Theory:

Agricultural Marketing: Concepts and Definition, Scope and subject matter, Market and Marketing: Meaning, Definitions, Components of a market, Classification. Market structure, Conduct, performance. Marketing structure, Market functionaries or agencies, Producer's surplus: Meaning, Types of producers surplus, marketable surplus. Marketed surplus, importance, Factors affecting Marketable surplus. Marketing channels: Meaning, Definition, Channels for different products. Market integration, Meaning, Definition, Types of Market Integration. Marketing efficiency: Meaning, Definition, Marketing costs, Margins and price spread, Factors affecting the cost of marketing, Reasons for higher marketing costs of farm commodities, Ways of reducing marketing costs. Theories of International Trade: Domestic Trade, Free trade, International Trade, GATT, WTO, Implications of AOA. Market access, Domestic support, Export subsidies, EXIM-Policy & Ministerial conferences. Cooperative Marketing. State Trading. Ware Housing Corporation; Central and State, Objectives, Functions, Advantages. Food Corporation of India: Objectives and Functions. Quality Control, Agricultural Products, AGMARK. Price Characteristics of agricultural product process, Meaning, Need for Agricultural Price Policy. Risk in Marketing: Meaning and importance, Types of Risk in Marketing. Speculations and Hedging, Futures trading, Contractfarming.

Practical:

Identification of marketing channels; Study of Rythu Bazars, Regulated markets; Study of unregulated markets; Study of livestock markets; Price spread analysis; Visit to market institutions, NAFED; Study of SWC, CWC and STC; Analysis of information of daily prices; Marketed and marketable surplus of different commodities.

Lecture schedule – Theory

S.No.	Topic	No. of lectures
1.	Agricultural Marketing; Concepts and Definition, Scope and Subject matter	1
2.	Market and Agricultural Marking : Meaning, Definitions, components and classification of market	1
3.	Market Structure, Conduct, Performance	1
4.	Market functionaries or agencies	1
5.	Producer's Surplus: Meaning, Types of Producer Surplus, Marketable Surplus, Marketed Surplus; importance, factors affecting Marketable Surplus	1
6.	Marketing channels : Meaning, Definition, Channels for different product	1
7.	Marketing integration : Meaning, Definition, Types of Market integration	1
8.	Marketing Efficiency : Meaning, Definition, Marketing costs, Margins and Price spread, factors affecting the cost of Marketing, Reasons for higher marketing costs of farm commodities, ways of reducing marketing costs	1
9.	Meaning of Domestic trade, free trade and International Trade	1
10.	WTO: Implications of AOA, market access, Domestic support, Export subsidies	1
11.	Cooperative Marketing State Trading	2
12.	12. Ware housing Corporation : Central and State, objectives, functions, advantages, Food Corporation of India : objectives and functions	1
13.	Quality control of Agricultural products: AGMARK, price characteristics of Agricultural product process, Meaning and need for Agricultural Price Policy	1
14.	Basic understanding of the terms speculations and Hedging, future Trading, contract Farming	2

Lecture schedule – Practical

S.No.	Topic	No. of lecture
1	Visit of village haat, Regulated Market, Unregulated Market, Live stock markets	6
2	Price spread analysis	2
3	Visit of Market Institutions, NAFED, study of SWC, CWS and STC	6

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4.	Analysis of daily prices: marketed and marketable surplus of different commodities	2

References

1. S.S. Acharya and N.L. Agarwal (1987) Agricultural Marketing in India, Oxfgord &IBH, NewDelhi
2. J.R. Moore, S.S. Johl and A.M. Khusro (1973) Indian Food Grain Marketing, Printice Hall, NewDelhi
3. A.S. Kahlon & D.S. Tyagi (1983) Agricultural Price Policyin India, Allied Publishers, NewDelhi
4. V.K. Bhall and S. Shiva Ramu (1996) International Business-Environment and Management,Anmol Publications (P) Limited, NewDelhi

Course Outcome -1. Students will able to know about protected cultivation of different vegetables
2. Students will able to understand about importance of green house cultivation in India
3. Students will able to know to about the different irrigation system used in protected cultivation
4.students will know about the material of construction for traditional and low cost green houses

BAG357 Protected Cultivation and PostHarvestTechnology 2(1+1)

Theory:

Green house technology- Introduction, types of green houses; Green houses equipments; Material of construction for traditional and low cost green houses; Irrigation systems used in green houses; Introduction: Scope and development of post harvest engineering; Basic engineering properties of cereals; Parts, care and maintenance of threshers and winnowers; Basic concepts and equipments used for cleaning and grading; Conveying equipment; Grain drying- need, methods, factors affecting drying and the different types of dryers; Silos; Grain storage structures and requirements of good storage structure.

Practical:

Determination of basic engineering properties and moisture content of grains; Study of thresher and winnower; Screen cleaners; Air- screen and other cleaners; Conveying equipments; Mechanical dryers; Silos and grain storage structures.

Lecture schedule: Theory

S.No.	Topic	No. of lectures
1.	Green house technology- Introduction, types of green houses; Green houses equipments; Material of construction for traditional and low cost green houses; Irrigation systems used in green houses;	2
2.	Introduction: Scope and development of post harvest engineering	1
3.	Basic engineering properties of cereals- Sphericity, Porosity, Angle of repose, Specific heat, Thermal Conductivity, Terminal velocity of objects, Bulk density, Moisture content.	2
4.	Measurement of moisture content.	1
5.	Parts, care and maintenance of threshers.	1
6.	Parts, care and maintenance of winnowers.	1
7.	Basic concepts of cleaning and grading; Screen cleaner; Vibratory and rotary air-screen cleaners.	1
8.	Disk separator, Specific gravity separator, Cylinder separator, Spiral separator, Inclined draper separator, Pneumatic separator, Aspirator separator, Magnetic separator and Cyclone separator; Conveying equipments- Belt conveyor, Screw conveyor and Bucket Elevator.	2
9.	Need, methods, factors affecting grain drying; Full bin, batch and continuous drying.	1
10.	Dryers- Sack dryer, Rotary dryer, PHTC type dryer, LSU dryer and Baffle dryer.	1
11.	Silos- Tower silos and horizontal silos- Trench silos and pit silos, numerical on economical design of silos.	1
12.	Grain storage structures- Bukhari, Kothar, Morai and Bag storage structures; Requirement of good storage structures; Numerical on Bag storage structures.	2

Lecture Schedule: Practical

S.No.	Topic	No. of Lectures
1.	Determination of Basic engineering properties of grains.	1
2.	Determination of moisture content of grains.	1
3.	Study of thresher.	1
4.	Study of winnower.	1
5.	Study of cyclone separator; Study of disk separator	1
6.	Study of spiral separator; Study of conveying equipments	1
7.	Study of mechanical grain dryer	2
8.	Numerical on economical design of pit silos and trench silos	2
9.	Study of Bukhari grain bin	1

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10.	Study of Kothar grain bin	1
11.	Study of Morai grain bin	1
12.	Study on bag storage structure capacity	1
13.	Visit to green house structures	2

References:

1. Post Harvest Technology of Cereals, Pulses and Oil Seeds.1999. Chakravarty, A. Oxford and IBH Pub. NewDelhi.
2. Agricultural Process Engineering. 1955. Henderson, S.M. and R.L. Perry. John Willy and Sons, NewYork.
3. Principles of Agricultural Engineering, Vol. I. 1993. Michael, A.M. and T. P. Ojha . Jain Brothers, NewDelhi.

Course Outcome -1. Students will know pathogens, symptoms, etiology, disease cycle and management of major diseases of Kharif field crops.
2. Students will know common pathogens, symptoms, etiology, disease cycle and management of diseases of Kharif vegetable crops
3. Students will know common pathogens, symptoms, etiology, disease cycle and management of diseases of fruit crops
4. Student will know importance of sign and symptoms for detection of pathogens and disease.
5. Students will know integrated methods of disease management, use of biological and chemicals in disease management.

BAG358 **Disease of Field Crops andTheirManagement** **3(2+1)**

Theory:

Economic importance , symptoms , etiology, disease cycle and management of diseases of **Wheat** (rusts, loose smut and Karnal bunt); **Barley** (covered smut and stripe disease); **Bengal gram** (Ascochyta blight and wilt); **Mustard** (white rust, Alternaria blight and white rot); **Rice** (blast, bacterial blight and khaira); **Maize** (brown stripe downy mildew , sugarcane downy mildew and Fusarium stalk rot); **Sorghum** (grain smut , loose smut and anthracnose); **Bajra** (ergot, smut and downy mildew); **Sugarcane** (red rot, whip srnut and grassy shoot disease); **Groundnut** (tikka and collar rot); **Cotton** (rootrot ,bacterial blight and leaf curl); **Sesamum** (bacterial leaf blight and phyllody); **Pigeonpea** (wilt and sterility mosaic);**Clusterbean** (Alternaria blight); **Castor** (Fusarium wilt and bacterial blight); **Soybean** (bacterial pustule and charcoal rot); **Moth** and **Mungbean** (yellow mosaicvirus).

Practical:

Study of symptoms, etiology, host-parasite relationship and control measures of diseases of wheat, barley, bengal gram, rice, maize, sorghum, bajra, sugarcane, groundnut, cotton, clusterbean, moth and mungbean. Visits of diseased field during the semester. Student should submit at least 25 pressed well mounted disease specimens.

Lecture schedule: Theory

S.No.	Topic	No. of lectures
1.	Wheat (rusts, loose smut and Karnal bunt);	4
2.	Barley (covered smut and stripe disease)	2
3.	Bengal gram (Ascochyta blight and wilt);	2
4.	Mustard (white rust, Alternaria blight and white rot)	2
5.	Rice (blast, bacterial blight and khaira)	2
6.	Maize (brown stripe downy mildew and sugarcane downy mildew and Fusarium stalk rot);	3
7.	Sorghum (grain smut , loose smut and anthracnose);	2
8.	Bajra (ergot, smut and downy mildew);	2
9.	Sugarcane (red rot and whip srnut);	1
10.	Groundnut (tikka and collar rot);	2
11.	Cotton (root rot ,bacterial blight and leaf curl)	2
12.	Sesamum (bacterial leaf blight and phyllody)	2
13.	Pigeonpea (wilt and sterility mosaic)	1
14.	Clusterbean (Alternaria blight);	2
15.	Castor (Fusarium wilt and bacterial blight)	1
16.	Soybean (bacterial pustule and charcoal rot);	1
17.	Moth and Mungbean (yellow mosaic virus);	1

Lecture Schedule: Practical.

S.No.	Topic	No. of lectures

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1.	Study of symptoms, etiology, host-parasite relationship and specific control measures of the following diseases Diseases of wheat and barley	2
2	Diseases of bengal gram (Ascochyta blight and wilt)	1
3	Mustard (white rust, blight and white rot)	2
4	Diseases of rice and maize	1
5	Diseases of sorghum and bajra	1
6	Diseases of sugarcane (red rot and whip srnut)	1
7	Diseases of groundnut (tikka and collar rot)	1
8	Diseases of cotton (root rot ,bacterial blight and leaf curl)	1
9	Clusterbean (bacterial blight and Alternaria blight);	1
10	Moth and mungbean (yellow mosaic virus);	1
11	*Preservation of diseases samples	2
12	Field visits at college research farm	2

*Note : student should submit at least 25 pressed well mounted disease specimens

Suggested Books

1 Cook A A 1981 . Diseases of tropical and sub-tropical field fiber and oil plants. Mac Millan Publishing Co. New York.

2 Gupta V K and Paul Y S (eds) 2002. Diseases of field crops. Indus Publishing Co.ND.

3 Mehrotra R S and Aggarwal A.2007.Plant Pathology (2^{nd}.ed.) Tata McGraw-Hill Publishing Co Ltd.ND.

4 Mishra A ,Bohra A and Mishra A 2005. Plant Pathology. Agrobios. Jodhpur(India).

5 Rangaswamy ,G and Mahadevan,A .2001. Diseases of crop plants in India. Prentice hall of India Pvt LtdND.

6 Singh R S .2007 Plant Diseases.(8^{th}.ed) Oxford and IBH Publishing Co.Pvt .Ltd.ND

Course Outcome -1. Students will able to identify different ornamental plants, medicinal, aromatic plants and spices

2. Students will able to know about production technology of different flowers, medicinal and aromatic plants

3. Students have basic knowledge about the importance and production technology of cut flowers grown in India.

4. Students will able know about the medicinal value of different medicinal and aromatic plants and spices.

BAG359 Production Technology of Spices, Aromatic and Medicinal Crops 2 (1+1)

Theory:

Importance and scope of Spices, Aromatic and Medicinal crops. Cultivation technology of Spices, Aromatic and Medicinal crops– ginger, turmeric, pepper, cardamom, coriander, cumin, fenugreek, fennel; Aromatic crops –lemon grass, citronella, palmarose, vetiver; Medicinal plants –opium, ocimum, aloe, guggal, senna, plantago, stevia, curry leaf,drumstick

Practical:

Identification of spices, aromatic and medicinal plants, Propagation techniques of spices, aromatic and medicinal crops. Propagation and planting methods of turmeric; Harvesting procedures in aromatic plants; Processing and curing of spices (ginger, turmeric and black pepper); Cost of cultivation of spices. Visit to aromatic &medicinal plant nurseries and seed spices field.

Lecture schedule- Theory

S.No.	Topic	No. of lectures
1.	Importance and scope of Spices, Aromatic and Medicinal crops	1
	Cultivation technology of Spices	
2	Ginger	1
3	Turmeric	1
4	Pepper	1
5	Cardamom	1
6	Coriander	1
7	Cumin	1
8	Fenugreek	1
9	Fennel	1
	Cultivation technology of Aromatic crops	
10	Lemon grass	1

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11	Citronella	1
12	Palmarose	1
13	Vetiver	1
	Cultivation technology of Medicinal plants	
14	Opium ,Plantago, Stevia	1
15	Ocimum ,Senna, Curry leaf	1
16	Aloe, Guggal, Drumstick	1

Lecture schedule-Practical:

S.No.	Topic	No. of lectures
1.	Identification of spices	1
2.	Identification aromatic plants	1
3.	Identification medicinal plants	1
4.	Propagation techniques of spices,	1
5.	Propagation aromatic and medicinal crops	2
6.	Propagation and planting methods of turmeric	1
7.	Harvesting procedures in aromatic plants	2
8.	Processing and curing of spices (ginger, turmeric and black pepper)	2
9.	Cost of cultivation of spices	2
10.	Visit to aromatic & medicinal plant nurseries and seed spices field	3

References:

1. Sharma, R. (2004). Agrotechniques of Medicinal Plants. Daya Publishing House,Delhi
2. Pruthi, J.S. (1993). Major Spices of India.Crop Management & Post harvest Technology. ICAR, NewDelhi
3. Dashora, L.K. Production Technology of Plantation Crops, Spices, Aromatic & MedicinalPlants.

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Course Outcome – 1. The student gains a thorough knowledge on basic production technology of Rabi crop production.
2. To aquatint the students with modern technologies right from field preparation to marketing by allotting specific crop to each students.
3. Familiarize on basic techniques of field production of Rabi crops.
4. Students will be able to apply different field techniques for the production of Rabi crops.
5. Students will be able to apply their knowledge to solve problems related to plant growth, crop production and natural resource management of Rabi crops
6. Practical knowledge on management of Rabi crops.

BAG361 **Practical Crop Production–II*(Rabi)*** **1(0+1)**

Practical:

Crop planting, raising field crops in multiple cropping systems: Field preparation, seed treatment, nursery raising sowing, fertilizer application, water management, weed management, intercultural operation, management of insect, pest and diseases of crop; Harvesting, threshing, drying, winnowing, storage and marketing of produce; Preparation of balance sheet including cost of cultivation, net return per student as well as per team of a group of students. **Lecture schedule :Practical**

S.No.	Topic	No. of lectures
1.	Allotment of land and field preparation	1
2.	Sowing methods	1
3.	Selection of crops and varieties	1
4.	Seed treatment	1
5.	Preparation of seed bed and sowing of crops	1
6.	Thinning and gap filling	1
7.	Fertilizer application including top dressing of fertilizers	1
8.	Intercultural operations- hoeing and weeding	1
9.	Intercultural operations- hoeing and weeding	1
10.	Application of moisture conservation practices	1
11.	Insect and pest management /control –application of insecticides	1

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12.	Disease management/control –application of fungicides	1
13.	Harvesting of the crops	1
14.	Threshing, winnowing and storage	1
15.	Marketing of produce	1
16.	Preparation of balance sheet including cost of cultivation andnet return per student as well as team of a group ofstudent	1

References:

1. Yawalkar K.S., Agarwal, J.P. and Bokde, S. 1992. Manures and Fertilizers. Agri-Horticultural Pub. House, Nagpur-India.
2. Balasubramaniyan, P. and Pallaniappan, S.P. 2001. Principles and Practices of Agronomy, Agrobios (India) , Jodhpur.
3. Reddy ,S.R. 2002 . Principles of Agronomy. Kalyani Publishers,New-Delhi.
4. Singh, S.S. 1993. Principles and Practices of Agronomy, Kalyani Publishers,New-Delhi.

Course Outcome -1. To "apply agriculture in the broadest sense, including the way people tend soils, water, plants and animals in order to produce, prepare and distribute goods.
2.They concern the way people interact with living landscapes, relate to one another and shape the legacy of future generations.
3. To guide our development of positions, programs and standards
4. The time concept relates to increasing the intensity of cropping under assured irrigated conditions.
5. Space utilization pertains to building up of vertical dimension through multi-tier cropping and farming system approach.

BAG362 Farming Systems, Sustainable Agriculture and Organic Farming 3(2+1)

Theory:

Sustainable agriculture: definition, current concept ; Factors affecting ecological balance and ameliorative measures; Land degradation and conservation of natural resources; Low external input agriculture (LEIA) &high external input agricultural (HEIA); Irrigation problems; Waste lands and their development; Differences between conventional and sustainable agricultural systems; Organic farming: definition, principles , components and relevance in present context; Organic production requirements; Biological intensive nutrient management- organic manures, vermicomposting, green manuring, recycling of organic residues, biofertilizers; Soil amendments; Integrated diseases and pest management – use of biocontrol agents, biopesticides, pheromones, trap crops, bird perches; Organic produce: quality considerations, certification, and accreditation; Farming systems: definition, principles and components, Intergrated farming system (I F S) models for wetland, irrigated dryland and drylandsituations.

Practical:

Preparation of cropping scheme for irrigated situations; Preparation of cropping scheme for dryland situations; Study of existing farming systems in nearby villages; Preparation of integrated farming system model for wetlands; Preparation of integrated farming system model for drylands; Preparation of enriched Farm Yard Manure; Preparation of Vermicompost; Study of profitable utilization of agricultural wastes; Visit to poultry anddairy units to study resource allocation, utilization and economics; Visit to an organic farm to study various components and utilization; Manurial requirement through vermicompost, FYM and poultry manure based on major nutrients; Estimation of organic carbon in organic manures; Technique for treating legume seed with *Rhizobium* and use of *Azotobactor* , *Azospirillum* and PSB in field crops ; Sustainable yield index and sustainable value index ; Productivity index of some important cropping sequences ; Raising of crops organically.

Lecture schedule :Theory

S.No.	Topic	No. of lectures
1.	Sustainable Agriculture-definition & current concept	1
2.	Factors affecting ecological balance and ameliorative measures.	1
3.	Land degradation –a brief introduction	1
4.	Conservation of natural resource _ soil	1
5.	Conservation of natural resource _ water	1
6.	LEIA (Low external input agriculture)	1
7.	HEIA (High external input agriculture)	1
8.	Irrigation problems- quality of irrigation water	1
9.	Waste lands and their development – a brief introduction	1
10.	Organic farming: definition, principles and components and relevance in present context	1
11.	Organic production requirements in the present context.	1
12.	Biological intensive nutrient management _ a brief introduction	1
13.	Vermicomposting	1
14.	Green manuring	1

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15.	Organic manure	1
16.	Recycling of organic residues	1
17.	Biofertilizers	1
18.	Soil amendment –acid affected soil	1
19.	Soil amendment –salt affected soil	1
20.	Integrated diseases and pest management: by use of biocontrol agents	1
21.	Biopesticides	1
22.	Pheromones, trap crops, bird perches	1
23.	Quality considerations of organic produce	1
24.	Certification oof organic produce and accreditation processors.	1
25.	Farming systems_ definition and principles	1
26.	Components of farming systems_ introduction.	1
27.	Poultry , piggery, fisheries & duck farming	1
28.	Agroforestry_ introduction	1
29.	Sericulture , apiculture and sheep and goat rearing	1
30.	IFS (Intergrated farming systems) model for wetland.	1
31.	IFS for irrigated drylands	1
32.	IFS for dryland situations	1

Lecture schedule :Practical

S.No.	Topic	No. of lectures
1.	Preparation of cropping scheme for irrigated situations	1
2.	Preparation of cropping scheme for dryland situations	1
3.	Study of existing farming systems	1
4.	Preparation of integrated farming systems model for wetlands	1
5.	Preparation of integrated farming system model for drylands.	1
6.	Preparation of enriched farm yard manure	1
7.	Preparation of vermicompost	1
8.	Study of profitable utilization of agricultural wastes	1
9.	Visit to poultry and dairy units to study resource allocation, utilization and economics.	1
10.	Visit to organic farm to study various components and utilization	1
11.	Manurial requirement through vermicompost, FYM and poultry manure based on major nutrients.	1
12.	Estimation of organic carbon in organic manures	1
13.	Technique for treating legume seed with *Rhizobium* and use of *Azotobactor*, *Azospirillum* and	1
	PSB in field crops	
14.	Calculation of sustainable yield index and sustainable value index	1
15.	Productivity index of some important cropping sequences	1
16.	To become familiar with raising of crops organically	1

References:

1. Panda, S.C. 2004. Cropping Systems and Farming Systems, Agrobios (India),Jodhpur.
2. Sharma, Arun K. 2002. A Handbook of Organic Farming, Agrobios (India) Ltd.,Jodhpur.
3. Balasubramaniyan, P. and Palaniappan, S.P. 2004. Principles and Practices of Agronomy, Agrobios(India) ,Jodhpur.
4. Shukla, Rajeev K. 2004. Sustainable Agriculture, Surbhee Publications,Jaipur.
5. Palaniappan, SP. 1985. Cropping Systgems in the Tro;ics : Principles and Management, Wiley Easter Ltd. And TNAU,Ciombatore.
6. Reddy, S.R. 2004. Principles of Agronomy, Kalyani Publishers,Ludhiana.
7. Palaniappan, S.P. and Sivraman, K. 1996. Cropping system in Tropics, International Pvt.New-Delhi.
8. Dahama, A.K. 1999. Organic Farming, Agro Botanic,Bikaner.
9. Sharma, Arun K. 2002. A Handbook of Organic Farming , Agrobios (India) ,Jodhpur.
10. Palaniappan, S.P. and Anandurai, K. 1999. Organic Farming- Theory and Practice, Scientific Pub.Jodhpur.
11. Thapa, U and Tripathy, P. 2006. Organic farming In India: Problems and Prospects, Agrotech, Publishning Academy,Udaipur.
12. Gautam , R.C. and Singh, Punjab 1997. Tikau Kheti , Bhartia Krishi Anusandhan Parishad,New-Delhi.
13. Sharma, Arun , K. 2005 . Gevik Kheti- Sindant, Taknik and Upyogita. Agrobios,Jodhpur.

Course Outcome -1. Apply knowledge for production of quality seeds.
2. Analyzing different methods of seed production and processing.
3. Examine quality seed by using different seed testing methods.

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4. Observe present status of India for seed production.

BAG363 **Principles of SeedTechnology** **3(2+1)**

Theory

Importance of improved seed in agriculture. Seed technology-definition, objective, relationship with other sciences. Seed quality-definition, characters of good quality seed and classes of seed. Seed policy, seed demand forecasting and planning of certified, foundation and breeder seed production. Determination of crop seed varieties, factors affecting deterioration and their control; Maintenance of genetic purity during seed production. Steps involved in development of seed progeramme and seed multiplication. Production of nucleus of & breeder seed, Maintenance and multiplication of pre-release and newly released varieties in self and cross pollinated crops. Seed production- foundation and certified seed production of maize,bajra,sorghum(hybrids,synthetics and composites),rice,cotton,tomoto and hybrids:chillies and cucurbits(varieties and hybrids) : seed production of wheat,barley, gram and rape seed mustard. Seed certification phases of certification, procedure for seed certification and field inspection, fields counts. Seed act 1966 and Seed act enforcement, Central seed committee, Central Seed Certification Board, State Seed Certification Agency.Central and State Seed Testing Laboratories;Duties and powers of seed inspectors,offences and penalities. Seed control order:Seed control order 1983.Intellectual Properties Rights, Patenting,WTO,Plant Breeders Rights and Farmer,s Right.Seed drying- Forced air seed drying,principle,properties of air and their effect on seed drying,moisture equilibrium between seed and air.Seed processing-planning and establishment of seed processing plant;air screen machine and its workingprinciple, different upgrading equipment and their use.Principles of seed treatment , Seed storage; stages of seed storage, factors affecting seed longevity storage and conditions required for good storage, general principles of seed storage. Seed marketing- marketing structure, marketingorganization.

Practical:

Seed sampling principles and procedures.Physical purity analysis of field and horticultural crops; Moisture testing; Germination analysis and viability test of field and horticultural crops; Vigour test of field and horticultural crops; KOH and NaOH test for varietal identification; Visit of GOT field at University farms; Varietal identification in seed production plots;Planting ratio,Minimum seed certification standards of important crops in the vicinity.

Lecture schedule: Theory

S.No.	Topic	No. of lectures
1.	Importance of improved seed in agriculture	1
2.	Seed technology-definition, objective, relationship with other sciences.	1
3.	Seed quality-definition, characters of good quality seed and classes of seed.	1
4.	Seed policy, seed demand forecasting and planning of certified, foundation and breeder seed production.	1
5.	Determination of crop seed varieties, factors affecting deterioration and their control;	1
6.	Maintenance of genetic purity during seed production.	1
7.	Steps involved in development of seed progeramme and seed multiplication.	1
8.	Production of nucleus and breeder seed	1
9.	Maintenance and multiplication of pre-release and newly released varieties in self and cross pollinated crops.	2
10.	Seed production- foundation and certified seed production of maize, bajra, sorghum(hybrids,synthetics and composites),rice,cotton,tomoto and hybrids:chillies and cucurbits(varieties and hybrids) : seed production of wheat, barley, gram and rape seed mustard.	10
11.	Seed certification phases of certification, procedure for seed certification and field inspection, fields counts.	2
12.	Seed act 1966 and Seed act enforcement,	1
13.	Central seed committee,Central Seed Certification Board,State Seed Certification Agency.Central and State Seed Testing Laboratories;	1
14.	Duties and powers of seed inspectors,offences and penalities	1
15.	Seed control order:Seed control order 1983.	1
16.	Intellectual Properties Rights, Patenting,WTO,Plant Breeders Rights and Farmer,s Right.	1
17.	Seed drying-Forced air seed drying,principle,properties of air and their effect on seed drying,moisture equilibrium between seed and air	1
18.	Seed processing-planning and establishment of seed processing plant;air screen machine and its workingprinciple, different upgrading equipment and their use.	1
19.	Principles of seed treatment	1
20.	Seed storage; stages of seed storage, factors affecting seed longevity storage and conditions required for good storage, general principles of seed storage.	1
21.	Seed marketing- marketing structure, marketing organization.	1

Lecture schedule: Practical

S.N.	Topic	No. of lectures

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1.	Seed sampling principles and procedures.	1
2.	Physical purity analysis of field and horticultural crops.	2
3.	Moisture testing.	1
4.	Germination analysis and viability test of field and horticultural crops	3
5.	Vigour test of field and horticultural crops	1
6.	KOH and NaOH test for varietal identification	2
7.	Visit of GOT field at University farms	1
8.	Varietal identification in seed production plots	2
9.	Planting ratio	1
10.	Minimum seed certification standards of important crops in the vicinity.	2

References:

1. Agarwal, R.L.1991.Seed Technology, Oxford &IBH Publishing Co.Delhi
2. Agarwal, P.K. 1999. Seed Technology, ICAR, NewDelhi.
3. Subir Sen and Nabinanda Ghosh.1999. Seed Science and Technology, Kalyani Publishers. NewDelhi.
4. Dhirenra Khare and Mohan S. Bhale.2000. Seed Technology. Scientific Publishers(India), Jodhpur.
5. Maloo,S.R., Intodia, S.K. and Pratap Singh.2008. Beej Pradyogiki.Agrotech PublishingAcademy.
6. A.K. Joshi and B.D. Singh.2005.Seed Technology. Kalyani Publishers, NewDelhi.

Course Outcome -1 Students will learn about evaluate the effectiveness of the formulated programme in for the farmers. The students will decide the plan of work in advance for the farmers as per their need and interest. The students will identify the importance of the subjects and how the extension methodology will implement in the rural area.

2 Students will be able to understand how the programmes were implemented for the rural poor before independence and after independence. How these programmes were changed the socio-economic conditions of the rural poor after acquire the benefits of these programmes.

3 Students will be able to familiar with the new technologies which are helping to the farmers through the help of internet, mobile, marketing related information, farmers led extension. The students will able to communicate the idea in short period of time in masses.

4 Students will be able to identify the successfulness of the projects and if any failure is there that will be assess during monitoring and evaluation of the programme. Students will also identify the deficient area of the training programme.

5 Students will be known the basic objectives of the implementation of programme in rural context and how the programme can be transfer up to the famers by adopting the various technologies.

6 Students will be able to promote the government programmes among the farmers by using the various communication methods and will able to identify the barriers of the communication during transfer of technology.

BAG364 Extension Methodologies for Transfer ofAgriculturalTechnology 2(1+1)

Theory:

Communication - Meaning, Definition, Models, Elements and their Characteristics, Barriers in Communication.Extension ProgrammePlanning-Meaning,DefinitionofPlanning,Programme,Project,PrinciplesandStepsinProgrammePlanning

Evaluation - Meaning, concept and types. Extension Teaching methods - Meaning, Definition and Classification. Individual contact methods – Farm and Home visit, Telephone call, E-mail. Group

contact methods – Group discussion, Method and Result demonstrations; Small group discussion techniques – Lecture, Panel, Workshop, Syndicate group, Brain Storming, Seminar, Conference and Buzz group. Mass contact Methods-Campaign, Exhibition, Kisan Mela, Radio &Television -Meaning, Importance, steps, Merits & Demerits. Factors influencing in selection of Extension Teaching methods. Innovative Information sources – Internet, Cyber Cafes, Video and Tele conferences, Kisan call centers. Diffusion-Meaning, Definition and Elements. Adoption Process- Meaning, Stages, Innovation decision process, Adopter categories and their characteristics, Factors influencing adoptionprocess.

Practical:

Organization of Group discussion and Method demonstration. Planning and Writing of scripts for Radio and Television. Preparation of selected audio-visual aids- Charts, Posters, Over Head Projector(OHP) Transparencies, Power Point Slides. Leaflet, Folder, Pamphlet, News Stories and Success Stories. Handling of Public Address Equipment (PAE) System, Still Camera, Video Camera and Liquid Crystal Display (LCD) Projector.

Lecture Schedule :Theory

S.No.	Topic	No.of lectures

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1.	Communication - Meaning, Definition, Models, Elements and their Characteristics, Barriers in Communication.	2
2.	Extension Programme Planning - Meaning, Definition of Planning, Programme, Project, Principles and Steps in Programme Planning	2
3.	Evaluation - Meaning, concept and types.	1
4.	Extension Teaching methods - Meaning, Definition and Classification.	1
5.	Individual contact methods – Farm and Home visit, Telephone call, E-mail.	1
6.	Group contact methods – Group discussion, Method and Result demonstrations; Small group discussion techniques – Lecture, Panel, Workshop, Syndicate group, Brain Storming, Seminar, Conference and Buzz group.	3
7.	Mass contact Methods- Campaign, Exhibition, Kisan Mela, Radio & Television -Meaning, Importance, steps, Merits & Demerits.	2
8.	Factors influencing in selection of Extension Teaching methods.	1
9.	Innovative Information sources – Internet, Cyber Cafes, Video and Tele conferences, Kisan call centers.	1
10.	Diffusion-Meaning, Definition and Elements. Adoption Process- Meaning, Stages, Innovation decision process, Adopter categories and their characteristics, Factors influencing adoption process.	2

Lecture schedule :Practical

S.No.	Topic	No.of lectures
1.	Organization of Group discussion	1
2.	Organization of Method demonstration.	1
3.	Planning and Writing of scripts for Radio	1
4.	Planning and Writing of scripts for Television.	1
5.	Preparation of Charts, Posters, Over Head Projector(OHP) Transparencies,	3
6.	Preparation of Power Point Slides.	3
7.	Preparation of Leaflet, Folder, Pamphlet, News Stories and Success Stories.	3
8.	Handling of Public Address Equipment (PAE) System,	1
9.	Handling of Still Camera and Video Camera	1
10.	Handling of Liquid Crystal Display (LCD) Projector.	1

References:

1. Das Gupta, S. 1989. Diffusion of agricultural Innovation in Indian Villages, Wiley Eastern Ltd., NewDelhi.
2. Kumar, K.J. 2000. Mass Communication in India, Jaico Publishing House, 121 MahatamaGandhi Road, Mumbai.
3. Mathur, K.B. 1994. Communication for Development & Social change, Allied Publisher Ltd., NewDelhi.
4. Rogers, E.M. and Shoemaker, F.F. 1971. Communication of Innovations – A Cross cultural Approach, The Free Press, NewYork.
5. Sandhu, A.S.1993. Text book on Agricultural Communication : Process & Method, Oxford &IBH Publishing Co. Pvt. Ltd. NewDelhi.
6. Reddy, A.A. 1993. Extension Education, Shri Laxmi Press,Baptala.

Course Outcome -1: Students will be able to evaluate the value and importance of livestock in Indian economy in view of distribution, identity, character of animal and poultry breeds and their end products including meat, milk, fiber and by-products.

2: Students will be able to critically assess that how digestion system of farm animals are functioning, classified and Describe key aspects of the basic physiological processes of reproduction, nutrition, and breeding & genetics needed for producing livestock and poultry.

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3: Students will be able to familiar with identify the basic nutrient groups; discuss nutrient requirement for growth, maintenance, reproduction and lactation. Identify feed additives and their use. Describe basic steps used for ration formulation.
4: Students will able to identify about basic concepts related to herd health, vaccination in livestock and poultry production.
5.Students will be known about the various diseases occurred in animals and poultry, their symptoms, reasons and how to control the disease which will be help to control the disease in rural area.
6. Students will be able to implement their idea to establish the poultry and dairy farming as allied activities and can be promote the animal husbandry among rural poor.

BAG365 **Livestock ProductionandManagement** **3 (2+1)**

Theory:

Place of livestock in the national economy. Different livestock development programs of Government of India. Important exotic and Indian breeds of cattle, buffalo, sheep, goat and swine. Measures and factor affecting fertility in livestock. Reproductive behaviors like puberty, estrus, pregnancy and parturition. Milk secretion, milking of animal and factor affecting milk yield and composition. Selection and breeding of livestock for higher milk and meat production. Feeding and management of calves, growing heifers and milch animals. Housing principles, space requirements for different species of livestock. Disease control measures, sanitation and care. Breeding, feeding and production records. Breed characteristics of poultry. Systems of housing, feeding and management. Incubation, hatching and brooding. Vaccination and prevention of diseases, Preservation and marketing of eggs, its economics and keeping quality. Cost of production of milk.

Practical:

Identification, handling and restraining of farm animals. Judging and culling of dairy cattle and poultry. Feeding and ration formulation for categories of livestock. Housing and management of poultry. Visit to livestock farms. Economics of livestock production.

Lecture schedule- Theory

S. No.	Topic	No. of lectures
1	Place of livestock in the national economy.	1
2	Different livestock development programs of Government of India.	2
3	Important exotic breeds of cattle	1
4	Important Indian breeds of cattle	1
5	Important breeds of buffalo	1
6	Important breeds of sheep	1
7	Important breeds of goat	1
8	Important breeds of swine	1
9	Measures and factor affecting fertility in livestock.	1
10	Reproductive behaviors like puberty, estrus, pregnancy and parturition	1
11	Milk secretion, milking of animal and factor affecting milk yield and composition.	2
12	Selection and breeding of livestock for higher milk and meat production.	1
13	Feeding and management of calves, growing heifers and milch animals.	1
14	Housing principles, space requirements for different species of livestock.	2
15	Disease control measures, sanitation and care of livestock	2
16	Breeding, feeding and production records of livestock	1
17	Breed characteristics of poultry.	2
18	Systems of housing, feeding and management. Incubation, hatching and brooding.	3
19	Vaccination and prevention of diseases in poultry	2
20	Preservation and marketing of eggs, its economics and keeping quality.	4
21	Cost of production of milk	1

Lecture schedule: Practical

S.No.	Topic	No. of lectures
1	Identification of farm animals	2
2	Handling and restraining of farm animals	2
3	Judging of dairy animals	1
4	Culling of dairy cattle and poultry	2
5	Feeding and ration formulation for different categories of livestock	2
6	Housing of dairy cattle	2
7	Housing management of poultry	2
8	Visit to livestock farms	1
9	Economics of livestock production	2

References:

1. Banerjee, G. C. 2011. A Text Book of Animal HusbandryVIII ed. Oxford and IBH

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Publications. NewDelhi.
2. ICAR. 2011. Hand Book of Animal Husbandry published by DIPA, ICAR, NewDelhi.
3. Ranjan, SK.1994 AnimalNutrition and Feeding Practices. Vikash Publications. NewDelhi.
4. Sukumar,De. 2000. Outlines of dairy technology. Oxford University Press,NewDelhi.
5. Thomus C.K., Sastry NSR and Singh,RA.1982.Farm Animal Management and Poultry Production.Vikash Publications. NewDelhi.

Course Outcome -1. Upon study of the subject the Students willbe able to understand the importance of the environment
2 They will know the various resources of energy ,renewable and non renewable
3 Upon study of the ecosystem students will analyze the eco system and implement use the basic requirements to preserve them,
4 Upon study of the ecology they will understand the characteristic to translate in real-world
5 Upon study the biodiversity they will analyze the, biogeographical regions in real life and try to implement it.
6-Upon study of the environmental pollution, they will use in real life and try to find out the solution..

BAG366 **EnvironmentalScience** **3(2+1)**

Theory:

Scope and importance of environmental studies and biological chemistry. Renewable resources : Forest, Water, Food, energy and land - various environmental cycles viz. carbon, nitrogen and water etc. Energy flow in the ecosystem : concept of photosynthesis and respiration. Woman and child welfare – food, balance diet, vitamins and minerals etc. HIV/AIDS – viruses and nucleic acids, modification and propagation. Role of information technology on environment and human health – nutrition/malnutrition in communities. Concept of biological processing of industrial wastes.*

Ecology : Definition and scope. Ecosystems: Definition, types, concept, structure, functions, components and food pyramids. Producers, consumers and decomposers of an ecosystem. Bio-diversity: Definition, classification, threats to biodiversity and its conservation. The Environment Protection Act, The Air Act, The water Act, The Wildlife Protection Act and Forest Conservation Act.**

Environmental pollution: Causes, effects and control of air, water, soil, thermal, noise and marine pollution. Causes, effects and management of soil nuclear hazards and industrial wastes.***

Practical:

Estimation of chlorophyll content of fresh water/sea water ecosystem. Study of transpiration and water balance in plants. Estimation of ascorbic acid (Vitamin C). Community survey for nutritional health status. Estimation of proline as stress indicator in plants. *

Estimation of pesticide contamination in Agro-Ecosystem. Determination of sound level by using sound level meter. Estimation of respirable and non respirable dust in the air by using portable dust sampler. Estimation of species abundance of plants. Visit to ecosystems and study of biodiversity. **

Collection, processing and storage of effluent samples; Determination of Bio-Chemical oxygen demand (BOD) in effluent sample; Determination of chemical oxygen demand (COD) in effluent sample; Estimation of dissolved oxygen in effluent samples; Determination of total dissolved solids (TDS) in effluent samples; Estimation of nitrate contamination in ground water. Analysis of temporary and total hardness of water sample by titration. Determination of heavy metals in sewage and sludge.***

***Bio chemistry ** Entomology *** Soil science Lecture schedule –Theory**

S. No.	Topic	No. of lectures
*1	Scope and importance of environmental studies and biological chemistry	1
*2	Renewable resources in ecosystems and their importance	1
*3	Biochemical cycles – carbon,nitrogen and water	1
*4	Energy flow and partioning in food chains and energy based classification of ecosystem	1
*5	Concept of Photosynthesis and respiration	1
*6	Food and balanced diet for women and children	1
*7	Role of vitamins and minerals in nutrition	1
*8	HIV/AIDS viruses and their propogation	1
*9	Nucleic acids and modifications of HIV/AIDS viruses	1
*10	Role of information technologies on environment and human health – nutrition /malnutrition in communities	1
*11	Concept of biological processing of industrial wastes	1
**12	Ecology : Definition and scope	1
**13	Ecosystem :Definition, types and concepts	1
**14	Ecosystem structure, functions and components	1
**15	Food pyramids	1
**16	Producers, consumers and decomposers of ecosystem	1
**17	Biodiversity : Definition and classification	1
**18	Threats to biodiversity and its conservation	1

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**19	The environmental protection acts	1
**20	The air and water acts	1
**21	The wild life protection acts	1
**22	The forest conservation acts	1
***23	Environmental pollution : Problems and hazards	1
***24	Air pollution causes, effects and control	1
***25	Water pollution causes, effects and control	1
***26	Soil pollution causes, effects and control	1
***27	Thermal pollution causes, effects and control	1
***28	Noise pollution causes, effects and control	1
***29	Marine pollution causes, effects and control	1
***30	Causes, effects and management of soil nuclear hazards	1
***31	Industrial wastes : causes effects and management	2

Lecture schedule –Practical

S. No.	Topic	No. of lectures
*1	Estimation of chlorophyll content of fresh water/sea water Ecosystem	1
*2	Demonstration of transpiration in plants	1
*3	Estimation of ascorbic acids (Vitamin C)	1
*4	Community survey for nutritional health status	1
*5	Estimation of proline as stress indicator in plants	1
**6	Estimation of species abundance of plants	1
**7	Estimation of respirable and non-respirable dust in the air	1
**8	Determination of sound level	1
**9	Estimation of pesticide contamination in agro ecosystem	1
**10	Visit to ecosystems and study of biodiversity	1
***1	Determination of BOD and COD in effluent sample	1
***1	Estimation of dissolved oxygen and TDS in effluent sample	1
***1	Estimation of Nitrate contamination in ground water	1
***1	Analysis of temporary and total hardness of water sample by titration	1
***1	Determination of heavy metals in sewage and sludge	2

References:

1. Bamanayha B.R., Verma, L.N. and Verma A (2005). Fundamentals of Environmental Sciences, Yash Publishing House, Bikaner
2. Dhaliwal G.S., Sangha G.S. and Ralhan P.K. (2000) Fundamentals of Environmental Sciences,Kalyani Publishers, New Delhi
3. Odum E.P. and Barrett G.W.(2007) Fundamentals of Ecology, Brooks/Cole, Akash Press, New Delhi
4. Agrawal, K.C.(1999) Environmental Biology, Agro Botanica, Bikaner
5. Kumar, H.D.(1997) Modern concepts of Ecology, Vikash Publishing House Pvt. Ltd. New Delhi
6. Dhaliwal G.S., and D.S.Kley (2006) Principles of Agricultural Ecology. Himalyan Publishing house, Bombay
7. Brij Gopal, and N.Bhardwaj (2004) Elements of Ecology. Vikash Publishing House, Pvt. Ltd., New Delhi.
8. Fawler, F.B.(1961). Radioactive Fall out, Soils, Plants, Food, Man (Ed.) Elsevier Science, Netherland
9. Kudesta, V.P.(1990). Pollution Everywhere, Pragatgi Prakashan, Meerut
10. Nemeron, R.L.1976. Industrial Water Pollution. Addison Wesley
11. Page, R.A.I., Miller, H. and Keeney, D.R., (1992) Methods of Soil Analysis Part-2 (Ed.) American Soc. Agronomy Madison, Wisconch, USA
12. Mishra, P.C.(2001). Soil pollution and Soil Organism, Ashish Publishing House, 8/81, Punjab Bagh, New Delhi – 110026.
13. Pathak, H.and Kumar, S.,(2003). Soil and Green House Effect, CBS Publishers and Distributors, 4596/1-A, 11, Dayaganj, New Delhi – 10002.

Course Outcome -1. Students will able to know about post harvest management of fruits and vegetables.
2. Students will able understand value added product of different fruits and vegetables
3. Students will know about maturity indices of different fruits and vegetables
4. Students will able to know about the preparation of jam, jelly etc

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5. Students will able to know about preservation of different fruits and vegetables and also able to know about different methods of preservation
6. Students will able to know about the different storage and packaging methods of fruits and vegetables

BAG367 Post Harvest Management and Value Addition of FruitsandVegetables

Theory:
3(2+1)
Importance of post harvest technology in horticultural crops. Maturity indices, harvesting and post-harvest handling of fruits and vegetables. Classification of fruit crops on the basis of ripening and ripening process. Factors affecting ripening of fruits and vegetables. Pre- harvest factors affecting quality on post-harvest shelf-life of fruits and vegetables. Factors responsible for detioration of harvested fruits and vegetables. Chemicals used for hastening and delaying ripening of fruits and vegetables. Primary processing of fruits and vegetables. Methods of storage – pre-cooling, pre-storage treatments, low temperature storage, controlled atmospheric storage, hypobaric storage, irradiation and low cost storage structures. Various methods of packing, packaging materials and transport. Importance and scope of fruit and vegetable preservation in India. Principles of preservation byheat, low temperature, chemicals and fermentation. Unit layout– selection of site and precautions for hygienicconditions of the unit. Preservation through canning, bottling, freezing, dehydration, drying, ultraviolet and ionizing radiations. Preparation of jams, jellies, marmalades, candies, crystallized and glazed fruits, preserves, chutneys, pickles, ketchup, sauce, puree, syrups, juices, squashes and cordials Spoilage of canned products, biochemical, enzymatic and microbial spoilage. Laws prohibiting processed fruit and vegetables food adulteration in India

Practical:
Practice in judging the maturity of various fruits and vegetables. Construction of zero energy cool chambers for on farm storage. Determination of physiological loss in weight (PLW), total soluble solids (TSS), total sugars, acidity and ascorbic acid content in fruits and vegetables. Effect of ethylene on ripening of banana, sapota and mango. Identification of equipment and machinery used in preservation of fruits and vegetables. Preservation by drying and dehydration. Preparation of jam, jelly and marmalades. Preparation of squash, cordials and syrups. Preparation of chutneys, pickles, sauces and ketchup. Visit to processing units, market yards, cold storage units and packingindustries.

Lecture schedule- Theory

S.No.	Topic	No. of lectures
1.	Importance of post harvest technology in horticultural crops	2
2.	Maturity indices, harvesting and post-harvest handling of fruits and vegetables	2
3.	Classification of fruit crops on the basis of ripening and ripening process	2
4.	Factors affecting ripening of fruits and vegetables	1
5.	Pre- harvest factors affecting quality on post-harvest shelf-life of fruits and vegetables	2
6.	Factors responsible for detioration of harvested fruits and vegetables	2
7.	Chemicals used for hastening and delaying ripening of fruits and vegetables	1
8.	Primary processing of fruits and vegetables	1
9.	Methods of storage – pre-cooling, pre-storage treatments, low temperature storage, controlled atmospheric storage, hypobaric storage, irradiation and low cost storage structures	3
10.	Various methods of packing, packaging materials and transport	1
11.	Importance and scope of fruit and vegetable preservation in India	1
12.	Principles of preservation by heat, low temperature, chemicals and Fermentation	1
13.	Unit layout – selection of site and precautions for hygienic conditions of the unit	1
14.	Preservation through canning, bottling, freezing, dehydration, drying, ultraviolet and ionizing radiations	4
15.	Preparation of jams, jellies, marmalades, candies, crystallized and glazed fruits, preserves, chutneys, pickles, ketchup, sauce, puree, syrups, juices, squashes and cordials	4
16.	Spoilage of canned products, biochemical, enzymatic and microbial spoilage	2
17.	Laws prohibiting processed fruit and vegetables food adulteration in India.	2

Lecture schedule-Practical:

S.No.	Topic	No. of lectures
1.	Practice in judging the maturity of various fruits and vegetables	1
2.	Construction of zero energy cool chambers for on farm storage	1
3.	Determination of physiological loss in weight (PLW), total soluble solids (TSS), total sugars, acidity and ascorbic acid content in fruits and vegetables	2
4.	Effect of ethylene on ripening of banana, sapota and mango	2
5.	Identification of equipment and machinery used in preservation of fruits and vegetables	1
6.	Preservation by drying and dehydration	1
7.	Preparation of jam, jelly and marmalades	3

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8.	Preparation of squash, cordials and syrups.	2
9.	Preparation of chutneys, pickles, sauces and ketchup	1
10.	Visit to processing units, market yards, cold storage units and packing industries	1

References:

1. Srivastava,R.P.andKumar,S.(2007).FruitsandVegetablePreservation.PrincipleandPractices. International Book Distributing Comp.,Lucknow
2. Lal, G., Siddapa, G.S. and Tandon, G.L. (1967). Fruit and vegetable Preservation in India. ICAR, NewDelhi
3. Nair, S.S. And Sharma, H.C. (2006). Phal Tarkari Parikshan Praydhogiki.Rajasthan Hindhi Granth Academy,Jaipur

Course Outcome -1. Students will know pathogens, symptoms, etiology, disease cycle and management of major diseases of Rabi field crops.

2. Students will know common pathogens, symptoms, etiology, disease cycle and management of diseases of Rabi vegetable crops

3. Students will know common pathogens, symptoms, etiology, disease cycle and management of diseases of fruit crops

4. Student will know importance of sign and symptoms for detection of pathogens and disease.

5. Students will know integrated methods of disease management, use of biological and chemicals in disease management.

BAG368 **Diseases of Horticultural Crops andTheirManagement** **2(1+1)**

Theory: Economic importance, symptoms, etiology, disease cycle and management of diseases of **citrus** (canker,dieback); **mango** (malformation and black tip); **banana** (panama wilt and sigatoka); **grapevine** (downy mildew and anthracnose); **pomegranate** (bacterial blight); **papaya** (foot rot and ring spot); **guava** (wilt and Zn deficiency); **apple** (scab); **ber**(powdery mildew): **potato** (late blight and black heart); **tomoto** (early blight and leaf curl); **chilli** (anthracnose); **brinjal** (Phomopsis blight and little leaf disease); **bhindi** (yellow vein mosaic); **pea** (powdery mildew); **cabbage** (black rot); **cucurbits** (downy mildew); **onion** (purple blotch); **ginger** (rhizome rot) and **rose** (powdery mildew).

Practical: Study of symptoms, etiology, host-parasite relationship and control measures of diseases of citrus, mango, grapevine, pomegranate, papaya, guava, ber, potato, tomoto, chilli, brinjal, bhindi, pea, onion. Field visits at orchards and vegetable fields during thesemester.

Lectures schedule: Theory

S.No.	Topic	No. of lectures
1.	Citrus (canker and dieback)	1
2.	Mango (malformation and black tip)	1
3.	Banana (panama wilt and sigatoka)	1
4.	Grapevine (downy mildew and anthracnose), Pomegranate (bacterial blight)	1
5.	Papaya (foot rot and ring spot)	1
6.	Guava (wilt and Zn deficiency);	1
7.	Apple (scab)	1
8.	Ber (powdery mildew)	1
9.	Potato (late blight, and black heart)	1
10.	Tomoto (early blight and leaf curl) Chilli (anthracnose)	1
11.	Brinjal (phomopsis blight and little leaf) Bhindi (yellow vein mosaic)	1
12.	Pea (powdery mildew), Onion (purple blotch)	1
13.	Cabbage (black rot) , Cucurbits (downy mildew)	2
14.	Ginger (rhizome rot)	1
15.	Rose (powdery mildew)	1

Lecture schedule: Practical

S.No.	Topic	No. of lectures
1.	Study of symptoms, etiology, host-parasite relationship and specific control measures of the following diseases Citrus (canker and dieback)	1
2.	Mango (malformation and black tip)	1
3.	Grapevine (downy mildew and anthracnose),Pomegranate (bacterial blight)	1

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4.	Papaya (foot rot and leaf curl)	1
5.	Guava (wilt and Zn deficiency);	1
6.	Ber (powdery mildew)	1
7.	Potato (late blight and leaf roll)	1
8.	Tomoto (leaf curl),Chilli (anthracnose)	1
9.	Brinjal (phomopsis blight and little leaf disease),Bhindi (yellow vein mosaic)	1
10.	Pea (powdery mildew), Onion (purple blotch)	2
11.	*Preservation of diseases samples	2
12.	Field visits at orchards and vegetable fields	3

*Note: student should submit at least 25 pressed well mounted disease specimens.

References

1 Gupta, S.K. and Thind, T.S. 2006. Disease problems in vegetableproduction. Scientific Publishers, Jodhpur.

2 Mehrotra, R.S. and Aggarwal, A. 2007.Plant Pathology (2nd.ed.) Tata McGraw-Hill Publishing Co Ltd., NewDelhi.

3 Pathak, V.N. 1980 Diseases of fruit crops. Oxford and IBH Publishing Co. Pvt. Ltd, . NewDelhi.

4 Rangaswamy, G. and Mahadevan, A .2001 Diseases of crop plants in India. Prentice Hall of India Pvt Ltd., NewDelhi.

5 Singh, R.S. 2006. Diseases of fruit crops. Oxford and IBH Publishing Co. Pvt. Ltd. NewDelhi.

6 Singh, R.S.1994 Diseases of vegetable crops. Oxford and IBH Publishing Co. Pvt. Ltd. NewDelhi.

7 Singh, R.S. 2007. Plant Diseases. (8th.ed) Oxford and IBH Publishing Co. Pvt . Ltd. NewDelhi.

Course Outcome -1. Detailed knowledge on Meaning and concept of farm management, objectives and relationship with other sciences.

2. Principles of farm management.

3. Law of equi- marginal/or principles of opportunity cost and law of comparative advantage.

4.To understands the subject matter and importance of natural resources economics.

5. Understand and learn the concepts of natural resource economics.

BAG369

Fundamentals of Farm Business Management (including Project Development, Appraisal and Monitoring)

2(1+1)

Theory -

Agribusiness: Meaning. Definition, Structure of Agribusiness, (Input. Farm. Product Sectors). Importance of Agribusiness in the Indian Economy, Agricultural Policy. Agribusiness Management. Distinctive features, Importance of Good Management. Definitions of Management. Management Functions, Planning. Meaning, Definition, Types of Plans (Purpose or Mission. Goals or Objectives. Strategies, Polices. Procedures, rules. programmes, Budget) characteristics of sound plan, Steps in planning, Organisation. Staffing, Directing. Motivation, Ordering, Leading. Supervision, Communication, control. Capital Management. Financial Management of Agribusiness: Importance of Financial Statements, Balance sheet, Profit and Loss Statement, Analysis of Financial statements. Agro-based Industries: Importance and Need, Classification of Industries, Types of Agro-based Industries. Institutional arrangement, Procedure to set up agro-based industries, Constraints in establishing agro-based industries. Marketing Management: Meaning, Definitions. Marketing Mix. 4Ps of Marketing. Mix, Market segmentation, Methods of Market. Product life cycle. Pricing policy, Meaning. pricing method. Prices at various stages of Marketing. Project, definitions, project cycle. Identification, Formulation. Appraisal, Implementation. Monitoring and evaluation, Appraisal and Evaluation techniques, NPW, BCR. IRR, N/C ratio, sensitivity analysis. characteristics of agricultural projects: preparation of project reports for various activities in agriculture and allied sectors: Dairying, poultry, fisheries. agro-industriesetc.

Practical:

Study of input markets: seed. fertilizers, pesticides. Study of output markets. grains, fruits, vegetables, flowers. Study of product markets. retail trade commodity trading, value added products. Study of financing institutions cooperatives commercial banks, RRBs. Agribusiness Finance Limited, NABARD: Preparations of projects. Feasibility reports; Project appraisal techniques: Case study of agro-based industries.

Lecture schedule- Theory

S.No.	Topic	No. of lecture
1.	AgriBusiness Meaning, Definition, Structure of Agri business (Input. Farm. Products Sectors	1
2.	Importance of Agri Business in the Indian Economy, Agricultural Policy, Agribusiness, Distinctive features ,Management, Distinctive features	1
3.	Importance of Good Management, Definition of Management, Management functions	1

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4.	Planning: Meaning, Definitions Types of Plans(Purpose or mission. Goals or Objectives, Strategies, policies, procedures, rules, programmes, Budget), Characteristics of sound plan, steps in planning, organization, staffing, directing, motivation, ordering, supervision, communication, control, capital management	2
5.	Financial Management of Agri-Business: Importance of financial statements, Balance sheet, profit and loss statement, analysis of financial statements	1
6.	Agro based industries, institutional arrangement, procedure to set up agro based industries, Constraints in establishing agro based industries.	2
7.	Marketing management: Meaning, Definitions, Marketing Mix, 4Ps of marketing Mix, Market segmentation, Methods of Market, Product life cycle	2
8.	Pricing policy, Meaning, pricing methods, price at various stages of marketing	1
9.	Project definitions, project cycle, identification, formulation, Appraisal, Implementation, monitoring and evaluation,	2
10.	Appraisal and evaluation techniques, NPW, BCR, IRR, N/K ratio, sensitivity analysis	1
11.	Characteristics of agricultural projects: preparation of project reports for various activities in agriculture and allied sectors: Dairying, poultry, fisheries, agro industries etc.	2

Lecture schedule: Practical

S.No.	Topic	No. of lectures
1.	Study of input markets: seed, fertilizer, pesticides.	3
2.	Study of output markets: grain, fruits, vegetables, flowers	3
3.	Study of product markets. Retail trade commodity trading, value added products.	3
4.	Study of financial institutes cooperatives commercial banks, RRBs, Agribusiness NABARD Financial limited, NABARD	3
5.	Preparation of projects, feasibility reports; project appraisal techniques	2
6.	Case study of agro based industries.	2

References

1. Principles and practice of Marketing in India· C B Mamoria andJoshi
2. Agricultural finance and Management-S Subba Reddy and P Raghu Ram
3. Marketing Agricultural Products - Kohls andUhl
4. Marketing Management -Kotler

B. Sc. (Hons.) Agriculture, Part- IV

VII Semester

Course Outcome -1. Apply knowledge for production of quality seeds.
2. Analyzing different methods of seed production and processing.
3. Examine quality seed by using different seed testing methods
4. Observe present status of India for seed production.

BAGECA471 **AdvancedSeedTechnology** **3(1+2)**

Theory:

Heterosis: Inbred line production and maintenance, Production of inbreds by various methods, Evaluation of inbreds,Maintenance of inbreds,Production of hybrids,Emasculation techniques
Use of male sterility, Use of self incompatibility, Maintenance of MS lines, Production of composites and synthetics, Exploitation of apomixes, Visit to seed production units

Seed technology: Setting up of Seed testing laboratory, Different tests of seed quality for seed legislation, Awareness of seed processing equipment, Setting up of seed processing unit, Visit to different seed processing units. **Seed marketing:**Setting up of marketing units, Economics of seed production, Supply chain management, Storage and packaging, Obtaining Licenses for seed production and processing units., Private and public seed production systems. Risk factor analysis in seed business.Model crops for seed production-Wheat, maize, pearl millet, gram, moth, guar and cowpea, rapeseed mustard, cotton, vegetables – tomato, cucurbits, chilli, seedspices.

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Practical:

Different methods of emasculation .Setting up of Seed testing laboratory.Different tests of seed quality for seed legislation. Awareness of seed processing equipment. Model crops for seed production. Wheat, maize, pearl millet, gram, moth, guar and cowpea, rapeseed mustard, cotton, vegetables – tomato, cucurbits, chilli, seed spices. Setting up of seed processing unit. Visit to seed production units. Visit to different seed processing units. Demonstration/visit of inbredplots.

Lecture schedule: Theory

S.No.	Topic	No. of lectures
1.	Heterosis: Inbred line production and maintenance, Production of inbred by various methods, Evaluation of inbred, Maintenance of inbred	1
2.	Production of hybrids, Emasculation techniques , Use of male sterility Use of self incompatibility, Maintenance of MS lines.	1
3.	Production of composites and synthetics	1
4.	Exploitation of apomixis.	1
5.	Obtaining Licenses for seed production and processing units.	1
6.	Private and public seed production systems. Risk factor analysis in seed business.	2
7.	Setting up of marketing units, Economics of seed production,Supply chain management, Storage and packaging	3
8.	Model crops for seed production-Wheat, maize, pearl millet, gram, moth, guar and cowpea, rapeseed mustard, cotton, vegetables – tomato, cucurbits, chilli, seed spices.	6

Lecture schedule: Practical

S.No.	Topic	No. of lectures
1.	Different methods of emasculation	2
2.	Setting up of Seed testing laboratory	2
3.	Different tests of seed quality for seed legislation	4
4.	Awareness of seed processing equipment	2
5.	Model crops forseedproduction- Wheat, maize, pearl millet, gram, moth, guar and cowpea, rapeseed mustard, cotton, vegetables – tomato, cucurbits, chilli, seedspices.	15
6.	Setting up of seed processing unit	2
7.	Visit to seed production units	1
8.	Visit to different seed processing units	2
9.	Demonstration/visit of inbred plots	2

References:

1. Agarwal, R.L.2003.Seed Technology, Oxford &IBH Publishing pvt. Ltd.NewDelhi
2. Arya, P.S. 2001. Vegetable Breeding and Seed Production. Kalyani Pub.,Ludhiana
3. Khare and Bale.2007. Seed Technology. Scientific Publisher (India),Jodhpur
4. Mukharjee, S. The Heterosis Phenomenon. Kalyani Pub.,Ludhiana
5. Sreenivas, V.S.2009. Seed Technilogy and Seed Pathology. Oxford Book Comp,Jaipur
6. Saxena,R.P.1984. Beez Sansadhan, GBPA&T,Pantnagar.

Course Outcome - 1. To know weed definitions and their characteristics
2.To study the harmful and beneficial effects of weeds.
3.To discuss about different classifications of weeds.
4.To study different methods of propagation and dissemination of weeds
5.To study the biology and ecology of different weed species
6.To study the weed competition with main crops for nutrients, moisture, light, space and losses caused by weeds.
7.To study the factors affecting crop weed competition/interference and allelopathic effects.

BAGECA472 **AppliedWeedManagement**

3(1+2)Theory:

Weed: definition, damages caused; Elements of weed prevention and control; Concept of Integrated weed management ; Physical weed control methods: manual, mechanical and soil solarization; Weed control through agronomic practices; Biological weed control : Classical approach and bio- herbicides, Herbicidal control; Classes and methods of herbicide application; Sprayers: components and calibration. Weed management in field crops viz., paddy, wheat, maize and millets, groundnut, linseed, rapeseed and mustard, soybean, chickpea, pigeonpea, lentil, sugarcane, cotton, cumin, fenugreek, Lucerne, berseem and vegetable crops; Control of parasitic weeds viz, *Striga, Orobanchae, Cuscutta* , and *Phoranthus.*

Practical:

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Identification and preservation of seasonal and perennial weeds; Practice in manual and mechanical weed control and use of improved implements; Acquaintance with herbicides – their manufacturers and potential uses; Visit to weed control trials to record observations on density, intensity and dry matter; Herbicide application equipments and their calibration; Herbicide calculations; Herbicide spray in cropped and non- cropped area; Recording herbicide toxicity ; Economics of weed control; Qualitative and quantative analysis of weedy vegetation; Bioassay for herbicide residue estimation; Control of *Parthenium hysterophorous*; Visits to observe weed problems on farmers fields and aquatic ecosystem.

Lecture schedule :Theory

S.No.	Topic	No.of lectures
1.	Weed definition and damages caused	1
2.	Elements of weed prevention and control	1
3.	Physical weed control of weeds	1
4.	Cultural and mechanical weed control and Soil solarization	1
5.	Weed control through agronomic practices	1
6.	Biological weed control and Integrated weed management	1
7.	Herbicidal weed control and limitations	1
8.	Classes and methods of herbicide application	1
9.	Sprayers, their component and calibration	1
10.	Weed management in rice, wheat, maize and millets	1
11.	Weed management in groundnut, linseed. Rapeseed and mustard, soybean	1
12.	Weed management in Chickpea, pigeon pea, lentil	1
13.	Weed management in Sugarcane and cotton	1
14.	Weed management in Cumin, fenugreek, Lucerne, berseem	1
15.	Weed management in vegetable crops	1
16.	Parasitic weeds and their control measures	1

Lecture schedule: Practical

S.No.	Topic	No.of lectures
1.	Identification of common weeds	2
2.	Collection of common *kharif* weeds and their preservation	2
3.	Collection of common *rabi* weeds and their preservation	2
4.	Collection of common perennial weeds and their preservation	2
5.	Different practices of manual and mechanical weed control and use of improved implements	2
6.	Acquaintance with herbicides : their manufacturer and potential uses	2
7.	Visit to weed control trials and recording observations	2
8.	Herbicide application equipments and their calibration	2
9.	Calculation on herbicidal requirement	2
10.	Herbicide spray in cropped and non cropped areas	2
11.	Study of phytotoxicity symptoms of herbicides in different crops	2
12.	Economics of weed control practices	2
13.	Quantitative analysis of weedy vegetation	2
14.	Bioassay for herbicide residue estimation	2
15.	Control measures for *Parthenium hysterophorus*	2
16.	Visit to observe weed problem on farmers field and aquatic ecosystem	2

Reference:

1. Saraswat, V.N., Bhan, V.M. and Yaduraju, N.T. 2003. Weed Management , ICAR,New-Delhi.
2. Gupta, O.P. 2005. Weed Management : Principles and Practices (2nd Ed.), Agribios (India),Jodhpur.
3. Shanmugavelu, K.G., Aravindan, R. and Rajagopal, A. 2004. Weed Management in Horticultural Crops , Agrobios (India),Jodhpur.
4. Gupta, O.P. 2008. Modern Weed Management , Agribios (India),Jodhpur
5. Das, T.K. 2008. Weed Science : Basics and Applications , Jain Brothers,New-Delhi.

Course Outcome -1. To "apply agriculture in the broadest sense, including the way people tend soils, water, plants and animals in order to produce, prepare and distribute goods.

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2.They concern the way people interact with living landscapes, relate to one another and shape the legacy of future generations.
3. To guide our development of positions, programs and standards for organic farming and vermicompost.
4. Organic farming and vermicompost, principles and its scope in India
5. Initiatives taken by Government (central/state), NGOs and other organizations for promotion of organic agriculture.
6. Choice of crops and varieties in organic farming.

BAGECA473 Vermicompost andOrganicFarming 3(1+2)

Theory:

Vermicompost: Definition and objectives of vermitechnology. Importance of vermicomposting in utilization of Agriculture waste and organic recycling of nutrients. Classification of earthworm's. Method of preparation of vermicompost. Method and doses of vermicompost application for cereals, vegetables, tress and pots. Role of vermicomposting in organic farming and soil fertility. **Organic farming:** concept, definition, objectives and scope of organic farming. Role of organic farming in improving soil health and quality. Biofertilizers: Definition, importance of biofertilizers in organic farming and sustainability of soil fertility and productivity. Types of microbiological inoculants and method of application anddoses.

Practical:

Identification of earthworms. Preparation of vermicompost. Separation and procurementof vermiculture and vermicompost. Analysis for quality standards and fractionation of vermicompost. Drawing of flow-sheet chart and preparation of vermicompost project. Measurement of changes in bulk density, infiltration rate, water holding capacity and organic carbon content of soil with the application of vermicompost. Determination of organic carbon, N, P and K content of soils under organic farming . Visits of organic farming fields. Identification of different strains of biofertilizers and isolation of rhizobium fromnodules.

Lecture schedule :Theory

S.No.	Topic	No.of lectures
1	Definition of vermitechnology	1
2	Importance of vermicompost in utilization of Agriculture waste, and organic recycling of nutrients	2
3	Classification of earth worms	1
4	Method of preparation of vermicompost	1
5	Method and doses of vermicompost application for cereals, pulses, trees vegetables and pots	2
6	Role of vermicomposting in organic farming and soil fertility	2
7	Concept and definition of organic farming	1
8	Objectives and scope of organic farming	2
9	Role of organic farming in improving soil health and quality,	2
10	Definition of biofertilizers and role of biofertilizers in organic farming, sustainable agriculture, soil fertility	2
11	Classification of biofertilizers, methods and doses of application for soil, seed and seedlings.	1

Lecture schedule :Practical

S. No.	Topic	No. of lectures
1	Identification of earthworms	1
2	Collection and preparation of bedding materials	3
3	Preparation of beds for vermicompost and inoculation of vermiculture	2
4	Separation of vermiculture and vermicompost	2
5	Maintenance of vermiculture	1
6	Preservation and packing of vermicompost	2
7	Determination of quality standards of vermicompost: Analysis for N, P and K	4
8	Estimation of organic carbon in vermicompost	1
9	Fractionation of vermicompost	2
10	Drawing of flow-sheet chart of vermitechnology	1
11	Measurement of changes in soil with the application of vermicompost i.e. bulk density, infiltration rate, water holding capacity and organic carbon content of soil.	4
12	Preparation of project for vermicomposting	1
13	Visit and reporting about the productivity of soil under organic farming	2
14	Determination of O.C., N, P and K status of soils under organic farming	5
15	Identification of different strains of bio-fertilizers	1
16	Isolation of Rhizobium from nodules	1

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References:

1. Bhatnagar, R.K. and Palta, R.K. (2002). Vermiculture and vermicomposting. Kalyani Publishers,Ludhiana.
2. Motsara, M.R. Bhattacharyya, P., Srivastava, Beena (1955) Biofertilizers (Technology, Marketing and as age. Fertilizer development and consultation organization-NewDelhi.
3. Thompson, J.A. (1984). Production and quality control of carrier based legumeinoculants.
4. Indian standards institution (1986). Indian Standard Specification for Rhizobiuminoculants.

Course Outcome -1.To trained on professional skill, professional knowledge and Employability skill.
2.In addition to this a candidate is entrusted to undertake project work and extracurricular activities to build up confidence and analysis of soil and soil nutrient.
3. Gets the idea of trade tools, apparatus & their standardization, calibration, identifies different types of Laboratory equipments for different analysis of rapid plant tissue test.
4. Preparation of standard solution and chemical reagents for soil Plant, Water and plant testing
5.Practice of different soil testing methods to determine various properties viz. soil texture, pH value, moisture content, Electric conductivity, hydraulic conductivity, organic carbon, Cation exchange capacity etc

BAGECA474 **Soil Plant andWaterAnalysis** **3 (1+2)**

Theory:

Principle of pH meter, EC meter, spectrophotometer, flame photometer and A A S Soil analysis: Objectives, Sampling of soil, procedure and precautions. Interpretation of analytical data and nutrient index Plant analysis: Sampling, stages and plant part to be sampled .Total plant analysis, Quantitative rating of plant analysis data and interpretation of results, critical nutrient concentration (CNC), critical nutrient range (CNR). Nutrient use efficiency. Rapid plant tissue test for N, P, K and their interpretation for fertilizer recommendation,. Visual diagnostic criteria for the nutrient deficiency and toxicity of plants. Errors in soil and plant analysis. Classification and minimization of errors. Water analysis: Quality criteria, classification and suitability of irrigation water and water qualityindex

Practical:

Standardization of solutions and reagents, collection and preparation of soil samples, estimation of pH, EC, organic carbon, NPKS, micronutrients, CEC and exchangeable sodium in soil. Determination of EC and pH of saturation extract / paste. Estimation of cations(Ca^{++}, Mg^{++} and Na^{+}) and anions (CO_3 and HCO_3 saturation extract . Plant sampling and sample preparation for analysis, digestion of plant material and estimation of N, P, K in plant. Rapid plant tissue test for N, P and K Determination of EC, pH, cations (Ca^{++} +Mg^{++} , Na^{+} , K^{+}) and anions (CO_3,HCO_3,Cl)inirrigation waterand.ComputationofSARandRSC.

Lecture schedule:Theory

S.No.	Topic	No.of lectures
1.	Principle of pH meter and EC meter	1
2.	Principle of spectrophotometer, flamephotometer and AAS	1
3.	Soil analysis: Objectives, methods of soil sampling, tools, materials and precautions in soil sampling	1
4.	Interpretation of analytical data for evaluation of soil fertility and nutrient index	1
5.	Plant analysis: Sampling, stages and plant part to be sampled	1
6.	Preparation of plant samples for analysis by ashing and digestion.	1
7.	Total plant analysis, Quantitative rating of plant analysis data and interpretation of results, critical nutrient concentration, critical nutrient range. Nutrient use efficiency	2
8.	Rapid plant tissue test for N, P, K and their interpretation as a guide to fertilizer recommendation. Advantage and disadvantage of rapid plant tissue test	2
9.	Visual symptoms of nutrients deficiency or toxicity and critical limits of major nutrients in plants	1
10.	Visual symptoms of nutrients deficiency or toxicity and critical limits of micro nutrients in plants	1
11.	Errors in soil and plant analysis, precision and accuracy classification and minimization of errors	2
12.	Water analysis: Quality criteria, classification and suitability of irrigation water. Water quality index	2

Practical schedule: Practical

S.No.	Topic	No.of lectures
1	Standardization of solutions and reagents	2
2	Collection and preparation of soil sample	1

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3	Mechanical analysis of soil by international pipette method	2
4	Estimation of pH and electric conductivity of soil suspension	1
5	Estimation of organic carbon in soil	1
6	Estimation of available nitrogen in soil	1
7	Estimation of available phosphorus in soil	2
8	Estimation of available potassium in soil	1
9	Estimation of available sulphur in soil	2
10	Estimation of micronutrients (Zn, Mn, Cu and Fe) in soil	2
11	Estimation of available boron in soil	2
12	Estimation of cation exchange capacity in soil	1
13	Estimation of exchangeable sodium in soil and computation of ESP	1
14	Preparation of soil saturation paste and extract	1
15	Determination of EC and pH in saturation extract / paste	1
16	Estimationofcations (Ca^{++}, Mg^{++} and Na^{+}) and anions(CO_3 andHCO_3)in saturation extract	2
17	Estimation of nitrogen in plant	2
18	Estimation of phosphorus in plant	2
19	Estimation of potassium in plant	1
20	Rapid plant tissue test for nitrate, phosphate and potassium	1
21	Estimation of Ca^{++} and Mg^{++} in irrigation water	1
22	Estimation of Na^{+} and K^{+} in irrigation water and computation of SAR	1
23	Estimationof CO_3 ,HCO_3 and Cl in irrigation water and computation ofRSC	1

References:

1.S.L. Chopra and J.S. Kanwar, 1999. Analytical AgricultureChemistry, Kalyani Publisher,Lucknow.

2.T.D. Biswas and S.K. Mukherjee 1995. Textbookof Soil Science (2nd Ed.) TataGrawHill Publishing Company Limited, NewDelhi.

3. M.L. Jackson 1973. Soil Chemical Analysis, Prentice Hall of India Pvt. Ltd., New Delhi.

4.H.L.S. Tandon 1990. Methods of Analysis of soil, plant, water and fertilizers, FDCO, New Delhi.

5. Tisdale, W.L. Nelson and J.D. Beaton, 1990. Soil Fertility and Fertilizers Macmillan Publishing Company, NewYork

6. P. K. Gupta 1999-2000. Soil, Plant, Water and Fertilizer Analysis, AgroBotanica,Bikaner.

7. Richards, L.A. (1954). Diagnosis and improvement of saline and alkali soils. USDA Hand book No. 60, Washington, DC USA.

Course Outcome - 1. Students will be able to fundamental knowledge to identify problematic soils and associated problems.

2.Students will be able to identify processes resulting in deterioration of soil physical and chemical properties, and to use the fundamentals of soil science disciplines for the reclamation of degraded soils.

3.Students will be able to the efficient use of treated wastewater for prevention of soil degradation.

4. Students will be able to use the concepts of soil chemistry to explain problematic soils and their restoration.

5. Students will be able to identify hazards associated with irrigation water including salinity, sodicity and toxicity hazards.

6. Students will be able to manage low quality irrigation water in a manner that ensure agricultural sustainability.

BAGECA475 SoilManagement 3 (1+2)

Theory:

Soil resources of India; distribution of wasteland and problematic soils with special reference to Rajasthan; soil tilth management; soil crusting and its management; management of soil moisture under different climates; effect of water quality on soils and plants; soil aeration problems and management; soil thermal regimes in relation to crops and their optimization. Recycling of agricultural and industrial wastes, waste land and their management; reclamation and management of acidic, saline and sodic soils, constraints and management of highly and slowly permeable soils; soil erosion, extent, type and effects, soil conservation technique, water harvesting techniques and watershed management, remote sensing for soil and watershedmanagement.

Practical:

Determination of saturated hydraulic conductivity, bulk density measurement of soil measurement of water holding and field capacities of soil, measurement of infiltration rate and moisture retention characteristics curve in normal, problematic and reclaimed soils. Preparation of saturation paste and saturation extracts of salt affected soils. Determination of pH, EC, cations and anions in saturation extract. Determination of $CaCO_3$ equivalent of liming material. Estimation of lime requirement of acid soils and gypsum requirement of sodic soils. Measurement of ODR of soil. Estimation of water stable aggregate in soil and field trip to study the areas of problematic soils.

Lecture schedule :Theory

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S.No.	Topic	No.of lectures
1.	Soil resources of India; distribution of wasteland and problem soils	1
2.	Soil tilth management, soil crusting and their management	1
3.	Soil water: classification, and its measurement, forces of soil water retention, moisture retention curve and management of soil moisture under different climates.	2
4.	Quality of irrigation water: Criteria andclassificationof poor quality water, effectof poor quality of water on soil and crop growth, management of poor qualitywater	2
5.	Soil air: Composition of soil air, gaseous exchange in soil and management of soil aeration in relation to plant growth	1
6.	Soil temperature and thermal regimes in relation to cropgrowth, factors affecting soil temperature and optimization of soil thermalregimes.	1
7.	Recycling of Agricultural and industrial organic waste.	1
8.	Acid soils: Extent, reclamation and management in India.	1
9.	Nomenclature, classification and formation ofsaltaffected soilsin India and Rajasthan, visual and chemical methods of diagnosing salt affectedsoils.	1
10.	Reclamation and management of salt affected soils	2
11.	Highly and low permeable soils: constraints and their management	1
12.	Soil Erosion: Extent of soil erosion, types of soil erosion, causes of soil erosion, prevention and management of soil erosion.	2
13.	Water harvesting and watershed management, concept, objectives and approach.	1
14.	Use of remote sensing in assessment and planning of waste land and watershed management.	1

Lecture schedule :Practical

S.No.	Topic	No.of lectures
1.	Techniques of reclamation / management of problematic soils	4
2.	Determination of saturated hydraulic conductivity of normal, problematic and reclaimed soil.	3
3.	Determination of bulk density of soil by core sampler method in normal, problematic and reclaimed soil.	3
4.	ermination of soil moisture at 1/3 and 15 bar by pressure plate method in normal, problematic and reclaimed soil.	2
5.	Measurement of water holding capacity and field capacity of soil	3
6.	Measurement of infiltration rate of soil by double ring infiltrometer in normal, problematic and reclaimed soil.	
7.	Preparation and analysis of saturation extract and determination of EC, pH	1
8.	Determination of Ca + Mg and Na in saturationextractand computation ofSAR	2
9.	Determination of CO_3, HCO_3 and Cl in saturated extract.	2
10.	Determination of $CaCO_3$ equivalent of liming material	3
11.	Estimation of lime requirement of acid soils	1
12.	Estimation of gypsum requirement of sodic soils	1
13.	Measurement of ODR of soil in normal, problematic and reclaimed soil	1
14.	Estimation of water stable soil aggregates in normal, problematic and reclaimed soil	2
15.	Field demonstration to study the problematic soilandmanaged area /watershed management	2

References:

1. Abrol, I.P. and Dhurva narayana, V.V. (1998) Technologies for wasteland development, ICAR, NewDelhi-110012
2. Agarwal, R.R., Yadav, J.S.P. and Gupta, R.N. (1982). Saline Alkali soils of India, ICAR, NewDelhi.
3. Biswas, T.D. Naryanswami, G, Goswami, N.R; Sekhon, G.S. and Shastry, T.G. (1991). Soil related constraints in crop production. Tech. Bull. No. 15. Indian Society of Soil Science, NewDelhi.
4. Biswas, T.D. and Mukharjee, S.K. (1990). Text book of soil science, Tata Mc Graw till publishing co. Ltd. New Delhi.
5. Cirsan Paul, J.(1985) Principles of remote sensing. Longman,NewYork.
6. Lal, P.; Chhipa, B.R. and Purohit, A.K. (1994). Salt affected soils- A modern synthesis Agro, Botanical publisher, Bikaner
7. Richards, L.A. (1954). Diagnosis and improvement of saline and alkali soils. USDA Hand book No. 60, Washington, DCUSA.
8. Somani, L.L. and Totawat, K.L. (1993). Management of salt affected soils and waters. Agrotech publishing Academy,Udaipur.

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Course Outcome -1: Students will be able to evaluate the value and importance of livestock in Indian economy in view of distribution, identity, character of animal and poultry breeds and their end products including meat, milk, fiber and by-products.

2: Students will be able to critically assess that how digestion system of farm animals are functioning, classified and Describe key aspects of the basic physiological processes of reproduction, nutrition, and breeding & genetics needed for producing livestock and poultry.

3: Students will be able to familiar with identify the basic nutrient groups; discuss nutrient requirement for growth, maintenance, reproduction and lactation. Identify feed additives and their use. Describe basic steps used for ration formulation.

4. Students will be able to implement their idea to establish the dairy and cattle farming as allied activities and can be promote the animal husbandry among rural poor.

BAGECA476 **DairyCattleProduction** **3(1+2)**

Theory:

Importance of dairying. Important milch breeds of cattle and buffalo. Selection, purchase and insurance of dairy animals. Scientific management of calves, heifers, bull calves, dry, pregnant and lactating dairy animals.Least cost ration formulation. Systems of breeding. Factors affecting productive and reproductive efficiency of dairy animals.

Practical:

Selection of site for dairy farm.Layout of dairy farm building.Computation and formulation of milk replacer, calf starter, concentrate mixture for lactating, pregnant and dry animals. Computation of balance ration for various categories of dairy animals. Physical and chemical treatment of low quality roughages. Plan for supplying green fodder throughout the year.Vaccination in various categories of dairy animals. Dehorning in dairy calves. Castration of male calves. Control of ecto and endo parasites. Colostrums and its utility. Weaning and rearing of dairy calves. Determination of age of animal. Care and management of dairy calves. Management of lactating, dry and pregnant cows. Dairy hygiene. Clean milk production and its marketing. Cleaning and sanitization of dairy equipments. Milking machine and its operation. Management of milch animals during adverse climatic conditions. Symptoms of estrus in dairy animals. Pregnancy diagnosis. Artificial insemination and its importance. Hay and silage making. Temperature, pulse and respiration rate in dairyanimals.

Lecture schedule- Theory

S.No.	Topic	No. of lectures
1	Importance of dairying.	2
2	Important milch breeds of cattle and buffalo.	2
3	Selection, purchase and insurance of dairy animals.	2
4	Scientific management of calves, heifers, bull calves, dry, pregnant and lactating dairy animals.	4
5	Least cost ration formulation.	2
6	Systems of breeding.	2
7	Factors affecting productive and reproductive efficiency of dairy animals.	2

Lecture schedule-Practical:

S.No.	Topic	No. of lectures
1	Selection of site for dairy farm.	1
2	Layout of dairy farm building.	1
3	Computation and formulation of milk replacer, calf starter, concentrate mixture for lactating, pregnant and dry animals.	2
4	Computation of balance ration for various categories of dairy animals.	2
5	Physical and chemical treatment of low quality roughages.	2
6	Plan for supplying green fodder throughout the year.	2
7	Vaccination in various categories of dairy animals.	2
8	Dehorning in dairy calves.	1
9	Castration of male calves.	1
10	Control of ecto and endo parasites.	1
11	Colostrums and its utility.	1
12	Weaning and rearing of dairy calves.	1
13	Determination of age of animal.	1
14	Care and management of dairy calves.	2
15	Management of lactating, dry and pregnant cows.	2
16	Dairy hygiene..	1
17	Clean milk production and its marketing.	1
18	Cleaning and sanitization of dairy equipments.	1
19	Milking machine and its operation.	1
20	Management of milch animals during adverse climatic conditions.	1

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21	Symptoms of estrus in dairy animals.	1
22	Pregnancy diagnosis.	1
23	Artificial insemination and its importance.	1
24	Hay and silage making. Temperature, pulse and respiration rate in dairy animals	2

References:

1. Banerjee, G. C. 2011. A Text Book of Animal Husbandr.VIII ed. Oxford and IBH Publications. NewDelhi.
2. ICAR. 2011. Hand Book of Animal Husbandry published by DIPA, ICAR, NewDelhi.
3. Ranjan, S.K.1994 AnimalNutrition and Feeding Practices. Vikash Publications. NewDelhi.
4. Singh, R A 1985. Poultry Prodution. Kalyani Publications.NewDelhi.
5. Sukumar, De. 2000. Outlines of dairy technology. Oxford University Press,NewDelhi.
6. Thomas, C.K., Sastry NSR and Singh, RA. 1982.Farm Animal Management and Poultry Production.Vikash Publications. NewDelhi.

Course Outcome - 1. Learn and understand about plant growth regulators.
2. Know about mechanism of plant harmones and synthetic harmones and there function.
3. Understand the mechanism and role of plant harmone in seed, fruit and grain formation.
4. Understand the process of translocation of solutes in plants
5. Understand the physiological and economic and social aspects of PGRs applications.

BAGECA477 **Plant Growth RegulatorsinAgriculture** **3 (1+2)**

Theory:

Introduction and historical background of Plant growth regulators. Classification of plant hormones and their synthetic analogues. Surfactants – Physiology and performance. Plant hormones vis-à-vis control of flowering and sex expression. Role of plant hormone in seed, fruit and grain formation. Weed control and plant hormones. Economic and social aspects of PGRs applications

Practical:

Methods of application of synthetic plant hormones and precautions. Doses, responses and growth stages for the application of hormones. Plant hormones and propagation through cell, tissue, organ culture and differentiation. Plant hormones vis-à-vis seed and propagule storage. Abiotic and biotic stress management through plant hormones. Vist to orchards for demonstration of flower and fruit drop and their control measures.

Lecture schedule: Theory

S.No.	Topic	No. of lectures
1.	Introduction and historical background of Plant growth regulators	1
2.	Classification of plant hormones and their synthetic analogues	3
3.	Surfactants – Physiology and performance	1
4.	Plant hormones vis-à-vis control of flowering and sex expression	3
5.	Role of plant hormone in seed, fruit and grain formation	3
6.	Weed control and plant hormones	3
7.	Economic and social aspects of PGRs applications	2

Lecture schedule: Practical

S.No.	Topic	No. of lectures
1.	Methods of application of synthetic plant hormones and precautions	7
2.	Doses, responses and growth stages for the application of hormones	5
3.	Plant hormones and propagation through cell, tissue, organ culture and differentiation	7
4.	Plant hormones vis-à-vis seed and propagule storage	6
5.	Abiotic and biotic stress management through plant hormones	4
6.	Vist to orchards for demonstration of flower and fruit drop and their control measures	3

References:

1. Krishanamurthy, H.N. (1994) Plant growth and development Narosa Publication, NewDelhi.
2. Kumar Arvind and Purohit S.S. (1996) Plant Physiology, Agrobotanica Publishers,Jodhpur.

Course Outcome – 1. Students know about plasticulture and plastic quality and used in agriculture.
2. Use of plastic in water management, water drainage , plastic mulch, poly house in nursery etc.
3. Students know about Plastics as cladding material forcontrolled environmental cultivation- poly houses, shade net houses, poly tunnels, low tunnels and crop covers. Plastic nets for crop protection - anti insect nets, bird protection nets, Plastic fencing.

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4. Use of plastics in farm equipments and machineries - sprayers, seed drill tubes and other spare parts of equipments and machineries. Plastic vermi-beds. Silage film technique for fodder preservation. Agencies involved in the promotion of plasticulture at national and state level

BAGECA478 **PlasticultureinAgriculture** **3(1+2)**

Theory:

Introduction of Plasticulture, Types and quality of plastics used in agriculture, Quality control measures, Present status and future prospective of plasticulture in India, Use of plastics in water management and in -situ moisture conservation, Plastic pipes for sub-surface drainage, Plastic film lining in canal, pond orwater reservoir.Plasticmulch technique, Useof plastic in nursery raising, Plastics as cladding material forcontrolledenvironmental cultivation- poly houses, shade net houses, poly tunnels, low tunnels and crop covers. Plastic nets for crop protection - anti insect nets, bird protection nets. Plastic fencing. Innovative packaging solutions- leno bags, carets, vacuum packing ,Plastic cap covers for storage of food gain in open..Use of plastics in farm equipments and machineries - sprayers, seed drill tubes and other spare parts of equipments and machineries. Plastic vermi-beds. Silage film technique for fodder preservation. Agencies involved in the promotion of plasticulture at national and state level

Practical:

Study of sub- surface drainage system model, design of farm pond and estimation of plastic film, laying and flushing of drip laterals, plastic mulch laying, construction of low tunnels, use of leno bags, design, installation and cost estimate of cap cover, use of plastic in nursery under anti insect/ bird protection net, use of plastic vermi-bed, use of silage film for fodder preservation, visit to a nearby- PVC pipe manufacturing unit/dealer/ farmer' s field, sprinkler manufacturing unit/ dealer, poly house, shade nethouse.

Lecture schedule: Theory

S.No.	Topic	No. of lectures
1.	Plasticulture-meaning. Types and quality of plastics used in agriculture. Various fields for plasticulture applications. Major benefits of plasticulture application	1
2.	Present status and future prospective of plasticulture in India. Quality control measures associated with environmental protection.	1
3.	Use of plastic for water conveyance - plastic pipelines for water conveyance. PVC pipes for underground lines, HDPE pipe roll, hose pipes, PVC foot valves, and fittings of PVC pipelines. Repair and maintenance of PVC pipes. Concept of SSD system, sub-surface drainage concept, plastic pipes for sub-surface drainage system	1
4.	Drip irrigation concept and approaches. Plasticulture application in drip irrigation- online and drip inline, porous pipes, bi- wall technique, T tape, bubbler irrigation. Lay out and cost estimate of drip irrigation system for 1 ha area in orchard (6 x 6 m spacing) and vegetablesat 1.2 x 0.4 m spacing). Repair and maintenance of drip laterals.	1
5.	Sprinkler irrigation- Over head sprinklers, mini and micro sprinklers, rain guns. Type and quality of plastics used in sprinkler irrigation. Repair of HDPE pipes.	1
6.	Importance of lining in canal, pond and water reservoir. Quality of plastic film used for lining in canal and water reservoir. Film laying technique. Care and maintenance of plastic lined ponds.	1
7.	Plastic mulching- Advantages of mulching. Types of mulch films available, selection of thickness and colour for different crops, Estimation of mulch quantity and cost for 1 ha area in case of orchards (6 x 6 m spacing) and 40 % surface covering in case ofvegetables.	1
8.	Plastics in nursery raising- plastic bags, trays, pots. Their quality and cost aspects. Selection of bags, trays and pots for different type of seedlings and plants.	1
9.	Need and concept of environmental control cultivation, specifications and cost estimate of cladding material and nets used in 1008 sqm poly house approved by state govt. Care and maintenance of polythene used in environmental control.	1
10.	Agro nets. Shade percentage. Different types of shade nets used in agriculture. Quality aspects. Various components of a shade net house. Fixing of agro nets on shade net houses and its care and maintenance.	1
11.	Plastic nets for crop protection- anti insect nets, bird protection nets. Plastic fencing. Govt. subsidy on use of plastic nets.	1
12.	Innovative packaging solutions- Packaging practices for different crops, leno bags, carets, vacuum packing. Govt. support on use of plastic in packaging and transport of crop produce.	1
13.	Plastic cap covers for storage of food gain in open. Design and cost estimate of cap cover used for 100 and 1000 wheat bags.	1
14.	Use of plastics in farm equipments and machineries- sprayers, seed drill tubes and other spare parts of equipments and machineries. Plastic vermi-beds for composting animal dung and agro waste.	1

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15.	Use of plastic for fodder preservation by silage film technique.	1
16.	Agencies involved in the promotion of plasticulture at national and state level. Govt. support to beneficiaries in various plasticulture applications	1

Lecture schedule: Practical

S.No.	Topic	No. of lectures
1	Study of sub- surface drainage system model for understanding the concept of pipe drainage.	2
2	Design of 8 lac lit. capacity farm pond and estimation of plastic film required for lining.	1
3	Laying and flushing of drip laterals in field. Discharge and pressure measurement of 12 and 16 mm lateral.	2
4	Plastic mulching (2 x2 m) in fruit plants and estimation of quantity and cost of mulch for 100 plants.	2
5	Construction of low tunnels in about 30 sqm area and to observe seed germination inside and outside the tunnel.	3
6	Study of leno bags and other plastic bags for vegetable packaging and transport.	2
7	Design, installation and cost estimate of cap cover used for 200 wheat bags.	2
8	Raising of chilly nursery/ leafy vegetable under anti insect/ bird protection net.	2
9	Study of plastic vermi-bed. Evaluation of NPK of vermi compost preparedin vermi- bed and of FYM.	2
10	Visit to a nearby PVC pipe manufacturing unit/dealer/ farmer' s field to learn PVC pipe specifications for conveyance line, joining of PVC pipes and to learn about different PVC fittings.	4
11	Visit to a nearby sprinkler manufacturing unit/ dealer to learn about HDPE pipe specifications, fitting of sprinkler pipes and their repair.	3
12	Visit to a nearby fodder preservation site.	2
13	Visit to a nearby poly house for estimating quantity of cladding material and cost calculation and measuring inside and outside temperature and humidity.	3
14	Visit to a nearby shade net house to work out shade net requirement and cost calculation and measuring inside and outside temperature and humidity.	2

References:

1. Rathi Gopal.L. 1997. Guide to Plastics. Maharashtra Plastic Manufacturers Association,Pune
2. GreenHouseManagement.ATrainingManual ofInternationalHorticultureInnovationandTrainingCentre, Durgapura,Jaipur
3. Green House Designs and Environmental Control- A manual of NCPAH, DAC, Ministry of Agri. And Cooperation, Govt ofIndia.
4. Pandey P.H1998. Principles and Practices of Post-Harvest Technology. Kalyani Publishers,NewDelhi.

Course Outcome-1. Apply knowledge for production of quality seeds.
2. Analyzing different methods of seed production and processing.
3. Examine quality seed by using different seed testing methods
4. Observe present status of India for seed production.

BAGEPP471 **AdvancedSeedTechnology** **3(1+2)**

Theory:

Heterosis: Inbred line production and maintenance, Production of inbreds by various methods, Evaluation of inbreds,Maintenance of inbreds,Production of hybrids,Emasculation techniques
Use of male sterility, Use of self incompatibility, Maintenance of MS lines, Production of composites and synthetics, Exploitation of apomixes, Visit to seed production units

Seed technology: Setting up of Seed testing laboratory, Different tests of seed quality for seed legislation, Awareness of seed processing equipment, Setting up of seed processing unit, Visit to different seed processing units. **Seed marketing:**Setting up of marketing units, Economics of seed production, Supply chain management, Storage and packaging, Obtaining Licenses for seed production and processing units., Private and public seed production systems. Risk factor analysis in seed business.Model crops for seed production-Wheat, maize, pearl millet, gram, moth, guar and cowpea, rapeseed mustard, cotton, vegetables – tomato, cucurbits, chilli, seedspices.

Practical:

Different methods of emasculation .Setting up of Seed testing laboratory.Different tests of seed quality for seed legislation. Awareness of seed processing equipment. Model crops for seed production Wheat, maize, pearl millet, gram, moth, guar and cowpea, rapeseed mustard, cotton, vegetables – tomato, cucurbits, chilli, seed spices. Setting up of seed processing unit.

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Visit to seed production units. Visit to different seed processing units. Demonstration/visit of inbredplots.

Lecture schedule: Theory

S.No.	Topic	No. of lectures
1.	Heterosis: Inbred line production and maintenance, Production of inbred by various methods, Evaluation of inbred, Maintenance of inbred	1
2.	Production of hybrids, Emasculation techniques , Use of male sterility Use of self incompatibility, Maintenance of MS lines.	1
3.	Production of composites and synthetics	1
4.	Exploitation of apomixis.	1
5.	Obtaining Licenses for seed production and processing units.	1
6.	Private and public seed production systems. Risk factor analysis in seed business.	2
7.	Setting up of marketing units, Economics of seed production,Supply chain management, Storage and packaging	3
8.	Model crops for seed production-Wheat, maize, pearl millet, gram, moth, guar and cowpea, rapeseed mustard, cotton, vegetables – tomato, cucurbits, chilli, seed spices.	6

Lecture schedule: Practical

S.No.	Topic	No. of lectures
1.	Different methods of emasculation	2
2.	Setting up of Seed testing laboratory	2
3.	Different tests of seed quality for seed legislation	4
4.	Awareness of seed processing equipment	2
5.	Model crops forseedproduction- Wheat, maize, pearl millet, gram, moth, guar and cowpea, rapeseed mustard, cotton, vegetables – tomato, cucurbits, chilli, seedspices.	15
6.	Setting up of seed processing unit	2
7.	Visit to seed production units	1
8.	Visit to different seed processing units	2
9.	Demonstration/visit of inbred plots	2

References:

1. Agarwal, R.L.2003.Seed Technology, Oxford &IBH Publishing pvt. Ltd. NewDelhi
2. Arya, P.S. 2001. Vegetable Breeding and Seed Production. Kalyani Pub.,Ludhiana
3. Khare and Bale.2007. Seed Technology. Scientific Publisher (India),Jodhpur
4. Mukharjee, S. The Heterosis Phenomenon. Kalyani Pub.,Ludhiana
5. Sreenivas, V.S.2009. Seed Technilogy and Seed Pathology. Oxford Book Comp,Jaipur
6. Saxena,R.P.1984. Beez Sansadhan, GBPA&T,Pantnagar.

Course Outcome - 1. Define the nature of plant growth processes in the tissue culture environment
2. Apply the technique of micro propagation such as somatic embryogenesis, organogenesis and protoplast culture for ex situ conservation and mass multiplication of endangered and economically important plants
3. Evaluate the clonal fidelity and polymorphism of the tissue cultured plants using molecular and statistical tools
4. Design and develop the protocols for enhanced production of bioactive compounds in cell suspension culture.
5. Formulate protocol for development of genetically engineered crops for novel traits.

BAGEPP472 Tissue Culture and MicroPropagationTechniques 3 (1+2)

Theory:

Setting up of commercial micro propagation unit - Lab and hardening unit design, Equipment, lab wares and consumables, Energy requirement and use of alternate energy sources. Man power requirement, Biosafety measures and waste disposal, Legislative requirement and govt. incentive. Major techniques in micro propagation- Axillary enhancement, Automated somatic embryogenesis systems, Synthetic seeds, Hardening procedures, Sterilization procedure and clean air environment, Risk factor analysis, Handling of contamination, Packaging and transportation, Marketing and Supply chain management, Economics of micropropagation, Material procurement, Stores handling, Cost reduction during production and hardening. GMP and HACCP requirement. Visit to commercial production units and case studies.

Practical:

Lab and hardening unit design. Familiarity with equipments, lab wares and consumables. Procedures of autoclaving, Media preparation Explant preparation, Surface sterilization, Axillary bud, nodal explant culture, experiments to induce somatic

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embryos. Preparation of synthetic seeds, Experiments for hardening of in vitro explants. Visit to commercial Production units and case studies.

Lecture schedule: Theory:

S.No.	Topic	No. of lectures
1.	Setting up of commercial Micropropagation unit	
	a. Energy requirement and use of alternativeenergyresources b. Biosafety measures and wastedisposal. c. Legislative requirement and Govtincentive	3
2.	Major techniques in Micropropagation a. Axillaryenhancement b. Automated Somatic embryogenesissystem	2
3.	Risk factor analysis Handling of contamination	2
4.	Packaging and transportation	1
5.	Marketing & Supply chain management	2
6.	Economics of Micropropagation a. Materialprocurement b. Storeshandling c. Cost reduction during production &hardening	4
7.	GMP and HACCP requirement	2

Lecture schedule: Practical:

S.No.	Topic	No. of lectures
1.	Setting up of commercial Micropropagation unit a. Lab and hardening unitdesign b. Equipments, lab wares andconsumables c. Man powerrequirement d. Biosafety measures and wastedisposal	6
2.	Major techniques in Micropropagation a. Axillaryenhancement b. Automated Somatic embryogenesissystem c. Syntheticseeds d. HardeningProcedures e. Sterilization procedures and Clean airenvironment	19
3.	Risk factor analysis Handling of contamination	2
4.	Visit to commercial Production units and case studies	5

References:

1. Chawala H S (2000) Introduction to Plant Biotechnology. Oxford &IBH
2. Gupta, P. K. (2008) Elements of biotechnology Rastogi publicationsmeerut
3. Ray V. Herren (2005)Introduction to biotechnology (An Agriculturalrevolution)
4. Shekhawat, MS (2011) Plant Biotechnology, In vitro princioles, Techniques and Applications, MJP Publishers,Chennai
5. Mascarenhas, A. F. (2008) Hand book of Plant tissue Culture,ICAR.

Course Outcome - 1.Students will familiarized with various categories of bioagents .
2.Students will know various field as well as laboratory methods of detection and diagnosis of arthropodan pests and plant pathogens
3.Students will know principles and utilization of integrated disease management of field crops
4.Students will know identification and nomenclature of disease of field crops and their management
5.Students will be able apply knowledge gained to solve actual disease management problems
6. Students will be able to explains the different methods of IDM with examples.
7. Students will be able to define the concept of Integrated Pest and Disease Management (IPDM) and enlists its components.

BAGEPP473 **Bioagents and IntegratedDiseaseManagement** **3(1+2)**

Theory:

Introduction, definition and concepts of Integrated Disease Management. Components of IDM- physical, chemical, cultural, biocontrol, resistance and legislative methods. Different biocontrol agents-*Trichoderma*, *Pseudomonas* and *Bacillus*. Mass

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production of bioagents. Mechanism of action of biocontrol agents. Methods of application of bioagents. IDM in important crops - rice, wheat, cotton, rapeseed and mustard, chickpea, groundnut and potato.

Practical:

Preparation of culture media for fungi and bacteria. Isolation and purification of antagonistic fungi and bacteria from rhizosphere soil. *In vitro* evaluation of antagonism against pathogens. Mass multiplication of bioagents (*Trichoderma*, *Pseudomonas*, *Bacillus* spp.) in different liquid and solid media. Evaluation of fungitoxicity against pathogens. Bioefficacy of antagonists against important pathogens. Visit to biopestcide production units. **Lecture schedule: Theory**

S. No	Topic	No. of lectures
1.	Introduction, definition and concepts of Integrated Disease Management.	1
2.	Components of IDM- physical, chemical, cultural, biocontrol, resistance and legislative methods.	2
3.	Different biocontrol agents-*Trichoderma*, *Pseudomonas* and *Bacillus*.	2
4.	Mass production of bioagents.	2
5.	Mechanism of action of biocontrol agents.	1
6.	Methods of application of bioagents.	1
7.	IDM in important crops - rice, wheat, cotton, rapeseed and mustard, chickpea, groundnut and potato.	7

Lecture schedule: Practical

S.No	Topic	No. of lectures
1.	Preparation of culture media for fungi.	2
2.	Preparation of culture media for bacteria.	2
3.	Isolation and purification of antagonistic fungi from rhizosphere soil.	4
4.	Isolation and purification of antagonistic bacteria from rhizosphere soil.	4
5.	*In vitro* evaluation of antagonism against pathogens.	4
6.	Mass multiplication of bioagents (*Trichoderma*, *Pseudomonas*, *Bacillus* spp.) in different liquid and solid media.	8
7.	Evaluation of fungitoxicity against pathogens.	2
8.	Bioefficacy of antagonists against important pathogens.	4
9.	Visit to biopestcide production units.	2

References

1. Campbell, R. 1989. Biological Control of Microbial Plant Pathogens. Cambridge Univ. Press,Cambridge.
2. Cook, R.J. and Baker, K.F. 1983. Nature and Practice of Biological Control ofPlant Pathogens. APS, St. Paul,Minnesota.
3. Gupta,V.K.andSharma,R.C.(Eds.).1995.IntegratedDiseaseManagementandPlantHealth. ScientificPubl., Jodhpur.
4. Mayee, C.D., Manoharachary, C., Tilak, KVBR., Mukadam, D.S and Deshpande Jayashree (Eds.). 2004. Biotechnological Approaches for the Integrated Management of Crop Diseases. Daya Publ. House, NewDelhi.
5. Mukherjee, K.G., Tewari J.P., Arora, D.K. and Saxena, G. 1992. Recent Developments in Biocontrol of Plant Diseases. Aditya Books, NewDelhi.
6. Nene, Y.L. and Thapliyal, P.N. 1993. Fungicides in Plant Disease Control. 3rd Ed., Oxford &IBH, NewDelhi.
7. Singh, R.S. (2000). Plant Disease Management. Oxford and IBH,NewDelhi.

Course Outcome -1. Stdents known about importance of seed –borne pathogen a brief account of seed-borne fungal, bacterial and viral pathogens.

2.learn about Seed transmission of Paths of infection – ovule, embryo, endosperm, seed-coat & pericarp infection and seed contamination. Seed health testing methods.

3.Student learn about Management of seed-borne pathogens- physical, cultural, chemical and biological methods.

4. Knowledge about Quarantine laws and procedures for seed certification. Pest risk analysis.

BAGEPP474 **Detection and Management ofSeed-bornePathogens**

3(1+2)Theory

Importance of seed-borne pathogens. A brief account of seed-borne fungal, bacterial and viral pathogens. Seed transmission. Paths of infection – ovule, embryo, endosperm, seed-coat & pericarp infection and seed contamination. Seed health testing methods. Management of seed-borne pathogens- physical, cultural, chemical and biological methods. Quarantine laws and procedures for seed certification. Pest risk analysis.

Practical:

Inspection of dry seeds. Detection of seed-borne pathogens by Seed-Washing Test, Seedling-Symptom Test, Blotter Method and Agar Plate Method. Embryo-Count Method. Molecular techniques for detection of seed- borne pathogens (ELISA & PCR). Identification of common seed-borne fungi – *Alternaria, Colletotrichum, Drechslera, Fusarium* etc. under microscope.

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Effect of chemical and biological seed treatments on seed-bornepathogens.

Lecture schedule: Theory-

S No.	Topic	No. of lectures
1	Importance of seed-borne pathogens.	1
2	A brief account of seed-borne fungal, bacterial and viral pathogens.	2
3	Seed transmission.	2
4	Paths of infection – ovule, embryo, endosperm, seed-coat & pericarp infection and seed contamination.	3
5	Seed health testing methods.	3
6	Management of seed-borne pathogens- physical, cultural, chemical and biological methods.	3
7	Quarantine laws and procedures for seed certification.	1
8	Pest risk analysis.	1

Lecture schedule: Practical-

S No.	Topic	No. of lectures
1	Inspection of dry seeds.	1
2	Detection of seed-borne pathogens by Seed-Washing Test.	2
3	Seedling-Symptom Test.	2
4	Detection of seed-borne pathogens by Blotter Method	5
5	Detection of seed-borne pathogens by Agar Plate Method	5
7	Embryo-Count Method.	3
8	Molecular techniques for detection of seed-borne pathogens (ELISA & PCR).	4
9	Identification of common seed-borne fungi – *Alternaria, Colletotrichum, Drechslera, Fusarium* etc. under microscope.	4
10	Effect of chemical and biological seed treatments on seed-borne pathogens.	4
11	Inspection of seed crops in the fields.	2

Selected References:

1. Agarwal, V.K. and Sinclair, J.B.1987. Principles of Seed Pathology. Vol. I &II. CRC Press. Inc.Boca Raton, Florida.
2. Hutchins, J.D. & Reeves, J.F. (Eds.). 1997. Seed Testing Progress towards the 21st Century. CABI,Wallington.
3. Jha, D.K. 1993. A Text Book on Seed Pathology. Vikas Publ. House Pvt. Ltd., 576, Masjid Road, Jangpura, New Delhi.
4. Jha, D.K. 1995. Laboratory Manual on Seed Pathology. Vikas Publishing House Pvt. Ltd. 576, Masjid Road, Jangpura, NewDelhi-110014.
5. Maude, R.B. 1996. Seed-borne diseases and their control. CAB International,UK.
6. Neerguard, P. 1988. Seed Pathology. Vol. I &II. Macmillan Press,UK.
7. Suryanayana, D. 1978. Seed Pathology. Vikas Publishing House Pvt. Ltd. 576, Masjid Road, Jangpura, New Delhi-110014.
8. Vishunavat, Karuna. 2007. Seed Health Testing – Principles &Protocols. Kalayani Publs.,24-Daryaganj, New Delhi-110002.

Course Outcome – 1. Students will knowledge about of Rodent pests of agricultural importance.
2. Students will understand about Field and storage losses due to rodents, Taxonomy, distribution, habitat behavior, burrowing pattern and breeding potential.
3. Students know about Methods of rodent management in field and go downs- mechanical, physical, biological, chemical (rodenticides, fumigants etc.).
4. Giving knowledge about Agricultural Ornithology: Important phytophagous bird species in India, potential losses, host range, feeding behaviour and management
5.Knowledge about Snails and Slugs, mammal pest and thereImportant species of agricultural importance.

BAGEPP475 Non-Insect Pests andTheir Management 3 (1+2)

Theory:

Rodents: Rodent pests of agricultural importance. Field and storage losses due to rodents. Taxonomy, distribution, habitat behavior, burrowing pattern and breeding potential. Methods of rodent management in field and godowns- mechanical, physical, biological, chemical (rodenticides, fumigants etc.). Bait shyness and bait preference,. Other methods- sanitation, rodent proof structures, electromagnetic repellents etc. **Agricultural Ornithology:** Important phytophagous bird species in India, potential losses, host range, feeding behaviour and management. **Snails and Slugs:** Important species of agricultural importance. **Mammal pests:** Major mammals of agricultural importance, nature of damage and management. **Phytophagous mites:** General morphology and biology. Important species of mites of Agricultural importance *(Petrobia latens, Larvacarus transitans, Eutetranychus orientalis* and *Tetranychus cinnabarinus),* nature and extent of damage and their management.

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Practical:

Identification of important rodent species in different habitats. Burrow patterns and feeding habits of important rodent species. Assessment and monitoring rodent pest population.Study of rodenticides Study of mechanical method of rodent control Pre-baiting, baiting and their application. Fumigation of burrows. Rodent management in field crops, threshing floors and godowns. Placement of baits, evaluation and efficacy of baits.Organization of rodent control campaigns. Identification and food habits of birds associated with agricultural crops. Crop protection measures for birds: traditional and modern methods. Study of external morphology of phytophagous mite species. Diagnostic study of symptoms caused by different groups ofmiteson different crops. Study of different acaricides. Study of major mammalian pests.Study of snails and slugs.Visit to zoological museum.

Lecture Schedule: Theory

S.No.	Topic	No. of Lectures
1.	Rodent pests of agricultural importance.	1
2	Field and storage losses due to rodents.	1
3	Taxonomy, distribution, habitat behavior, burrowing pattern and breeding potential of rodents.	2
4	Methods of rodent management in field and godowns- mechanical, physical, biological, chemical (rodenticides, fumigants etc.).	2
5	Bait preparation, bait shyness and bait preference.	1
6	Other methods- sanitation, rodent proof structures, electromagnetic repellents etc.	1
7	ImportantphytophagousbirdspeciesinIndia,potentiallosses,hostrange,feedingbehaviourand management.	2
8.	Important species snails and slugs of agricultural importance, nature of damage and management.	2
9.	Important mammals of agricultural importance (bats, monkeys and blue bulls), nature of damage and management.	1
10.	General morphology and biology of mite.	1
11.	Important mite species of Agricultural importance *(Petrobia latens, Larvacarus transitans, Eutetranychus orientalis* and *Tetranychus cinnabarinus),* nature and extent of damage and their management.	2

Lecture Schedule: Practical

S.No	Topic	No. of Lectures
1.	Identification of important rodent species in different habitats.	2
2.	Burrow patterns and feeding habits of important rodent species.	2
3.	Assessment and monitoring rodent pest population.	2
4.	Study of rodenticides	1
5.	Study of mechanical method of rodent control	1
6.	Pre-baiting, baiting and their application	2
7.	Fumigation of burrows.	2
8.	Rodent management in field crops, threshing floors and godowns.	2
9	Placement of baits, evaluation and efficacy of baits	2
10.	Organization of rodent control campaigns.	2
11.	Identification and food habits of birds associated with agricultural crops.	2
12.	Crop protection measures for birds: traditional and modern methods.	2
13.	Study of external morphology of phytophagous mite species.	2
14.	Diagnostic study of symptoms caused by different groups of mites on different crops.	2
15.	Study of different acaricides.	1
16.	Study of major mammalian pests.	2
17.	Study of snails and slugs.	1
18.	Visit to zoological museum.	2

References:

1. Barnes,Edwin,H.1981.ThebirdsofIndia:AguidetoIndianOrnithology,Cosmopublication,NewDelhi.
2. Bhargava,M.C.andKumawat,K.C.2010.PestsofstoredgrainsandtheirmanagementNewIndiaPublishingAgency, NewDelhi.
3. IswarPrakash,1992.RodentsinIndianAgriculture,Vol.1.ScientificPublishers,Jodhpur.

Course outcome -1. Giving knowledge about Definition, concept and principles of biological control. Attributes of an effective natural enemies.

2.Undrestand about Types of natural enemies- Parasitoids and predators. Techniques of biological control. Microbial control.

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Pathogenicity, virulence and factors that enhance the use of microorganisms.
3. Know about advantage and limitations of biological control in IPM. Role of biological control in IPM.
4. Knowledge of mass production and multiplication of biocontrol agents- viruses, bacteria, fungi and parasitoids and predators and their application techniques. Potential of plant products in IPM.

BAGEPP476 **BiocontrolAgentsandBiopesticides** **3(1+2)**

Theory:

Definition, concept and principles of biological control. Attributes of an effective natural enemies. Types of natural enemies- Parasitoids and predators. Techniques of biological control. Microbial control- Pathogenicity, virulence and factors that enhance the use of microorganisms. Classification, mode of action and uses ofmicrobial agents, factors influencing their effectiveness. Advantages and limitations of biological control in IPM. Role of biological control in IPM. Mass production and multiplication of biocontrol agents- viruses, bacteria, fungi and parasitoids and predators and their application techniques. Potential of plant products in IPM.

Practical:

Handling, maintenance and upkeep of equipments related to biological control. Identification of important biological agents. Mass rearing techniques of important host insects of parasitoids (one field and one storage Lepidopteran pest).Mass rearing techniques and inundative release of important parasitoids- *Trichogramma* sp./ *Campoletis chlorideae.* Mass rearing technique of important predators- Lady bird beetle and green lacewing.Collection and preservation of bio-agents. Mass production of NPV, Bt and *Metarrhizium anisopliae.* Field visit to study the behavior of natural enemies and their collection. Visits of mass production and biological control centers of national repute. Preparation of neem seed kernelextract.

Lecture Schedule: Theory

S.No.	Topic	Lectures
1.	Definition, concept and principles of biological control.	1
2.	Attributes of an effective natural enemies.	1
3.	Types of natural enemies- Parasitoids and predators.	1
4.	Techniques of biological control.	1
5.	Classification of microbial agents, mode of action and their use in pest management	2
6.	Pathogenicity, virulence and factors influencing the effectiveness of microorganisms	1
7.	Advantages and limitations of biological control in IPM.	1
8.	Role of biological control in IPM of rice, cotton, sugarcane and tomato.	2
9.	Mass multiplication of biocontrol agents- parasitoids (*Trichogramma* sp. and *Campoletis chloridae*) and predators (ladybird beetle and *Chrysoperla carnea*).	3
10	Mass production of microbial agents- viruses, bacteria and fungi.	2
11	Potential of plant products in IPM	1

Lecture Schedule: Practical:

S.No.	Topic	Lectures
1.	Handling, maintenance and upkeep of equipments related to biological control.	2
2.	Identification of important biological agents	2
3.	Mass rearing techniques of important host insects of parasitoids (one field and one storage Lepidopteran pest)	5
4.	Mass rearing techniques and inundative release of important parasitoids- *Trichogramma* sp./ *Campoletis chlorideae*	4
5.	Mass rearing technique of important predators- Lady bird beetle and green lacewing.	4
6.	Collection and preservation of bio-agents.	2
7.	Mass production of NPV, Bt and *Metarrhizium anisopliae.*	6
8.	Field visit to study the behaviour of natural enemies and their collection.	4
9.	Visits of mass production and biological control centres of national repute.	2
10.	Preparation of neem seed kernel extract.	1

References:

DeBach,P. 1974. Biological control by Natural enemies. Cambridge University Press.

Manfred Mackaur, Laster E.Ehler and Jens Roland. 1990. Critical Issues in Biological control- Intercept Ltd.

Project Directorate of Biological control. 1994. Technology for mass production of Natural enemies. Technical Bulletin -4.

Rabindra, R.J., Kennedy, J.S., Sathaiah, N., Rajasekharan, B. and Srinivasan, M.R. 2001. Microbial control of crop pests.

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TNAU.
Dhaliwal GS & Arora R. 2001. *Integrated Pest Management: Concepts and Approaches.*KalyaniPubl., New Delhi.
Dhaliwal, GS & Koul O. 2007. *Biopesticides and Pest Management*. Kalyani Publ., New Delhi. Gautam, R.D. Biological Pest Suppression, Westvill Publising Co., New Delhi.

Course Outcome - 1. Learn and understand about plant growth regulators.
2. Know about mechanism of plant harmones and synthetic harmones and there function.
3. Understand the mechanism and role of plant harmone in seed, fruit and grain formation.
4. Understand the process of translocation of solutes in plants
5. Understand the physiological and economic and social aspects of PGRs applications.

BAGEPP477 Plant Growth RegulatorsinAgriculture 3 (1+2) Theory:

Introduction and historical background of Plant growth regulators. Classification of plant hormones and their synthetic analogues. Surfactants – Physiology and performance. Plant hormones vis-à-vis control of flowering and sex expression. Role of plant hormone in seed, fruit and grain formation. Weed control and plant hormones. Economic and social aspects of PGRs applications

Practical:

Methods of application of synthetic plant hormones and precautions. Doses, responses and growth stages for the application of hormones. Plant hormones and propagation through cell, tissue, organ culture and differentiation. Plant hormones vis-à-vis seed and propagule storage. Abiotic and biotic stress management through plant hormones. Vist to orchards for demonstration of flower and fruit drop and their control measures.

Lecture schedule: Theory

S.No.	Topic	No. of lectures
1.	Introduction and historical background of Plant growth regulators	1
2.	Classification of plant hormones and their synthetic analogues	3
3.	Surfactants – Physiology and performance	1
4.	Plant hormones vis-à-vis control of flowering and sex expression	3
5.	Role of plant hormone in seed, fruit and grain formation	3
6.	Weed control and plant hormones	3
7.	Economic and social aspects of PGRs applications	2

Lecture schedule: Practical

S.No.	Topic	No. of lectures
1.	Methods of application of synthetic plant hormones and precautions	7
2.	Doses, responses and growth stages for the application of hormones	5
3.	Plant hormones and propagation through cell, tissue, organ culture and differentiation	7
4.	Plant hormones vis-à-vis seed and propagule storage	6
5.	Abiotic and biotic stress management through plant hormones	4
6.	Vist to orchards for demonstration of flower and fruit drop and their control measures	3

References:

1. Krishanamurthy, H.N. (1994) Plant growth and development Narosa Publication, NewDelhi.
2. Kumar Arvind and Purohit S.S. (1996) Plant Physiology, Agrobotanica Publishers,Jodhpur.

Course outcome -1. Giving knowledge about Definition, concept and principles of biological control. Attributes of an effective natural enemies.
2.Undrestand about Types of natural enemies- Parasitoids and predators. Techniques of biological control. Microbial control- Pathogenicity, virulence and factors that enhance the use of microorganisms.
3. Know about advantage and limitations of biological control in IPM. Role of biological control in IPM.
4. Knowledge of mass production and multiplication of biocontrol agents- viruses, bacteria, fungi and parasitoids and predators and their application techniques. Potential of plant products in IPM.

BiocontrolAgentsandBiopesticides **BAGEHA471**

3(1+2)

Theory:

Definition, concept and principles of biological control. Attributes of an effective natural enemies. Types of natural enemies- Parasitoids and predators. Techniques of biological control. Microbial control- Pathogenicity, virulence and factors that enhance the use of microorganisms. Classification, mode of action and uses of microbial agents, factors influencing their effectiveness. Advantages and limitations of biological control in IPM. Role of biological control in IPM. Mass production and multiplication of biocontrol agents- viruses, bacteria, fungi and parasitoids and predators and their application

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techniques. Potential of plant products in IPM.

Practical:

Handling, maintenance and upkeep of equipments related to biological control. Identification of important biological agents. Mass rearing techniques of important host insects of parasitoids (one field and one storage Lepidopteran pest).Mass rearing techniques and inundative release of important parasitoids- *Trichogramma* sp./ *Campoletis chlorideae.* Mass rearing technique of important predators- Lady bird beetle and green lacewing.Collection and preservation of bio-agents. Mass production of NPV, Bt and *Metarrhizium anisopliae.* Field visit to study the behavior of natural enemies and their collection. Visits of mass production and biological control centers of national repute. Preparation of neem seed kernelextract.

Lecture Schedule: Theory

S.No.	Topic	Lectures
1.	Definition, concept and principles of biological control.	1
2.	Attributes of an effective natural enemies.	1
3.	Types of natural enemies- Parasitoids and predators.	1
4.	Techniques of biological control.	1
5.	Classification of microbial agents, mode of action and their use in pest management	2
6.	Pathogenicity, virulence and factors influencing the effectiveness of microorganisms	1
7.	Advantages and limitations of biological control in IPM.	1
8.	Role of biological control in IPM of rice, cotton, sugarcane and tomato.	2
9.	Mass multiplication of biocontrol agents- parasitoids (*Trichogramma* sp. and *Campoletis chloridae*) and predators (ladybird beetle and *Chrysoperla carnea*).	3
10	Mass production of microbial agents- viruses, bacteria and fungi.	2
11	Potential of plant products in IPM	1

Lecture Schedule: Practical:

S.No.	Topic	Lectures
1.	Handling, maintenance and upkeep of equipments related to biological control.	2
2.	Identification of important biological agents	2
3.	Mass rearing techniques of important host insects of parasitoids (one field and one storage Lepidopteran pest)	5
4.	Mass rearing techniques and inundative release of important parasitoids- *Trichogramma* sp./ *Campoletis chlorideae*	4
5.	Mass rearing technique of important predators- Lady bird beetle and green lacewing.	4
6.	Collection and preservation of bio-agents.	2
7.	Mass production of NPV, Bt and *Metarrhizium anisopliae.*	6
8.	Field visit to study the behaviour of natural enemies and their collection.	4
9.	Visits of mass production and biological control centres of national repute.	2
10.	Preparation of neem seed kernel extract.	1

References:

DeBach,P. 1974. Biological control by Natural enemies. Cambridge University Press.

Manfred Mackaur, Laster E.Ehler and Jens Roland. 1990. Critical Issues in Biological control- Intercept Ltd.

Project Directorate of Biological control. 1994. Technology for mass production of Natural enemies. Technical Bulletin -4.

Rabindra, R.J., Kennedy, J.S., Sathaiah, N., Rajasekharan, B. and Srinivasan, M.R. 2001. Microbial control of crop pests. TNAU.

Dhaliwal GS & Arora R. 2001. *Integrated Pest Management: Concepts and Approaches.*KalyaniPubl., New Delhi.

Dhaliwal, GS & Koul O. 2007. *Biopesticides and Pest Management.* Kalyani Publ., New Delhi. Gautam, R.D. Biological Pest Suppression, Westvill Publising Co., New Delhi.

Course Outcome -1. To "apply agriculture in the broadest sense, including the way people tend soils, water, plants and animals in order to produce, prepare and distribute goods.

2.They concern the way people interact with living landscapes, relate to one another and shape the legacy of future generations.

3. To guide our development of positions, programs and standards of vermicompost and organic farming.

4. Organic farming and vermicompost principles and its scope in India

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5. Initiatives taken by Government (central/state), NGOs and other organizations for promotion of organic agriculture.

6. Choice of crops and varieties in organic farming and vermicompost.

BAGEHA472 Vermicompost andOrganicFarming 3 (1+2)

Theory:

Vermicompost: Definition and objectives of vermitechnology. Importance of vermicomposting in utilization of Agriculture waste and organic recycling of nutrients. Classification of earthworm's. Method of preparation of vermicompost. Method and doses of vermicompost application for cereals, vegetables, tress and pots. Role of vermicomposting in organic farming and soil fertility. **Organic farming:** concept, definition, objectives and scope of organic farming. Role of organic farming in improving soil health and quality. Biofertilizers: Definition, importance of biofertilizers in organic farming and sustainability of soil fertility and productivity. Types of microbiological inoculants and method of application anddoses.

Practical:

Identification of earthworms. Preparation of vermicompost. Separation and procurementof vermiculture and vermicompost. Analysis for quality standards and fractionation of vermicompost. Drawing of flow-sheet chart and preparation of vermicompost project. Measurement of changes in bulk density, infiltration rate, water holding capacity and organic carbon content of soil with the application of vermicompost. Determination of organic carbon, N, P and K content of soils under organic farming . Visits of organic farming fields. Identification of different strains of biofertilizers and isolation of rhizobium fromnodules.

Lecture schedule :Theory

S.No.	Topic	No.of lectures
1	Definition of vermitechnology	1
2	Importance of vermicompost in utilization of Agriculture waste, and organic recycling of nutrients	2
3	Classification of earth worms	1
4	Method of preparation of vermicompost	1
5	Method and doses of vermicompost application for cereals, pulses, trees vegetables and pots	2
6	Role of vermicomposting in organic farming and soil fertility	2
7	Concept and definition of organic farming	1
8	Objectives and scope of organic farming	2
9	Role of organic farming in improving soil health and quality,	2
10	Definition of biofertilizers and role of biofertilizers in organic farming, sustainable agriculture, soil fertility	2
11	Classification of biofertilizers, methods and doses of application for soil, seed and seedlings.	1

Lecture schedule :Practical

S. No.	Topic	No. of lectures
1	Identification of earthworms	1
2	Collection and preparation of bedding materials	3
3	Preparation of beds for vermicompost and inoculation of vermiculture	2
4	Separation of vermiculture and vermicompost	2
5	Maintenance of vermiculture	1
6	Preservation and packing of vermicompost	2
7	Determination of quality standards of vermicompost: Analysis for N, P and K	4
8	Estimation of organic carbon in vermicompost	1
9	Fractionation of vermicompost	2
10	Drawing of flow-sheet chart of vermitechnology	1
11	Measurement of changes in soil with the application of vermicompost i.e. bulk density, infiltration rate, water holding capacity and organic carbon content of soil.	4
12	Preparation of project for vermicomposting	1
13	Visit and reporting about the productivity of soil under organic farming	2
14	Determination of O.C., N, P and K status of soils under organic farming	5
15	Identification of different strains of bio-fertilizers	1
16	Isolation of Rhizobium from nodules	1

References:

5. Bhatnagar, R.K. and Palta, R.K. (2002). Vermiculture and vermicomposting. Kalyani Publishers, Ludhiana.Motsara, M.R. Bhattacharyya, P., Srivastava, Beena (1955) Biofertilizers (Technology, Marketing and as age. Fertilizer development and consultation organization-New Delhi.

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6. Thompson, J.A. (1984). Production and quality control oi carrier basedlegumeinoculants.
7. Indian standards institution (1986). Indian Standard Specification for Rhizobiuminoculants.

Course Outcome - 1. Define the nature of plant growth processes in the tissue culture environment
2. Apply the technique of micro propagation such as somatic embryogenesis, organogenesis and protoplast culture for ex situ conservation and mass multiplication of endangered and economically important plants
3. Evaluate the clonal fidelity and polymorphism of the tissue cultured plants using molecular and statistical tools
4. Design and develop the protocols for enhanced production of bioactive compounds in cell suspension culture.
5. Formulate protocol for development of genetically engineered crops for novel traits.

BAGEHA473 Tissue Culture and MicroPropagationTechniques 3 (1+2)

Theory:

Setting up of commercial micro propagation unit - Lab and hardening unit design, Equipment, lab wares and consumables, Energy requirement and use of alternate energy sources. Man power requirement, Biosafety measures and waste disposal, Legislative requirement and govt. incentive. Major techniques in micro propagation- Axillary enhancement, Automated somatic embryogenesis systems, Synthetic seeds, Hardening procedures, Sterilization procedure and clean air environment, Risk factor analysis, Handling of contamination, Packaging and transportation, Marketing and Supply chain management, Economics of micropropagation, Material procurement, Stores handling, Cost reduction during production and hardening. GMP and HACCP requirement. Visit to commercial production units and case studies.

Practical:

Lab and hardening unit design. Familiarity with equipments, lab wares and consumables. Procedures of autoclaving, Media preparation Explant preparation, Surface sterilization, Axillary bud, nodal explant culture, experiments to induce somatic embryos. Preparation of synthetic seeds, Experiments for hardening of in vitro explants. Visit to commercial Production units and case studies.

Lecture schedule: Theory:

S.No.	Topic	No. of lectures
1.	Setting up of commercial Micropropagation unit	
	d. Energy requirement and use of alternativeenergyresources e. Biosafety measures and wastedisposal. f. Legislative requirement and Govtincentive	3
2.	Major techniques in Micropropagation c. Axillary enhancement d. Automated Somatic embryogenesis system	2
3.	Risk factor analysis Handling of contamination	2
4.	Packaging and transportation	1
5.	Marketing & Supply chain management	2
6.	Economics of Micropropagation d. Materialprocurement e. Storeshandling f. Cost reduction during production &hardening	4
7.	GMP and HACCP requirement	2

Lecture schedule: Practical:

S.No.	Topic	No. of lectures
1.	Setting up of commercial Micropropagation unit e. Lab and hardening unitdesign f. Equipments, lab wares andconsumables g. Man powerrequirement h. Biosafety measures and wastedisposal	6
2.	Major techniques in Micropropagation f. Axillaryenhancement g. Automated Somatic embryogenesissystem h. Syntheticseeds i. HardeningProcedures j. Sterilization procedures and Clean airenvironment	19

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3.	Risk factor analysis Handling of contamination	2
4.	Visit to commercial Production units and case studies	5

References:

6. Chawala H S (2000) Introduction to Plant Biotechnology. Oxford &IBH
7. Gupta, P. K. (2008) Elements of biotechnology Rastogi publicationsmeerut
8. Ray V. Herren (2005)Introduction to biotechnology (An Agriculturalrevolution)
9. Shekhawat, MS (2011) Plant Biotechnology, In vitro princioles, Techniques and Applications, MJP Publishers,Chennai
10. Mascarenhas, A. F. (2008) Hand book of Plant tissue Culture,ICAR.

Course Outcome – 1. Students know about plasticulture and plastic quality and used in agriculture.
2. Use of plastic in water management, water drainage , plastic mulch, poly house in nursery etc.
3. Students know about Plastics as cladding material forcontrolled environmental cultivation- poly houses, shade net houses, poly tunnels, low tunnels and crop covers. Plastic nets for crop protection - anti insect nets, bird protection nets, Plastic fencing.
4. Use of plastics in farm equipments and machineries - sprayers, seed drill tubes and other spare parts of equipments and machineries. Plastic vermi-beds. Silage film technique for fodder preservation. Agencies involved in the promotion of plasticulture at national and state level

BAGEHA474 **PlasticultureinAgriculture** **3(1+2)**

Theory:

Introduction of Plasticulture, Types and quality of plastics used in agriculture, Quality control measures, Present status and future prospective of plasticulture in India, Use of plastics in water management and in -situ moisture conservation, Plastic pipes for sub-surface drainage, Plastic film lining in canal, pond or water reservoir. Plastic mulch technique, Use of plastic in nursery raising, Plastics as cladding material for controlledenvironmental cultivation- poly houses, shade net houses, poly tunnels, low tunnels and crop covers. Plastic nets for crop protection - anti insect nets, bird protection nets. Plastic fencing. Innovative packaging solutions- leno bags, carets, vacuum packing .Plastic cap covers for storage of food gain in open. Use of plastics in farm equipments and machineries - sprayers, seed drill tubes and other spare parts of equipments and machineries. Plastic vermi-beds. Silage film technique for fodder preservation. Agencies involved in the promotion of plasticulture at national and statelevel.

Practical:

Study of sub- surface drainage system model, design of farm pond and estimation of plastic film, laying and flushing of drip laterals, plastic mulch laying, construction of low tunnels, use of leno bags, design, installation and cost estimate of cap cover, use of plastic in nursery under anti insect/ bird protection net, use of plastic vermi-bed, use of silage film for fodder preservation, visit to a nearby- PVC pipe manufacturing unit/dealer/ farmer' s field, sprinkler manufacturing unit/ dealer, poly house, shade nethouse.

Lecture schedule: Theory

S.No.	Topic	No. of lectures
1.	Plasticulture-meaning. Types and quality of plastics used in agriculture. Various fields for plasticulture applications. Major benefits of plasticulture application	1
2.	Present status and future prospective of plasticulture in India. Quality control measures associated with environmental protection.	1
3.	Use of plastic for water conveyance - plastic pipelines for water conveyance. PVC pipes for underground lines, HDPE pipe roll, hose pipes, PVC foot valves, and fittings of PVC pipelines. Repair and maintenance of PVC pipes. Concept of SSD system, sub-surface drainage concept, plastic pipes for sub-surface drainage system	1
4.	Drip irrigation concept and approaches. Plasticulture application in drip irrigation- online and drip inline, porous pipes, bi- wall technique, T tape, bubbler irrigation. Lay out and cost estimate of drip irrigation system for 1 ha area in orchard (6 x 6 m spacing) and vegetablesat 1.2 x 0.4 m spacing). Repair and maintenance of drip laterals.	1
5.	Sprinkler irrigation- Over head sprinklers, mini and micro sprinklers, rain guns. Type and quality of plastics used in sprinkler irrigation. Repair of HDPE pipes.	1
6.	Importance of lining in canal, pond and water reservoir. Quality of plastic film used for lining in canal and water reservoir. Film laying technique. Care and maintenance of plastic lined ponds.	1
7.	Plastic mulching- Advantages of mulching. Types of mulch films available, selection of thickness and colour for different crops, Estimation of mulch quantity and cost for 1 ha area in case of orchards (6 x 6 m spacing) and 40 % surface covering in case ofvegetables.	1

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8.	Plastics in nursery raising- plastic bags, trays, pots. Their quality and cost aspects. Selection of bags, trays and pots for different type of seedlings and plants.	1
9.	Need and concept of environmental control cultivation, specifications and cost estimate of cladding material and nets used in 1008 sqm poly house approved by state govt. Care and maintenance of polythene used in environmental control.	1
10.	Agro nets. Shade percentage. Different types of shade nets used in agriculture. Quality aspects. Various components of a shade net house. Fixing of agro nets on shade net houses and its care and maintenance.	1
11.	Plastic nets for crop protection- anti insect nets, bird protection nets. Plastic fencing. Govt. subsidy on use of plastic nets.	1
12.	Innovative packaging solutions- Packaging practices for different crops, leno bags, carets, vacuum packing. Govt. support on use of plastic in packaging and transport of crop produce.	1
13.	Plastic cap covers for storage of food gain in open. Design and cost estimate of cap cover used for .. 100 and 1000 wheat bags.	1
14.	Use of plastics in farm equipments and machineries- sprayers, seed drill tubes and other spare parts of equipments and machineries. Plastic vermi-beds for composting animal dung and agro waste.	1
15.	Use of plastic for fodder preservation by silage film technique.	1
16.	Agencies involved in the promotion of plasticulture at national and state level. Govt. support to beneficiaries in various plasticulture applications	1

Lecture schedule: Practical

S.No.	Topic	No. of lectures
1	Study of sub- surface drainage system model for understanding the concept of pipe drainage.	2
2	Design of 8 lac lit. capacity farm pond and estimation of plastic film required for lining.	1
3	Laying and flushing of drip laterals in field. Discharge and pressure measurement of 12 and 16 mm lateral.	2
4	Plastic mulching (2 x2 m) in fruit plants and estimation of quantity and cost of mulch for 100 plants.	2
5	Construction of low tunnels in about 30 sqm area and to observe seed germination inside and outside the tunnel.	3
6	Study of leno bags and other plastic bags for vegetable packaging and transport.	2
7	Design, installation and cost estimate of cap cover used for 200 wheat bags.	2
8	Raising of chilly nursery/ leafy vegetable under anti insect/ bird protection net.	2
9	Study of plastic vermi-bed. Evaluation of NPK of vermi compost preparedin vermi- bed and of FYM.	2
10	Visit to a nearby PVC pipe manufacturing unit/dealer/ farmer' s field to learn PVC pipe specifications for conveyance line, joining of PVC pipes and to learn about different PVC fittings.	4
11	Visit to a nearby sprinkler manufacturing unit/ dealer to learn about HDPE pipe specifications, fitting of sprinkler pipes and their repair.	3
12	Visit to a nearby fodder preservation site.	2
13	Visit to a nearby poly house for estimating quantity of cladding material and cost calculation and measuring inside and outside temperature and humidity.	3
14	Visit to a nearby shade net house to work out shade net requirement and cost calculation and measuring inside and outside temperature and humidity.	2

References:

1. RathiGopal.L.1997. GuidetoPlastics. MaharashtraPlasticManufacturersAssociation,Pune
2. GreenHouseManagement.ATrainingManual ofInternationalHorticultureInnovation andTrainingCentre, Durgapura,Jaipur
3. Green House Designs and Environmental Control- A manual of NCPAH, DAC, Ministry of Agri. And Cooperation, Govt ofIndia.
4. Pandey P.H1998. Principles and Practices of Post-Harvest Technology. Kalyani Publishers,NewDelhi.

Course Outcome - 1 Students will be identify and practice safe use of tools, equipment and supplies used in nursery and garden center management careers

2 Students should be an understanding of the composition, fertility and biology of soil and how they relate to good plant growth

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3 Students will be an understanding of functional business knowledge in the nursery and greenhouse management industry

4 Students will be understand to propagate with different parts of plant, grow, and maintain plants in horticulture production systems

5 Students will be understand a fundamental understanding of plant identification, selection, use and maintenance of plant material best suited for conventional

6 Students will be able to apply relevant mathematical principles and calculations inherent in all aspects of the nursery, qualitative plant development and horticulture Industry

BAGEHA475 Nursery Management of HorticulturalCrops 3(1+2)

Theory:

Present status and future scope of nurseries. Recent trends in planning and layout of nurseries and progeny orchard. Principles and methods of propagation by seed, specialized vegetative structures, cutting, layering, grafting, budding and in vitro propagation. Use of PGRs in plant propagation. Propagation structures Economics of raising nursery. Nursery regulation certification.

Practical:

Identification of propagation material and equipment. Layout of nurseries and management of progeny orchard. Use of protrays and root trainers in vegetable nursery. Raising and maintenance of root stock. Multiplication of plants by sexual methods. Raising of seedlings. Propagation by cuttings in Horticultural crops. Propagation by budding in Horticultural crops. Propagation by grafting in Horticultural crops. Use of plant growth regulators in propagation. Potting, repotting or lifting of saplings (packaging) for transportation. Use of propagation media. Tetrazolium salt test for determining germination. Visit of commercial nurseries. Project preparation for nursery. Procurement of inputs. Techniques of environment management for large scale production. Care of nursery plant and management of insect, pest and diseases. Visit to commercial orchard and diagnosis of maladies.

Lecture schedule-Theory:

S.No.	Topic	No. of lectures
1.	Present status and future scope of nurseries	2
2.	Recent trends in planning and layout of nurseries and.	1
3.	Principles and methods of propagation by seed	1
4.	Progeny orchard	1
5.	Cutting,	2
6.	Layering,	1
7.	Grafting,	1
8.	Budding and in vitro propagation	2
9.	Use of PGRs in plant propagation	1
10.	Propagation structures	2
11	Economics of raising nursery	1
12	Nursery regulation certification.	1

Lectureschedule-Practical

S.No.	Topic	No. of lectures
1.	Identification of propagation material and equipment	2
2.	Layout of nurseries	1
3.	Management of progeny orchard.	2
4.	Use of protrays and root trainers in vegetable nursery	1
5.	Raising and maintenance of root stock	1
6.	Multiplication of plants by sexual methods	1
7.	Raising of seedlings	2
8.	Propagation by cuttings in Horticultural crops	2
9.	Propagation by budding in Horticultural crops	2
10.	Propagation by grafting in Horticultural crops	2
11.	Use of plant growth regulators in propagation	1
12.	Potting, repotting or lifting of saplings (packaging) for transportation	2
13.	Use of propagation media	1
14.	Tetrazolium salt test for determining germination	1

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15.	Visit of commercial nurseries	3
16.	Project preparation for nursery.	1
17.	Procurement of inputs	1
18.	Techniques of environment management for large scale production	2
19.	Care of nursery plant and management of insect, pest	1
20.	Care of nursery plant and management of diseases.	1
21.	Visit to commercial orchard and diagnosis of maladies.	2

References:

1. Bose, T.K. Mitra, SK and Sandhu MK (1986). Propagation of tropical & sub-tropical horticultural crops, Naya Prakash,Calcutta.
2. Hartman, HT and Kester, DE (1986). Plant propagation principles and practices. Prentice Hall of India Pvt. Ltd.,Bombay
3. Gill, SS. Bal, JS and Sadhu, AS (1985). Raising Fruit Nursery, Kalyani Publishers,NewDelhi.

Course Outcome - 1.Students will be known about the importance and scope of vegetable and spices.
2.Students will be able to know about cultivation of different vegetable crops like tomato, brinjal, chilli etc.
3.Students will be able to know about the different vegetable gardening which is used in the world.
4.Students will know about cultivation of different seed spices like coriander, cumin, fenugreek etc
5.Students will know about morphological characters of different vegetables and spices.
6. Students will be able to understand about economics of vegetables and spices

BAGEHA476 **CommercialVegetableProduction** **3(1+2)**

Theory:

Importance, scope and export potential of commercial vegetables in India. Importance , origin, history, area, distribution, taxonomy, recent trends of the commercial vegetables. F1-hybrids, commercialvarieties, nutritional requirement, irrigation, inter-cultural operations, weed control, mulching, plant protection of important commercial vegetables, solanaceous, okra, bulb crops, cucurbits, cowpea, amaranthus and clusterbean. Off season cultivation of important commercial vegetables . Organic vegetable production..

Practical:

Identification and botanical description of important commercial vegetables, their varieties & seeds. Estimation of viability and germinatin percentage and real value of seeds. Practice of emasculation, selfing and crossing in various vegetable crops. Seed production in root crops, cauliflower, onion, tomato and cucurbits. Planting of roots of radish, carrot and turnip for seed production. Preparation of cropping scheme for commercial vegetable growers/farms. Preparation of nursery beds, seed treatment and sowing of seeds in beds. Sowing of seeds in polythene bags/ pro-trays. Seedling preparation in pro-trays and management in Net house. Transplanting of seedlings, sowing of cucurbits in field. Growing of vegetables with drip irrigation methods. Use of plastic mulch in vegetable production. Application of manures and fertilizers, liquid fertilizers and nutrient spray in vegetable crops. Inter-cultural operations in vegetable crops. Spray of pesticides, fungicides and use of PGRs. Study of physiological disorders in vegetables. Study of maturity standards and harvesting. Seed extraction techniques, pre cooling, washing, grading, packaging and storage of vegetable crops. Calculation of cost of production and B/C ratio. Identification of major pests, diseases and disorders. Study of storage techniques of vegetablecrops.

Lecture schedule-Theory:

S.No.	Topic	No. of lectures
1.	Importance, scope and export potential of commercial vegetables in India.	2
2.	Importance , origin, history, area, distribution, taxonomy, recent trends of the commercial vegetables. F1-hybrids, commercialvarieties, nutritional requirement, irrigation, inter- cultural operations, weed control, mulching, plant protection of important commercial vegetables,..	4
3.	Solanaceous, okra,	2
4.	Bulb crops,	1
5.	Cucurbits,	2
6.	Cowpea, amaranthus	1
7.	Clusterbean.	1
8.	Off season cultivation of important commercial vegetables .	2
9.	Organic vegetable production	1

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Lectureschedule-Practical

S.No.	Topic	No. of lectures
1	Identification and botanical description of important commercial vegetables, their varieties & seeds.	2
2	Estimation of viability and germinatin percentage and real value of seeds.	2
3	Practice of emasculation, selfing and crossing in various vegetable crops.	2
4	Seed production in root crops, cauliflower, onion, tomato and cucurbits.	2
5	Planting of roots of radish, carrot and turnip for seed production.	1
6	Preparation of cropping scheme for commercial vegetable growers/farms.	2
7	Preparation of nursery beds, seed treatment and sowing of seeds in beds.	2
8	Sowing of seeds in polythene bags/ pro-trays. Seedling preparation in pro-trays and management in Nethouse.	2
9	Transplanting of seedlings, sowing of cucurbits in field.	2
10	Growing of vegetables with drip irrigation methods. Use of plastic mulch in vegetable production..	2
11	Application of manures and fertilizers, liquid fertilizers and nutrient spray in vegetable crops.	2
12	Inter-cultural operations in vegetable crops.	2
13	Spray of pesticides, fungicides and use of PGRs.	2
14	Study of physiological disorders in vegetables.	2
15	Study of maturity standards and harvesting.	1
16	Seed extraction techniques, pre cooling, washing, grading, packaging and storage of vegetable crops.	2
17	Calculation of cost of production and B/C ratio. Identification of major pests, diseases and disorders. Study of storage techniques of vegetable crops	2

References:

Chadha, K.L. and Kaloo, G Advances in Horticulture. Vol 5 & 6, Vegetable Crops. Malhotra Publishing House, New Delhi.
Choudhary, B. 1996. Vegetables, NBT, New Delhi.
Bose, T.K., Kabir, I., Maity, T.K., Parthasarthy, V.A. and Sons, M.G. 2006. Vegetable crops. Vol I, II and III. Singh, S.P. 1989. Production technology of vegetable crops. Agril. Resesearch, Communication Centre, Karnal.

Course Outcome -1. Students will able to identify the different fruits and plantation crops.
2. Students will able to know about production technology of different fruits and plantation crops
3. Students will know about the nutritional and economic value of fruits and plantation crops
4. Students will able to understand about the cost of cultivation of different fruits and plantation crops

BAGEHA477 CommercialFruitProduction 3(1+2)

Theory:

Importance, present position and scope of fruit production. Classification, systematic study of fruits, Importance, origin, history, area, distribution and recent trends in the production technology of commercial fruit crops *viz*. Guava, Citrus, Mango, Beal, Ber, Aonla, Lehsua, Pomegranate, Papaya, Grapes and Date palm.

Practical:

Identification of important sub tropical and tropical fruits. Lay out of orchards. Different types of planting methods including high density planting and meadow orcharding. Preparation of soil mixture for nursery bed. Identification and uses of horticultural tools. Raising of rootstock. Practices on stratification and scarification of fruit seeds. Soil sterilization of nursery. Irrigation methods of fruits orchards with the emphasis on micro irrigation. Methods of fertilizer application of fruit crops and fertigation. Use of PGRs in fruit crops. Various methods of plant protection. Vegetative methods of propagation. Demonstration of different training methods. Demonstration of different pruning methods. Methods of moisture conservation and weed control in various fruit crops. Study of physiological disorders of fruit crops. Study of nutrient deficiency symptoms of fruit crops. Study of maturity indices of fruit crops. Calculation of water or irrigation requirement of fruit crops based on CPE. Visit to different fruit orchards of local region. Cost of cultivation of ber, Aonla, mango, kinnow, papaya etc. Pollination in datepalm.

Lecture schedule- Theory:

S.No.	Topic	No. of lectures
1.	Importance, present position and scope of fruit production	2

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2.	Classification, systematic study of fruits,	1
Importance, origin, history, area, distribution and recent trends in the production technology of commercial fruit crops *viz.*		
3.	Guava	1
4.	Citrus	2
5.	Mango	2
6.	Beal	1
7.	Ber	1
8.	Aonla	1
9.	Lehsua	1
10.	Pomegranate,	1
11	Papaya,	1
12	Grapes	1
13	Date palm.	1

Lecture schedule-Practical:

S.No.	Topic	No. of lectures
1.	Identification of important sub tropical and tropical fruits	1
2.	Lay out of orchards	1
3.	Different types of planting methods including high density planting and meadow orcharding	2
4.	Preparation of soil mixture for nursery bed	1
5.	Identification and uses of horticultural tools	1
6.	Raising of rootstock	1
7.	Practices on stratification and scarification of fruit seeds	1
8.	Soil sterilization of nursery	2
9.	Irrigation methods of fruits orchards with the emphasis on micro irrigation	2
10.	Methods of fertilizer application of fruit crops and fertigation	2
11.	Use of PGRs in fruit crops	1
12.	Various methods of plant protection	2
13.	Vegetative methods of propagation	1
14.	Demonstration of different training methods	1
15.	Demonstration of different pruning methods.	2
16.	Methods of moisture conservation	1
17.	Weed control in various fruit crops	1
18.	Study of physiological disorders of fruit crops	1
19.	Study of nutrient deficiency symptoms of fruit crops	1
20.	Study of maturity indices of fruit crops	1
21.	Calculation of water or irrigation requirement of fruit crops based on CPE	1
22.	Visit to different fruit orchards of local region	2
23.	Cost of cultivation of ber, Aonla, mango, kinnow, papaya etc	2
24.	Pollination in date palm.	1

References:

1. Bal, J.S. 1997. Fruit Growing. Kalyani Publishers. NewDelhi.
2. Bose, T.K., Mitra, S.K. and Rathore, D.S. (Eds.). 1988. Temperate Fruits- Horticulture. AlliedPublication.
3. Bose, T.K., Mitra, S.K. and Sanyal, D. (Ed.). 2002. Fruits of India- Tropical and Subtropical. 3rd Ed. Vol. I, II. NayaUdyog.
4. Chadha, K.L. 2001. Handbook of Horticulture. ICAR Publication. NewDelhi.
5. Chadha, K.L.and Pareek, O.P. (Eds.) 1996. Advances in Horticulture. Vol. I. Malhotra Publishing House. NewDelhi.
6. Chundawat, B.S. 2002. Principles of Fruit Culture. AgrotechPublishingAcademy.
7. Pradeep Kumar, T., Suma, B., Jyothibhaskar and Satheesan, K.N. 2008. Management of Horticultural Crops. New India PublishingAgency.
8. Radha, T. and Mathew, L. 2007. Fruit Crops. New IndiaPublishingAgency.
9. Singh, Amar. 1992. Fruit Physiology & Production. Kalyani Publishers. NewDelhi.

Course Outcome - 1. Learn and understand about plant growth regulators.
2. Know about mechanism of plant harmones and synthetic harmones and there function.
3. Understand the mechanism and role of plant harmone in seed, fruit and grain formation.
4. Understand the process of translocation of solutes in plants
5. Understand the physiological and economic and social aspects of PGRs applications.

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BAGEHA478 **Plant Growth RegulatorsinAgriculture** **3 (1+2)**

Theory:

Introduction and historical background of Plant growth regulators. Classification of plant hormones and their synthetic analogues. Surfactants – Physiology and performance. Plant hormones vis-à-vis control of flowering and sex expression. Role of plant hormone in seed, fruit and grain formation. Weed control and plant hormones. Economic and social aspects of PGRs applications

Practical:

Methods of application of synthetic plant hormones and precautions. Doses, responses and growth stages for the application of hormones. Plant hormones and propagation through cell, tissue, organ culture and differentiation. Plant hormones vis-à-vis seed and propagule storage. Abiotic and biotic stress management through plant hormones. Vist to orchards for demonstration of flower and fruit drop and their control measures.

Lecture schedule: Theory

S.No.	Topic	No. of lectures
1.	Introduction and historical background of Plant growth regulators	1
2.	Classification of plant hormones and their synthetic analogues	3
3.	Surfactants – Physiology and performance	1
4.	Plant hormones vis-à-vis control of flowering and sex expression	3
5.	Role of plant hormone in seed, fruit and grain formation	3
6.	Weed control and plant hormones	3
7.	Economic and social aspects of PGRs applications	2

Lecture schedule: Practical

S.No.	Topic	No. of lectures
1.	Methods of application of synthetic plant hormones and precautions	7
2.	Doses, responses and growth stages for the application of hormones	5
3.	Plant hormones and propagation through cell, tissue, organ culture and differentiation	7
4.	Plant hormones vis-à-vis seed and propagule storage	6
5.	Abiotic and biotic stress management through plant hormones	4
6.	Vist to orchards for demonstration of flower and fruit drop and their control measures	3

References:

1. Krishanamurthy, H.N. (1994) Plant growth and development Narosa Publication, NewDelhi.
2. Kumar Arvind and Purohit S.S. (1996) Plant Physiology, Agrobotanica Publishers,Jodhpur.

Course Outcome -1. Students would be able to know the basic concepts & terms of Agricultural Marketing
CO-2. Students will be acquainted about markets, classification of markets, marketable and marketed surplus of agricultural commodities
CO-3. They will be familiarize about marketing functions and channels
CO-4. Students would be able to learn market integration, efficiency, cost and price spread
CO-5. Students would be taught role of government in agricultural marketing, public sector institutions viz. CWC, SWC, FCI, CACP and DMI- their objectives and functions
CO-6. Students would be able to learn about agricultural price policy in India and its need.

BAGESS471 **MarketingManagement** **3(2+1)**

Theory:

Marketing Management: Meaning, definitions, marketing, Mix, market segmentation, targeting & positioning, market information system, market orgaiation and control. 4P's of marketing, product life cycle. Marketing potential : Classification of products, new product development, product line, product mix, branding, packaging and labeling. Factors affecting on prices: Pricing policies, strategies and pricing methods. Types of distribution channels. Functions of channels, members and channel management decisions.

Practical :

Performance analysis of regulated market and Marketing societies. Price spread and Marketing efficiency analysis.

Lecture Schedule- Theory

S.No.	Topic	No. of lectures
1.	Marketing Management-Meaning, Definition.	1
2.	Marketing Mix	2
3.	Market Segmentation	2

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4.	Market targeting and positioning	2
5.	Market Information system	2
6.	Marketing Organization and control	
7.	4 P'S of marketing	1
8.	Product life cycle	2
9.	Classification of products	1
10.	New product Development	2
11.	Product line and product mix	2
12.	Branding, Packaging and Labeling	2
13.	Factors affecting on price and pricing policies	2
14.	Pricing strategies and pricing methods	3
15.	Types of Distribution Channels	1
16.	Functions of channel and channel management decision	3

Lecture schedule: Practical

S.No.	Topic	No. of lectures
1.	Workout the Seasonal Index of Production of Important crop based on Secondary	2
2.	Establishment the relationship between MSP and WSP of important product based on	2
3.	Study the organizational structure of various market organizations.	1
4.	Study the Departmental structure of various products.	1
5.	Analysis of profit-value of the products	1
6.	Study the key factors of decisions about profit ability of the product	1
7.	Study the comparative statement of profitability of Different products	2
8.	Study the various Channels involved in the marketing of important products.	1
9.	Study the cost Structures. Margin and price spread value added products	2
10.	Study the steps involved in designing market channel.	1
11.	Study the Structures of the Marketing Mix.	1

Reference: :

1. Marketing Management : V.S. Ramaswamy, S. Namakumari-Macmillian publishers IndiaLtd.
2. Marketing Management : Kotler P. 2002 Analysis planning, implementation and control, PearsonEdu.
3. Marketing Management : Saxena, M.C.GrawHill
4. Fundamentals of Marketing : Stanton W.J. Etzal MJ & Walker B.J. McGrawHill

Course Outcome – 1. Students learn about Meaning and definition, purpose, characteristics of a project.
2. Project cycle: Identification, formulation, appraisal, implementation, monitoring and evaluation
3. Know about Project feasibility: Market feasibility, technical feasibility, financial and economic feasibility.
4. knowledge about Project appraisal techniques: Discounted and undiscounted techniques, compounding, payback period, annual return on investment, proceeds per unit of outlay, NPW, B-C ratio, IPR, profitability index, sensitivity analysis.

BAGESS472 **Project Formulation, EvaluationandMonitoring** **3(1+2)**

Theory:

Introduction to project: Meaning and definition, purpose, characteristics of a project, type of agriculture projects. Project cycle: Identification, formulation, appraisal, implementation, monitoring and evaluation. Project feasibility: Market feasibility, technical feasibility, financial and economic feasibility. Project appraisal techniques: Discounted and undiscounted techniques, compounding, payback period, annual return on investment, proceeds per unit of outlay, NPW, B-C ratio, IPR, profitability index, sensitivity analysis. Project monitoring and evaluation: Ex-ante evaluation, mid course evaluation and ex-postevaluation.

Practical:

Numerical exercises on techniques of project appraisals

Lecture schedule-Theory

S.No.	Topic	No. of lectures
1.	Meaning and Definition of Project	1
2.	Purpose and Characteristics of a project	1
3.	Types of Agricultural projects	2
4.	Project cycle: Identification, formulation, monitoring and evaluation	4

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5.	Project Feasibility: Market feasibility, technical feasibility, financial and economic feasibility	4
6.	Project appraisal techniques :(i). Discounted and Undiscounted techniques, Compounding,(ii). Payback period, annual returns on investment, proceeds per unit of outlay, (iii). NPW, B-C Ratio, IRR.(iv) Profitability index and sensitivity analysis.	2
7.	Project monitoring and evaluation. Ex- anti evaluation mid course evaluation and expect evaluation	2

Lecture schedule-Practical

S.No.	Topic	No. of lectures
1.	Workout the net present worth.	3
2.	.Workout the net cost ratio.	3
3.	Workout the payback period.	2
4.	Calculate the breakeven point.	3
5.	Calculate the average ratio of the returns of the projects.	2
6.	Calculate the standard deviation for selection of the projects.	3
7.	Estimate of IRR of the projects.	2
8.	Calculate the benefit cost ratio of various projects.	3
9.	Analyze the comparative performance of the profitability of various projects.	3
10.	Prepare the profitability index of the projects.	2
11.	Workout the sensitivity analysis of the projects.	3
12.	Estimate the compounding and discounting value of the projects.	3

References:

1. Agriculture finance and management : S. Subba Reddy & P. raghuRam
2. Project management : P. Chandra, Tata MCGrawHill
3. Project management: Gopal Krishan & NagarajanK.
4. Economic analysis of Agricultural Project: Gittinger J.P. The Johons Hoplkins Univ.Press

Course Outcome -1. Upon study of the subject the Students willbe able to understand the importance of the natural resource economics.

2 They will know the various natural resources of energy ,renewable and non renewableand concepts of natural resource economics: ecology-ecosystem, biomass, biosphere, reserves, environment, pollution, etc.

3 They will analyze natural resources management and conservation, issues in natural resources and management.

4 Upon study of the ecosystem students will understand important issues in economics and managementof land, water and forest resource and the environment and factors mitigating natural resourcesscarcity.

5 Upon study of the ecology they will understand the natural resources administration and policy formulations. International environmental issues, climatechange.

BAGESS473 Natural Resource EconomicsandManagement 3 (2+1)

Theory:

Concept, Subject matter and importance of natural resource economics, Classifications of natural resources and basic terms and concepts of natural resource economics: ecology-ecosystem, biomass, biosphere, reserves, environment, pollution, etc. Natural resources management and conservation, issues in natural resources and management. Approaches to natural resource problems. Important issues in economics and managementofland, water and forest resource and the environment. Factors mitigating natural resourcesscarcity. Natural resources administration and policy formulations. International environmental issues, climatechange.

Practical:

Environmental impact assessment. Visit to pollution control board. Optimum harvest of forestry/fishery, exercise on pollution abatement.

Lecture Schedule: Theory

S.No.	Topic	No. of Lectures
1.	Concept, subject matter and Importance of natural resource economics	2

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2.	Classification of natural resources and basic terms used in natural resources	3
3.	Natural resources management and conservation	3
4.	Issues in natural resources and management	3
5.	Approaches to natural resource problems	2
6.	Important issues in economics and management to land, water and forest resources and the environment	4
7.	Factors mitigating natural resources scarcity	3
8.	Natural resources administration and policy formation	3
9.	International environment issues	3
10.	Climate change	6

Lecture schedule-Practical

S.No.	Topic	No. of lectures
1.	Study the impact of water pollution on crop production .	2
2.	Analyze the environmental pollution on land degradation.	2
3.	Study the climate change on productivity.	2
4.	Analyze the cost benefit of various pollution control programmes.	2
5.	Study the economic analyze of national disaster.	2
6.	Economic analysis of non conventional sources of energy.	3
7.	Assessment of government programmes control the pollution.	3

References;

1. Environmental and natural resource economics: Theory, policy and the sustainable society: M.E. Sharpe, Armonk NY
2. The economics of natural resource use : Hartiwick JM and OlewilerND
3. natural resource economics : Theory and applications in India- Korr JM, Marothia D.K., Katar Singh,Ramaswamy C. and Bentley WR.
4. Environmental and natural resource economics : Tietonberg T.s

BAGESS474 Visuals &GraphicCommunication 3(1+2)

Theory:

Role of visuals & graphics in Communication. Characteristics of visuals &graphics. Functions of visuals and graphics. Classification and selection of visuals. Designing message for visuals and Graphics. Principles and production of low cost visuals like charts, posters, flash cards, exhibits, photographs slides and PC based visuals. Multimedia production. Preparation and presentation of multimedia slides.Pre-testing and evaluation of visuals. Scanning of visuals.

Practicals: Preparation of low cost projected and Non-Projected visuals. Designing and layout of charts, posters, flash cards etc. Power point presentations. Generating computer aided presentation graphics. Scanning and evaluation of visuals.

Lecture Schedule: Theory

S. No.	Topic	No. of Lectures
1	Role of visuals & graphics in Communication	1
2	Characteristics of visuals &graphics	1
3	Functions of visuals and graphics	1
4	Classification and selection of visuals	2
5	Designing message for visuals and Graphics	2
6	Principles and production of low cost visuals like charts, posters, flash cards, exhibits, photographs slides and PC based visuals	5
7	Multimedia production. Preparation and presentation of multimedia slides	2
8	Pre-testing and evaluation of visuals	1
9	Scanning of visuals	1

Lecture Schedule: Practical

S.No.	Topic	No. of Lectures
1.	Preparation of low cost projected and Non-Projected visuals. Designing and layout of charts, posters, flash cards, exhibits, photographs slides and PC based visuals etc.	18
2.	Power point presentations.	4
3.	Generating computer aided presentation graphics.	4
4.	Scanning of visuals.	3
5.	Evaluation of visuals.	3

References;

1. Bhatia A. 2005. *Visual Communication*. Rajat Publications, NewDelhi.

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2. Edgar Dale 1970. *Audio Visual methods in Teaching*. Holt, Rinehart &Winston.
3. James WB, Richard BL, Fried F Harcleroad. 1952. *A.V. Instructional Material & Methods*. Mc.GrawHill.
4. Reddy YN. 1998. *Audio Visual Aids in Teaching, Training and Extension*. Haritha Publ. House,Hyderabad.

Course Outcome – 1. Students undrestand about Indian situation of Agriculture and Issues and challenges in agricultural development in India.
2.Students aware about National Policy for Agricultural development since independence
3.Students known about different development programmes for agriculture with reference to year of start, objectives and salient features of different programmes.

4 Students are aware about new research and new agriculture policy and teaching mechanism at national and state level with reference to agriculture, Public-PrivatePartnership.

BAGESS475 Government Policies and ProgrammesonAgriculture 3(1+2)
Theory:

Indian situation of Agriculture at a glance. Issues and challenges in agricultural development in India. National Policy for Agricultural development since independence: Development programmes for agriculture with reference to year of start, objectives and salient features. Research, extension and teaching mechanism at national and state level with reference to agriculture, Public-PrivatePartnership.

Practical:
Preparation of interview schedule for conducting bench mark survey with special reference to demographic information of a nearby village. Visit of KVK / voluntary organization to study developmental activities related to agriculture. Field visit to a successful agriculture related enterprise. Study the functioning of State Department of Agriculture. Evaluation of any ongoing agricultural development programme. Social auditing of MNREGA.

.Lecture Schedule: Theory

S.No.	Topic	No. of Lectures
1	Indian situation of Agriculture at a glance.	1
2	Issues and challenges in agricultural development in India.	3
3	National Policy for Agricultural development since independence	3
4	Development programmes for agriculture with reference to year of start, objectives and salient features	5
5	Research, extension and teaching mechanism at national and state level with reference to agriculture, Public-Private Partnership.	4

Lecture Schedule: Practical

S.No.	Topic	No. of Lectures
1	Preparation of interview schedule for conducting bench mark survey with special reference to demographic information of a nearby village.	10
2	Visit of KVK / voluntary organization to study developmental activities related to agriculture.	5
3	Field visit to a successful agriculture related enterprise.	5
4	Study the functioning of State Department of Agriculture.	4
5	Evaluation of any ongoing agricultural development programme.	5
6	Social auditing of MNREGA.	3

References;

1. Subhalakshmi V. 2005. Globalization- Indian Experience. ICFAI Univ. Press,Hyderabad.
2. Bagchi J.2007. Agriculture and WTO opportunity forIndia.Sanskruti.
3. John KC, Sharma DK, Rajan CS and Singh C. 1997. Farmers Participation in Agricultural Research and Extension Systems. MANAGE, Concept Publi. Co.
4. Narasaiah ML. 2005. Agricultural Development and world Trade organization. DiscoveryPubl.
5. Dunn DD. 1978. Appropriate Technology with a Human Face. MecmillanPress.
6. Kapoor SK, Roy PB & Roy AK. 1980. Role of Information centers in Technology Transfer. IASLIC,Kolakata.
7. Lekhi RK. 1984. Technological Revolution in Agriculture. Classical Publ.Co.
8. Ray GL.2006. Extension Communication and management. KalayaniPubl.
9. Supe SV. 2009. A Text Book of Extension Education. Agrotech Publishing Academy, Udaipur.
10. Viswanathan M. 1994. Women in Agriculture and Rural Development. PrintwellPubl.

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Course Outcome – 1. Students will be able to sampling unit, frame, Principles of sample survey. main steps in survey, types of sampling, advantages of sampling over census.
2. Students known abouttypes of non-sampling errors, biases and variance error, non- sampling bias, non-coverage, incomplete frames and missing units.
3. Students will be able to simple random sampling with and without replacement. Stratified sampling. Systematic sampling; Cluster sampling, multi-stage sampling.
4.Students will be able to Basic idea about ratio and regression estimators.

BAGESS476 **SamplingTechniques** **3(1+2)**

Theory:

Sampling unit. Sampling frame, Principles of sample survey. main steps in survey, types of sampling, advantages of sampling over census, limitations of sampling; Sources and types of non-sampling errors, biases and variance error, non-sampling bias, non-coverage, incomplete frames and missing units; Simple random sampling with and without replacement. Stratified sampling. Systematic sampling; Cluster sampling, multi-stage sampling. Basic idea about ratio and regression estimators. NOTE : Mathematical derivations and proofs are excluded.

Practical:

Random sampling - use of random number tables. Determination of sample size, estimation of mean and variance of simple random sampling with and without replacement, stratified random sampling. Cluster sampling, two stage sampling, Ratio and Regression estimators, Efficiency of SRSWR over SRSWOR,. Estimation of gain in precision due to stratification. Relative efficiency of cluster sampling equal cluster over unequalcluster.

Lecture Schedule: Theory

S. No.	Topic	No. of Lectures
1.	Sampling unit. Sampling frame	1
2.	Principles of sample survey. main steps in survey	2
3.	Types of sampling	1
4.	Advantages of sampling over census, limitations of sampling	1
5.	Sources and types of non-sampling errors	1
6.	Biases and variance error	1
7.	Non-sampling bias, non-coverage, incomplete frames and missing units	1
8.	Simple random sampling with and without replacement	2
9.	Stratified sampling	1
10.	Systematic sampling	1
11.	Cluster sampling	1
12.	Multi-stage sampling	1
13.	Basic idea about ratio and regression estimators.	2

Lecture Schedule: Practical

S. No.	Topic	No. of Lectures
1.	Random sampling - use of random number tables.	2
2.	Determination of sample size	2
3.	Estimation of mean and variance of simple random sampling with and without replacement	6
4.	Stratified random sampling	4
5.	Cluster sampling,	3
6.	Two stage sampling	3
7.	Ratio and Regression estimators	3

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8.	Efficiency of SRSWR over SRSWOR	3
9.	Estimation of gain in precision due to stratification.	3
10.	Relative efficiency of cluster Sampling equal cluster over unequal cluster.	3

References:

1. Cochran, W.G. 1977. Sampling Techniques, JohnWiley.
2. Murthy, M.N. 1977. Sampling Theory and Methods. 2"' Ed, statisticalPubl.
3. Singh, D. Singh, P. and Kumar, P. 1982. Handbook on Sampling Methods, IASRIPubl.
4. Sukhatme , S.V. and Ashok. C. 1984. Sampling Theory of Surveys with Applications. Iowa State university Press and Indian Society of Agricultural Statistics. NewDelhi.

Course Outcome - 1: Students will be able to evaluate the value and importance of livestock and dairy in Indian economy in view of distribution, identity, character of animal breeds and their end products including meat, milk, fiber and by-products.
2: Students will be able to critically assess that how digestion system of farm animals are functioning, classified and Describe key aspects of the basic physiological processes of reproduction, nutrition, and breeding & genetics needed for producing livestock.
3: Students will be able to familiar with identify the basic nutrient groups; discuss nutrient requirement for growth, maintenance, reproduction and lactation. Identify feed additives and their use. Describe basic steps used for ration formulation.
4: Students will able to identify about basic concepts related to herd health, vaccination in livestock and dairy production.
5. Students will be able to implement their idea to establish the poultry and dairy farming as allied activities and can be promote the animal husbandry among rural poor.

BAGESS477 **DairyCattleProduction** **3(1+2) Theory:**

Importance of dairying. Important milch breeds of cattle and buffalo. Selection, purchase and insurance of dairy animals. Scientific management of calves, heifers, bull calves, dry, pregnant and lactating dairy animals.Least cost ration formulation. Systems of breeding. Factors affecting productive and reproductive efficiency of dairyanimals.

Practical:

Selection of site for dairy farm.Layout of dairy farm building.Computation and formulation of milk replacer, calf starter, concentrate mixture for lactating, pregnant and dry animals. Computation of balance ration for various categories of dairy animals. Physical and chemical treatment of low quality roughages. Plan for supplying green fodder throughout the year.Vaccination in various categories of dairy animals. Dehorning in dairy calves. Castration of male calves. Control of ecto and endo parasites. Colostrums and its utility. Weaning and rearing of dairy calves. Determination of age of animal. Care and management of dairy calves. Management of lactating, dry and pregnant cows. Dairy hygiene. Clean milk production and its marketing. Cleaning and sanitization of dairy equipments. Milking machine and its operation. Management of milch animals during adverse climatic conditions. Symptoms of estrus in dairy animals. Pregnancy diagnosis. Artificial insemination and its importance. Hay and silage making. Temperature, pulse and respiration rate in dairyanimals.

Lecture schedule- Theory

S.No.	Topic	No. of lectures
1	Importance of dairying.	2
2	Important milch breeds of cattle and buffalo.	2
3	Selection, purchase and insurance of dairy animals.	2
4	Scientific management of calves, heifers, bull calves, dry, pregnant and lactating dairy animals.	4
5	Least cost ration formulation.	2
6	Systems of breeding.	2
7	Factors affecting productive and reproductive efficiency of dairy animals.	2

Lecture schedule-Practical:

S.No.	Topic	No. of lectures
1	Selection of site for dairy farm.	1
2	Layout of dairy farm building.	1

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3	Computation and formulation of milk replacer, calf starter, concentrate mixture for lactating, pregnant and dry animals.	2
4	Computation of balance ration for various categories of dairy animals.	2
5	Physical and chemical treatment of low quality roughages.	2
6	Plan for supplying green fodder throughout the year.	2
7	Vaccination in various categories of dairy animals.	2
8	Dehorning in dairy calves.	1
9	Castration of male calves.	1
10	Control of ecto and endo parasites.	1
11	Colostrums and its utility.	1
12	Weaning and rearing of dairy calves.	1
13	Determination of age of animal.	1
14	Care and management of dairy calves.	2
15	Management of lactating, dry and pregnant cows.	2
16	Dairy hygiene..	1
17	Clean milk production and its marketing.	1
18	Cleaning and sanitization of dairy equipments.	1
19	Milking machine and its operation.	1
20	Management of milch animals during adverse climatic conditions.	1
21	Symptoms of estrus in dairy animals.	1
22	Pregnancy diagnosis.	1
23	Artificial insemination and its importance.	1
24	Hay and silage making. Temperature, pulse and respiration rate in dairy animals	2

References:

7. Banerjee, G. C. 2011. A Text Book of Animal Husbandr.VIII ed. Oxford and IBH Publications. NewDelhi.
8. ICAR. 2011. Hand Book of Animal Husbandry published by DIPA, ICAR, NewDelhi.
9. Ranjan, S.K.1994 AnimalNutrition and Feeding Practices. Vikash Publications. NewDelhi.
10. Singh, R A 1985. Poultry Prodution. Kalyani Publications.NewDelhi.
11. Sukumar, De. 2000. Outlines of dairy technology. Oxford University Press,NewDelhi.
12. Thomas, C.K., Sastry NSR and Singh, RA. 1982.Farm Animal Management and Poultry Production.Vikash Publications. NewDelhi.

Course Outcome - 1: Students will be able to critically assess that how digestion system of poultry animals are functioning, classified and Describe key aspects of the basic physiological processes of reproduction, nutrition, and breeding & genetics needed for producing poultry.
C2: Students will be able to familiar with identify the basic nutrient groups; discuss nutrient requirement for growth, maintenance, reproduction and lactation. Identify feed additives and their use. Describe basic steps used for ration formulation.
C3: Students will able to identify about basic concepts related to poultry health, vaccination in poultry production.
C4.Students will be known about the various diseases occurred in animals and poultry, their symptoms, reasons and how to control the disease which will be help to control the disease in rural area.
C5. Students will be able to implement their idea to establish the poultry as allied activities and can be promote the poultry among rural poor.

BAGESS478 Poultry ProductionandManagement 3(1+2)Theory:

Poultry breeds of economic importance. Formation and laying of egg. Systems of poultry rearing. Feeding and management of different categories of poultry. Common nutritional disorders of birds. Vaccination and deworming. Selection and culling of different classes of poultry. Formulation of poultry farmplan.

Practical:

Familiarity with external body parts of chicken. Handling and restraining of poultry birds. Selection of site for poultry farm. Layout of poultry farm buildings. Brooding, debeaking and vaccination of chicks. Internal structure and composition of egg. Collection, recording, grading, marketing and preservation of chicken eggs. Management of

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broilers. Dressing of birds. Incubation of eggs. Common feed ingredients. Feed additives used in poultry. Formulation of chick starter, grower and layer feed. Formulation of broiler starter and finisher feed. Cleaning and disinfection of poultry houses. Management of poultry farm under adverse climatic conditions. Economics of poultryfarm.

Lecture schedule - Theory

S.No.	Topic	No. of lectures
1	Poultry breeds of economic importance.	2
2	Formation and laying of egg.	1
3	Different Systems of poultry rearing.	2
4	Feeding and management of different categories of poultry.	3
5	Common nutritional disorders of birds.	2
6	Vaccination in chicks	2
7	Deworming in poultry birds	1
8	Selection and culling of different classes of poultry.	2
9	Formulation of poultry farm plan.	1

Lecture schedule-Practical:

S.No.	Topic	No. of lectures
1	Familiarity with external body parts of chicken.	1
2	Handling and restraining of poultry birds.	1
3	Selection of site for poultry farm.	1
4	Layout of poultry farm buildings.	2
5	Brooding, debeaking and vaccination of chicks.	3
6	Internal structure and composition of egg.	2
7	Collection, recording, grading, marketing and preservation of chicken eggs.	3
8	Management of broilers.	2
9	Dressing of birds.	1
10	Incubation of eggs.	2
11	Common feed ingredients.	3
12	Feed additives used in poultry.	1
13	Formulation of chick starter, grower and layer feed.	3
14	Formulation of broiler starter and finisher feed.	2
15	Cleaning and disinfection of poultry houses.	2
16	Management of poultry farm under adverse climatic conditions	2
17	Economics of poultry farm	1

References:

Banerjee, G. C. 20011. A Text Book of Animal Husbandr.VIII ed. Oxford and IBH Publications. NewDelhi.

1. ICAR. 2011. Hand Book of Animal Husbandry published by DIPA, ICAR, NewDelhi.
2. Ranjan, S.K.1994. Animal Nutrition and Feeding Practices. Vikash Publications. NewDelhi.
3. Singh, R A 1985. Poultry Prodution. Kalyani Publications. NewDelhi
4. Sukumar, De. 2000. Outlines of dairy technology. Oxford University Press,NewDelhi.
5. Thomas C.K., Sastry NSR and Singh,RA. 1982. Farm Animal Management and Poultry Pdn,Vikash.Publ.

B. Sc. (Hons.) Agriculture, Part- IV

Rural Agricultural Work Experience (RAWE)VIII Semester

SEMESTER VIII Rural Agricultural Work Experience (RAWE)		
SN	**Course**	**Outcomes**

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		completion of these courses students should be able to;
1	GeneralOrientation **Course Code:- BAG481**	**CO -1.** Students would be able to gain conceptual and theoretical knowledge of RAWE **CO -2.** Students would be able to identify, formulate, review literature, and analyze research problems related to RAWE **CO- 3.** Students would be able to apply conceptual knowledge and the knowledge gained during this training to assess. it's applicability and utility in rural area. **CO -4.** Students would be able to communicate effectively about the research conducted, verbally as well as in written, write effective report, make effective presentation, and be an effective media communicator
2	Research Station/KVK/ including village attachment and *In-situ* interaction of farmers, students and research station scientists **Course Code:-BAG 482**	**CO-1**. Rural Agriculture Work Experience also enables the students to gain rural experience giving them confidence and enhancing on-farm problem solving abilities in real life situations especially in contact with farmers, growers, other stakeholders. **CO-2**. Confidence building. Develop skill of joint effort (community management) **CO-3**. Developing art of creative thinking. Effective decision-making **CO-4**. Life's real experiences. Time and relationship management **CO-5**. Observe problem and possible solution (crisis management) **CO-6.** Understanding and practicing local (ITK) and scientific methods. Working of local institution/organization.
3	*In-situ* interaction of farmers, college faculty and students	**CO-1**. Acquaintance with Univ./College/KVK/ Research Station and their staff . **CO-2**. Study of structure, functioning, objective and mandates of the Univ./ College/KVK/ Research Station. **CO-3**. Study of various units and hands-on trainings under supervision of Univ./ College/KVK/ Research Station. **CO-4**. Contribution of the Univ./College/KVK/ Research Station in promoting social environment.
4	Industrial Attachment*/Skill Development/Experiential Learning Courses **Course Code:-BAG 483**	**CO-1**. Acquaintance with industry and staff **CO-2**. Study of structure, functioning, objective and mandates of the industry. **CO-3**. Study of various processing units and hands-on trainings under supervision of industry. **CO-4.** Staff Ethics of industry. **CO-5**. Employment generated by the industry. **CO-6**. Contribution of the industry promoting environment. **CO-7**. Learning business network including outlets of the industry **CO-8**. In-plant Training for a short period of time in relevant industry helps gain the knowledge and experience of the work culture. In-plant Training by reputed organizations either MNCs or organized sectors provide an industrial exposure to the students as well as helps develop their career in high tech industrial requirements.

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5	Educational Tour **BAG484**	**CO-1- .** Students would be able to gain conceptual and practical knowledge by educational tour. **CO -2.** Students would be able to learn about new agriculture research projects, new technology in agriculture and other. **CO- 3.** Students would be able to apply conceptual knowledge and the knowledge gained during this educational tour.
6	Project Report Preparation and Evaluation **Course Code:-BAG 485**	**CO-1**-Upon study of the meaning and definitions of the projects students will understand the meaning of the project in practice. **CO- 2**- Upon Study and characteristics of the projects, students will realize the practical importance and try to use in real life. **CO-3**- Upon study of the various types of agriculture projects, students will analyze the system and implement in real life practice. **CO-4-** Upon study of the project cycle they will know the identification, formulation and evaluation of real projects in life. **CO-5**-Upon study of the feasibility, students will know the meaning of market, technical feasibility of the real life project, and will implement it. **CO-6**. Student Project is essential for students interested in higher education. Through this component, they will know how to identify research problem, create experimental set up and to write report etc.

*Industrial attachment shall include attachment with any of the following industries/Organisations

1. Seed industries/companies
2. Fertilizerindustries/companies
3. Pesticideindustries/companies
4. Biotechnologicalindustries/companies
5. Tissue culturelaboratories
6. Bio-Pesticideindustries
7. Commercial nurseries/land scapingunits
8. Food processingunits
9. Agricultural finance institutions/banks/credit societies,etc
10. NGOs

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JAIPUR NATIONAL UNIVERSITY, JAIPUR

BOARD OF STUDIES

2016-17

SCHOOL OF SOCIAL SCIENCES

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BOARD OF STUDIES IN THE SCHOOL OF SOCIAL SCIENCES

AGENDA

The meeting of the Board of Studies in the School of Social Sciences for the year 2016-2017, will be held on 16 **January 2016 at 2:00 pm** in the Board Room,SADTM Campus, and Jaipur National University.

The following agenda will be discussed in the meeting: -

1. Confirmation of the minutes of the meeting held on 10January, 2015.
2. To discuss and approve The Action taken report.
3. To discuss and approve the revised inentire coursecurriculum of MSW all semesters.
4. Preparation and Implementation of New Course Curriculum for MPhil (Sociology), MPhil (Social Work) I Semester.
5. Purchase of More Books for Mphil in Social Work and Sociology.
6. To Discussion and Approve the Admission Rules for Students of Mphil Students (Sociology and Social Work).
7. To Discuss and Approved the List of Teaching Faculties and Norms for Dissertation of Mphil Students
8. To Discuss and Approve the Advance Study and Research
9. To discuss and approve that the one value added course for next semester.
10. To approve the insurance of purchase of more research oriented books in the library with the list of books produced.
11. Proposed Teaching Plan for MSW
12. To discuss and approve the panel of examiners for the End term examination 2016-2017.
13. To discuss and approve that the research scholars should submit their two articles before submission of their final thesis.
14. To discuss and approve other points with permission of chairperson.

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BOARD OF STUDIES IN THE SCHOOL OF SOCIAL SCIENCES

Minutes ofthe Meeting Held On 16 January 2016

The meeting of the Board of Studies in the School of Social Sciences, for the year 2016-2017, was held on **16 January 2016 at 2:00 pm** in Board Room, SADTM Campus, Jaipur National University.

The following members attended the meeting:

S. No.	Name	Designation
1.	Prof. H.N.Verma	Chairperson
2.	Prof. K.L.Sharma	Pro-Vice Chancellor and Director of SOSS.
3.	Prof. R.S.Lokhande	Director -Research Cell
4.	Prof. (Mrs.) Kamala Vashistha	External Subject Expert
5.	Prof. K.K.Rattu	External Subject Expert
6.	Dr. Achla Sharma	HOD and Faculty member
7.	Dr. Chandra Kanwar	Faculty Member
8.	Ms. Sadhavi Negi	Alumni

The following members expressed their inability to attend the meeting:

S. No.	Name	Designation
2.	Ms. Sadhvi Negi	Alumni

Chairperson of the Board addressed the members and introduced external BOS Members to the board and further internal members introduced themselves.

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Item No. 1&2

1. Confirmation of the Minutes of The Meeting Held on 10/01/2015.

The minutes of the meeting held on 10/01/2015were read and confirmed unanimously by all the members.

RESOLUTION
[No.: BOS/SOSS/2016/1]

UNANIMOUSLY RESOLVED that the minutes of BOS Meeting held on10/01/2015 were hereby confirmed.

Item No. 3

Implementation of revised curriculum for MSW Programme for me, II, III&IV Semester as Per New Guideline.

The revised curriculum discussed and approved with Resolution**No. BOS/SOSS/2016/2** with suggestions has been implemented fromJuly, 2016 for the following courses:-

S.No.	Semester	Title of Courses
1.	I	MSW 1.1-Origin and development of Social Work. MSW 1.2-Personality and Dynamics of Human Behaviour,1.4 Social Case Work: Theory and Practice1.5-Group Work: Theory and practice, FWP-01 - Field-work Practicum & Viva-voce
2.	ii	MSW 2.1Social and Human Development, MSW 2.1Population and Environment, MSW 2.1Community Organization: Theory and Practice, MSW 2.1Social Work Research, MSW 2.1 Social Welfare Administration and Social Action & FWP-01 Field-work Practicum & Viva-voce
3.	iii	Compulsory Courses –MSW- 3.1, Social Work: Themes and Perspectives MSW3.2-Social Policy and Planning in India,MSW 3.3-Social Statistics and Computer applications, MSW 3.4-Trade Unions and Industrial Relations,MSW 3.5-Labour Welfare and Social Security. , MSW 3.6Women and Society in India, MSW 3.7 Youth Welfare and Development FWP–3- Field-work Practicum & Viva-voce
4.	iv	MSW- 4.1, Counseling and Communication MSW- 4.2, Participatory Approaches to Development and Social Work Practice Skills MSW- 4.3, Political Economy and Development **Specializations (Elective Papers) - I. Labour Welfare and Human Resource Management** - MSW 4.4Human Resource Management, MSW 4.5, Labour

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		Legislations in India **II. Family-cantered Social Work Intervention-** MSW 4.6Child Welfare and Development, MSW 4.7Welfare of the Aged- FWP-4.1 Field-work Practicum

Few minor Suggestions were provided in paper number MSW 1.5, 2.3, 3.2, 3.5,4.4 and 4.7 by Prof. K.L Sharma, Prof. H.N Verma and Dr. Achala Sharma , which was included and finalized for final approval again.MSW Course curriculum was changed as per recommends by in six pay commission. **(Annexure -01, entire revised syllabus)**

Course learning outcome also was also prepared separately of all courses alongwith few suggestions in papers 1.4.1.5, 2.1, 2.5, 3,2, 3.5 and 4.5, 4.7 **(Annexure -02 , Course learning outcomes)**

RESOLUTION
[No.: BOS/SOSS/2016/2]

UNANIMOUSLY RESOLVED that the in all the courses few recent policiesChoice Based Credit System (CBCS) and subject were included which was appreciated and approved by BOS members after adding two more suggestions by Prof. (Mrs.) Kamala Vashistha and Prof. K L Sharma .

Implementation of Revised Curriculum forMSW Programme forI1 andIV Semester as Per New Guideline.

Item No 4

Preparation and Implementation of New Course Curriculum for MPhil (Sociology), MPhil (Social Work) I Semester.

The new course curriculum was discussed and approved with Resolution **no. BOS/SOSS/2016/3** with suggestions has been implemented from 2016 , for the following courses:

S. No.	Semester	Title of Courses
1.	MPhil (MSW)	MPhil (Social Work) total five papers two core and three Elective papers,MPHSW 301: Theoretical and Conceptual Issues in Social Work , MPHSW 302: Social Work Research, MPHSW 303: Social Work in Industry, MPHSW 304: Mental Health, MPHSW 305: Rural and Urban Community Development in India, and MPHSW 306: Dissertation
2.	MPhil (Sociology)	MPhil (Sociology) Total five papers two core and two Elective papers,Theoretical Orientations in Sociology Research Methodology MPHS 103: Social Labour Welfare MPHS 104: Rural and Urban Community Developmentand MPHS 105-

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		Dissertation

RESOLUTION
[No.: BOS/SOSS2016/3]

UNANIMOUSLY RESOLVED THAT. It will be implemented from July 2016-2017 , by school of Social Sciences, next coming session for "MPhil (Sociology and social Work) " this one year course is appreciated and approved with the suggested changes subject to the final approval of Academic Council

Item No. 5

Purchase of More Books for Mphil in Social Work and Sociology.

Discussion made on for the approval of the books list prepare by department for MPhil (Sociology and social Work) course as mentioned in course curriculum. Five more books suggested by board members Prof. KL Sharma, pro chancellor and Prof. Kamala Vashist (HOD, Education), which is incorporated by HOD and final list approved by BM (**Books list attached along with curriculum)** it was suggested to send one copy of this list to library to purchase these book.

RESOLUTION
[No.: BOS/SOSS/2016/4]

UNANIMOUSLY RESOLVED THAT the list of books appreciated and approved with the suggested. And copy of same to send in library to start process to purchase these books as per university rules.

Item No. 6

To Discussion and Approve the Admission Rules for Students of Mphil Students (Sociology and Social Work).

Dr. Achala Sharma discussed that department will follow the university admission rules for Mphil students. All members were agreed with these suggestions

RESOLUTION
[No.: BOS/SOSS/2016/5]

UNANIMOUSLY RESOLVED the approval appreciated the **Admission Rules for Mphil (Sociology and social work) new students** which will be followed by university admission rules.

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Item No. 7

To **Discuss and Approved the List of Teaching Faculties and Norms for Dissertation of Mphil Students**

It was also discussed in one year course second year dissertation and assignments will be completed by Mphil students. The Dissertation rules and regulations for the Mphil students and the Faculty member's, **(Find Copy of Rules and regulations for Mphil, syllabus)** which is presented by her. This rules copy finalized and approved after adding one more suggestion by Prof. K.L Sharma director of SOSS.

RESOLUTION
[No.: BOS/SOSS/2016/6]

UNANIMOUSLY RESOLVED the approval for the rules and regulations (Norms) for dissertation of Mphil students **(As Per University Rule for Other Department Mphil students will be follow) this paper was appreciated and approved,** which will be follow by SOSS Department

Item No. 8

To Discuss and Approve the Advance Study and Research

The members give their suggestions for further strengthening of research in department

- Research scholars should submitted one semester course work completion certificate issued by the university along with thesis at the time of its final submission
- Publication /communicated two articles before submission of the final thesis must be adhered to department
- Purchase of more research oriented books in the library, list to be prepare by HOD, SOSS already earlier
- For any other issue related to research, vice chancellor was s authriesed to take the decision.

RESOLUTION
[No.: BOS/SOSS/2016/7]

UNANIMOUSLY RESOLVED the approval for the advance study and research work rules and regulations **was appreciated and approved,** which will be follow by SOSS Department in case of PhD students.

Item No. 9

2. To discuss and approve that the one value added course for next semester.

S. No.	Semester/Period	Title of Courses
1.	Paper no-VAPPG-104 - 30 Minutes	Personal and professional growth

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Personal and professional growth paper all units 1-5 was discussed andunanimously approved after incorporate the three members suggestions. This will be implement in the summer vacation just after the end term examination. The students will get the certificate after completion of this course and their regular attendance will be ensured. **(Annexure-2, syllabus, course no-- VAPPG-104)**

The syllabus divided in to four. Few subject such as Ethics - concept, Meaning, definition and importance of professional ethics Ethics - concept, Meaning, definition and importance of professional ethics included by Prof. H N Vermaji and in unit IV Spirituality as a dimension of health by Prof. Kamala Vashistha. This syllabus finalized after incorporate these suggestions

Three books name suggested by committee members as follow;-

- Becavar, D. (Ed.) 1997 the Family, Spirituality and Social Work, Journal of Family Social Work, Vol.2, No. 4. &
- Paul, Brunton. 1975 The Hidden Teaching Beyond Yoga, Triveni, 44 (3), 91.
- Ramakumar, O. 1970 Intelligence and Self-concept, Education and Psychology Review, 10 (3), 154 -57.

After incorporate these books in suggested literature books names finalized and approved by members

RESOLUTION

[No.: BOS/SOSS/2016/3]

UNANIMOUSLY RESOLVED that the "Personal and professional growth "syllabus and guideline was appreciated and approved with Resolution **No. BOS/SOSS/2016/3** with suggestions has been implemented from June, 2017. Certificate also approved by committee members.

Item No. 10

DiscussionOn The Purchase Of More Research Oriented Books In The Library And The List Of Books Produced.

The produced list of Books on Research Methodology was approved by the members of the meeting. The following books on research methodology were produced and were given approval by the members of the meeting:

1. **Methods for Social Work Research** by Allen Rubin and Earl Babbie.
2. **A Methodology for Social Research** by Grideon Sjoberg and Roger Nett.
3. **Social Research** (Issues, Methods and Process) by Tim May.
4. **Research for Social Workers-An Introduction to methods** by Margaret Alston and Wendy Bowles.

The members of the meeting unanimously approved on the purchase of more research oriented books in the library.

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RESOLUTION

[No.: BOS/SOSS/2016/4]

UNANIMOUSLY RESOLVED the approval on the purchase of more research oriented books in the library.

Item No. 11

Proposed Teaching Plan for MSW

Propose teaching plan and work load of few papers was presented by HOD to take permission for guest faculty, which was discussed and approved by committee **members (Annexure – 03, proposed teaching plan attached)**

RESOLUTION

[No.: BOS/SOSS/2016/5]

UNANIMOUSLY RESOLVED the approval on the proposed teaching plan.

Item No. 12

To Consider and Approve the Guideline and List of Examiners and Paper Setter for the End TermExamination for the Session 2015-16

Director (Academics) explained the guidelines, commonalities, workshop to suit discipline requirements and uniqueness (30% practice and 70% Theory based curriculum) of the MSWprogramme.The List of internal and external examiner also produces for the approval of BOS members. **(Annexure – 4, List of examiners)**

RESOLUTION
[No.: BOS/SOSS/2016/6]

UNANIMOUSLY RESOLVED for the approval of the list of examiners and paper setter for the End Term Examination.

Item No. 13

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To discuss and approve that the research scholars should submit their two articles before submission of their final thesis.

In the meeting it was discussed that the research scholars should submit their at least two articles/publications in ISSN Journals before the final submission of their thesis. The BOS approved for the same.

RESOLUTION
[No.: BOS/SOSS/2016/7]

UNANIMOUSLY RESOLVED that the research scholars should submit their two articles before submission of their final thesis.

Item No. 14
Any other matter with the permission of the Chair

To fill up the feedback form of students by school
To prepare plan for Pre PhD course for PhD Scholars, course outline and course schedule and name of resource persons were discussed and finalized for next course

Board of Studies recommended the above resolutions to be presented in the Academic Council for further final approval

The meeting ended with the vote of thanks to the Chair

Chairperson

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Value added course

TITLE OF THE PAPER

TITLE OF THE PAPER: PERSONAL AND PROFESSIONAL GROWTH

OBJECTIVES:

- Understand self as a being, as one in the process of becoming and experience self awareness.
- Examine own values and attitudes and explore choices made to express self in own Environment.
- Develop positive life skills and practice self help methods for integration and for stress Reduction.
- Understand and uphold Professional Values and Ethics.

Unit-I:
Self and Self Awareness

□Understand self through a cognitive construct.
□Approaches for self awareness - Psycho sexual development, Psycho social development of Erik Erikson, Gestalt Approach, Reality Therapy, Yoga as a Therapy, Meditation Techniques.
□Understand the Function of Brain, Emotions and Nature of its expression
□Choices made to express emotions - Modes used, examining its need for change.

Unit-II:
Values and Professional Ethics
□Values - concept, Meaning, and their Role in present scenario.
□Value Conflict - its impact on Value clarification.
□Ethics - concept, Meaning, definition and importance of professional ethics.

Unit-III :
Life Style, Stress / Burnout – Self help Methods
□Life skill Education - WHO core life skills.
□Building and Sustaining Bonds - Relational, Collegial and Personal Bonds.
□Self defeating behavior - Nature, Impact, Choices for Change.
□ Nature of Stress.

Unit-IV:
Spirituality
□Concept, Meaning, definition and their Role in present scenario.
□Spirituality as a dimension of health.
□Application of spirituality in day to day functioning and social work interventions .

SUGGESTED LITERATURE:

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1. Becavar, D. (Ed.) 1997 The Family, Spirituality and Social Work, Journal of Family
2. Social Work, Vol.2, No. 4.
3. Bhattacharya, K. 1971 The Indian Concept of Self, Bulletin Ramakrishna Mission
4. Institute of Culture, 22(8), August 1971. 304 - 13.
5. Burke, R, 1. 1982 Personality, Self-Image and Situational Characteristics of Effective Helpers in Work Settings, the Journal of Psychology, Vol. 112,213.
6. Feldman Robert S 1997 Understanding Psychology, 4th Edition, Tata McGraw Hill Publishing Company Limited, New Delhi.
7. Hamilton, G. 1954 Self-Awareness in Professional Education', Journal of Social Casework, Vol. 35, No. 9, 371-379.
8. Paul, Brunton. 1975 The Hidden Teaching Beyond Yoga, Triveni, 44 (3), 91.
9. Ramakumar, O. 1970 Intelligence and Self-concept, Education and Psychology Review, 10 (3), 154 -57.
10. Singh, N. P. 1970 the Concept of Self in Modern Psychology, Indian Education Review, 5 (1), 84 -99.
11. Besthorn, F. Provisioning environment: Deep ecology for education and&Canda, E. R. (2002) Teaching in social work. Pdf *Journal of Teaching in Social Work, 22*(1/2), 79-101.
12. Canda, E. R. (2005) Integrating religion and social work in dual degree programs.(pdf) *Journal of Religion and Spirituality in Social Work: Social Thought, 24*(1/2), 79-91. (Also a book chapter in *Social Work and Divinity*.)
13. Canda, E. R. (Ed.) (2005) Spiritual diversity in social work – Special Issue. *Eflections: Narratives of Professional Helping, 11*(3).

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BOARD OF STUDIES

2016-17

SCHOOL OF EDUCATION

Additional Registrar
Jaipur National University
Jaipur

BOARD OF STUDIES
SCHOOL OF EDUCATION

AGENDA

The meeting of the Board of Studies in School of Education (M.Ed. 2016-18, B.Ed. 2016-18, B.A.(Pass) – 2016-19, B.A.B.Ed.-2016-20, B.Sc.B.Ed.-2016-20) will be held on 27th July, 2016 at 11:30am in Seminar Hall, School of Education, Main Campus, Jaipur National University for the year (2016-17).

The following agenda will be discussed in the meeting:

1. Confirmation of the minutes of the meeting held on 19thJuly 2015.
2. Action taken report
3. Introduction of two new diploma programme i.e Diploam I Yoga and Diploma in Guidance and Counselling
4. Additional Value-added course
5. Any other matter with the permission of chair.

Additional Registrar
Jaipur National University
Jaipur

BOARD OF STUDIES IN SCHOOL OF EDUCATION

Minutes of the meeting held on 27th July, 2016

The meeting of the Board of Studies in School of Education, for the year 2016-17, was held on 27th July 2016 at 11:30 am in Seminar Hall, School of Education, Main Campus, Jaipur National University

The following members attended the meeting:

1.	Prof. H. N. Verma Vice Chancellor, JNU , Jaipur	Chairperson
2.	Prof Kamla Vashisth Director, School of Education	Director
3.	Prof Rita Arora Research Advisor, School of Education	Member
4.	Prof. Anshu Bhatia Deputy Director, School of Education	Member
5.	Dr Shubha Vyas Professor, School of Education	Member
6.	Dr Grishma Shukla Associate Professor, School of Education	Member
7.	Dr Meenu Singh Assistant Professor, School of Education	Member
8.	Dr Preeti Pandey Assistant Professor, School of Education	Member
9.	Dr Reena Jain Assistant Professor, School of Education	Member
10.	Dr Rishikesh Mishra Assistant Professor, School of Education	Member
11.	Dr Ragini Saxena Assistant Professor, School of Education	Member
12	Prof Ramana Sood Head, Department of Education, Kurukshetra University, Haryana	External Member
13.	Prof. J.D Sharma Former Head, Department of Zoology University of Rajasthan, Jaipur	External Member
14.	Dr. Vishnu Sharma	Alumni

Additional Registrar
Jaipur National University
Jaipur

Chairperson of the Board addressed the members and introduced external BOS Members to the board and further internal members introduced themselves

Item No. 1

Confirmation of the minutes of the meeting held on 19thJuly, 2015

The minutes of the meeting held on 19-20 July, 2015 were read and confirmed unanimously by all the members

RESOLUTION
[No.: BOS/SOE/2016/1]

UNANIMOUSLY RESOLVED THAT the minutes of BOS Meeting held on 19thJuly, 2015 were hereby confirmed.

Item No. 2

Action Taken Report

The report about the action taken on the decisions of meeting of the Board of Studies held on 19th July, 2015, is placed before the board. Prof Rita Arora, Research Advisor, apprised the members that the suggestion made by members has been duly incorporate in syllabus with minor changes. The members of Board of Studies, the Action Taken Report (ATR) on the decisions taken in the meeting of the Board of Studies held on 19th July, 2015, expressed its appreciation for the efforts of the School.

Item No. 3

Introduction of two new diploma programme i.e Diploam I Yoga and Diploma in Guidance and Counselling.

The item related to Introduction of two Diploma programmes i.e Diploma in Yoga and Diploma in Guidance and Counselling was proposed by Chair for further discussion along with syllabi, course module, practicum and assessment.

RESOLUTION
[No.: BOS/SOE/2016/2]

UNANIMOUSLY RESOLVED THAT the proposed Diploma programmes were approved by the Board members with minor suggestions. The copy of syllabi, Course module and assessment details documents will be send to the College Education, Department of Higher Education, Government of Rajasthan for Non objection certificate for implementation of this programmes from the next academic session i.e.2017-18.

Additional Registrar
Jaipur National University
Jaipur

Item No. 4

Additional Value-added course

The item related to Introduction of additional value-added courses such as **Women empowerment, Story Telling Pedagogy, Life Skill Development** in different programme was proposed by Chair for further discussion along with syllabi, course module, practicum and assessment.

RESOLUTION
[No.: BOS/SOE/2016/3]

UNANIMOUSLY RESOLVED THAT the proposed value-added courses were approved by the Board members with minor suggestions.

There were no other points for discussion.

Board of Studies recommended the above resolutions to be presented in the Academic Council for further final approval

The meeting ended with the vote of thanks to the Chair.

Authorized Signatory

Additional Registrar
Jaipur National University
Jaipur

JAIPUR NATIONAL UNIVERSITY, JAIPUR

BOARD OF STUDIES

2016-17

SCHOOL OF ENGINEERING AND TECHNOLOGY

Additional Registrar
Jaipur National University
Jaipur

BOARD OF STUDIES IN THE SCHOOL OF ENGINEERING AND TECHNOLOGY

AGENDA

A Meeting of the Board of Studies in Civil Engineering for the year 2016-17, will be held on **14/05/2016** at 10:00 AM in the Director Office, School of Engineering and Technology (JNU Main Campus), Jaipur National University, Jaipur.

The following agenda will be discussed in the meeting:

1. Confirmation of the minutes of the meeting held on 15th May 2015.
2. Action taken report
3. To discuss and approve revision in the course contents of M.Tech Programme
4. Any other matter with the permission of Chair

Additional Registrar
Jaipur National University
Jaipur

BOARD OF STUDIES IN THE SCHOOL OF ENGINEERING AND TECHNOLOGY

Minutes of the Meeting held on May 14, 2016

The meeting of the Board of Studies in Civil Engineering for the year 2016-17, was held on 14-05-2015 at 11:00 am in the Director office, School of Engineering and Technology (Main Campus), Jaipur National University, Jaipur.

The following members attended the meeting:

S.No.	Name	Designation
1.	Prof. H. N. Verma Vice-Chancellor, JNU, Jaipur	Chairperson
2.	Dr. Sudhir Engineering, JKLP University, Jaipur	External Subject Expert
3.	Dr. D.K. Sharma Engineering, MNIT, Jaipur	External Subject Expert
4.	Dr. Kedar Engineering, JKLP University, Jaipur	External Subject Expert
5.	Prof. Sudhir Kumar Sharma Joint Director, JNU, Jaipur	Member
6.	Prof. P.N Darde H.O.D. – Civil Engineering	Member
7.	Mr. Yusuf Ali Associate Professor CE- Deptt.	Member
8.	Mr. Dharmveer Singh Sagar Assistant professor CE- Deptt.	Member
9.	Mr. Arun Sharma Assistant professor CE- Deptt.	Member

The Chairperson of the board addressed the members and introduced external BOS members to the board and further internally introduced themselves.

Item No. 1

1.Confirmation of the minutes of the meeting held on 15th May2015.

The minutes of the meeting held on 15th May2015 were read and confirmed unanimously by all the members.

Additional Registrar
Jaipur National University
Jaipur

Resolution
[No. BOS/CE/2016/1]

Unanimously resolved that the minutes of the BOS meeting held on 15th May 2015 were hereby confirmed.

Item No. 2

Action Taken Report

The curriculum for the M.Tech Civil Engineering department specialization in infrastructure engineering and construction & management program and revision in the course content in the strength of the material and building construction after the suggested modification by the board of members vide resolution no. BOS/SOET/CE/2015/4,5,6 has been implemented in July 2015.

Item No. 3

To discuss and approve the revision in the course contents of M.Tech Programme

Prof. P.N. Darde briefed about the IECM course as an additional skill that can cover areas of importance apart from university curriculum to make students better prepared to meet professional demands, at the same time it helps students to develop their interest and aptitudes. These courses are conducted by professionals and industry experts helping the students to stand apart from the rest in the job market by adding further value to their resume.

Mr. Yusuf Ali briefed M.Tech -Infrastructure Construction Engineering & Management.Master of Construction and Infrastructure Management at Jaipur National University aims to prepare graduates for future roles in managing people, equipment, materials, technological processes, and funds in the construction, management, and maintenance of buildings and assets in the civil infrastructure.

Changed Syllabus file attached M.Tech IECM.docx

RESOLUTION
[No.: BOS/CE/2016/2]

UNANIMOUSLY RESOLVED THAT the course content of M.Tech IECM has discussed and approved subjects to the final approval of the Academic Council.

Item No.4

Board Members suggested the latest trends in Civil Engineering .Board of Studies recommended the above resolutions to be presented in the Academic Council for further final approval

There was no other point for discussion

Additional Registrar
Jaipur National University
Jaipur

The meeting ended with the vote of thanks to the Chair

Chairperson

Additional Registrar
Jaipur National University
Jaipur

JAIPUR NATIONAL UNIVERSITY, JAIPUR

BOARD OF STUDIES

2016-17

Additional Registrar
Jaipur National University
Jaipur

SCHOOL OF ENGINEERING AND TECHNOLOGY

BOARD OF STUDIES IN THE SCHOOL OF ENGINEERING AND TECHNOLOGY

AGENDA

The meeting of the Board of studies Electrical Engineering for the year 2016-17, will be held on **10 July 2016** at 10:30 A.M. in Director's office, SOET, Engineering Block Main Campus, Jaipur National University, Jaipur.

The following agenda will be discussed in the meeting:

Item No. 1 Confirmation of the minutes of the meeting held on 10 July, 2015

Item No. 2 Action taken report.

Item No. 3 To discuss and approve the introduction of new programme in M.Tech. Control System Engineering and approve the proposed elective course system in the programme.

Additional Registrar
Jaipur National University
Jaipur

BOARD OF STUDIES MEETING IN THE SCHOOL OF ENGINEERING AND TECHNOLOGY

Minutes of the Meeting held on 09July 2016

The new CBCS (Choice Based Credit System) syllabus as per the AICTE Model Curriculum for Undergraduate Degree Courses in Engineering & Technology (Electrical Engineering) and was approved by the BOS along with the suggestions given by the various members.

In the meeting following members were present:

S.No.	Name of Person	Designation
1.	Prof. H.N. Verma Vice Chancellor, JNU, Jaipur	Chairman
2.	Prof. R.P.Maheswari Professor, Department of Electrical Engineering, IIT Roorkee.	External Expert
3.	Prof. (Dr.)Vijay Bhaduria Professor, Department of Electronics & Communication Engineering, MNNIT ,Allahbad	External Expert
4.	Prof. O.S.Joshi Director, JNU, Jaipur	Member
5.	Prof. Sudhir Kumar Sharma Joint Director, JNU, Jaipur	Member
6.	Prof. R.K.Yadav Professor, Head of Department, Department of Electrical Engineering JNU,Jaipur	Member
7.	Mr. M.Sashilal, Associate Professor, Department of Electrical Engineering, JNU, Jaipur	Member
8.	Mr. Devendra Doda, Associate Professor, Department of Electrical Engineering, JNU, Jaipur	Member

Additional Registrar
Jaipur National University
Jaipur

Item No.1

Confirmation of the minutes of the meeting held on 10 July 2015.The minutes of the meeting held on 10 July 2015 were read and confirmed unanimously by all the members.

Resolution
[No. BOS/SOET/EE/2016/1]

Unanimously resolved that the minutes of BOS meeting held on 10 July 2015 were hereby confirmed.

Item No.2

2. Action Taken Report

The curriculum discussed and approved vides **Resolution no. BOS/SOET/EE/2015/1** with suggestions has been implemented from **July 2016** for the M.Tech. Courses

Item No. 3

To discuss and approve the introduction of new programme in M.Tech. Control System Engineering and approve the proposed elective course system in M.Tech CSE

Prof. R.K.Yadav recommended the introduction of new program M.Tech. Control System Engineering. He had explained about the importance of Electrical Engineering in the present era. He also discussed about the applications of this branch in almost every sphere of our life and has made it very important over the traditional branches of engineering. The laboratories under this branch provide platform for learning not only theory but also practical aspects of engineering.

Proposed Program Structure:

S. No.	Category	Suggested Breakup of Marks (Total 2500)
1	Personality Development Course (English)/Writing Skills	200
2	Professional core courses	1000
3	Elective courses relevant to chosen specialization/branch	300
4	Dissertation Work	900
Total		**2400**

Additional Registrar
Jaipur National University
Jaipur

Requirements of marks

The minimum percentage of marks to pass the examination in each Semester shall be:

- 40 percent Marks in each written paper with internal and external assessment.,
- 50% Marks in aggregate of each semester Practical examination.

A candidate shall be promoted to the next semester if he/she passes at least 20% of the papers prescribed in the semester failing which he/she shall be declared as fail in that semester and he/she shall be required to get re-admission in the failed semester and shall have to appear in all the papers currently in force

Proposed Scheme

SEMESTER: I

Subject code	Subject Name	Teaching Hours Per Week		Duration of ESE	Evaluation Scheme		
		L	T		Mid Term Test	End Term Test	Total
1MTCSE1	Basic Control System	3	1	3	20	80	100
1MTCSE2	Systems Engineering	3	1	3	20	80	100
1MTCSE3	Digital Control Systems	3	1	3	20	80	100
1MTCSE4	**Elective-I** **4.1** Real Time Instrumentation Techniques **4.2** Advance PowerElectronics **4.3** Linear System Theory **4.4** Robot Dynamics &Control	3	1	3	20	80	100
1MTCSE5	Writing Skills & Presentation-I	4	-	3	20	80	100
	Total	**16**	**4**	**-**	**100**	**400**	**500**

Additional Registrar
Jaipur National University
Jaipur

Subject Code	Subject Name	Teaching Hours Per Week	Duration Of ESE	Evaluation Scheme		
				Sessional	Practical	Total
1MTCSE6	Simulation Lab	6	3	60	40	100
	TOTAL	**6**	**-**	**60**	**40**	**100**
Total Semester Credit		**23**		**Grand Total**		**600**

BRANCH: M.TECH. (POWER SYSTEM ENGINEERING)YEAR: I

SEMESTER: II

Subject code	Subject Name	Teaching Hours Per Week		Duration of ESE	Evaluation Scheme		
		L	T		Mid Term Test	End Term Test	Total
2MTCSE1	Control Devices	4	-	3	20	80	100
2MTCSE2	Modern Control System	3	1	3	20	80	100
2MTCSE3	Non-Linear And Adaptive Control	3	1	3	20	80	100
2MTCSE4	**Elective-II** **4.1** Optimal And Robust Control **4.2** Multi-Variable Control System **4.3** Measurement System& ErrorAnalysis **4.4** Power System Dynamics &Control	3	1	3	20	80	100
2MTCSE5	Writing Skills & Presentation-II	4	0	3	20	80	100
	TOTAL	**17**	**3**	**-**	**100**	**400**	**500**

Additional Registrar
Jaipur National University
Jaipur

Subject Code	Subject Name	Teaching Hours Per Week	Duration Of ESE	Evaluation Scheme		
				Sessional	Practical	Total
2MTCSE6	Control System Lab	6	3	60	40	100
	TOTAL	**6**	**-**	**60**	**40**	**100**
Total Semester Credits		**23**		**Grand Total**		**600**

BRANCH: M.TECH. (POWER SYSTEM ENGINEERING)YEAR: II

SEMESTER: III

PAPERS

Subject code	Subject Name	Teaching Hours Per Week		Duration of ESE	Evaluation Scheme		
		L	T		Mid Term Test	End Term Test	Total
3MTCSE1	Control Systems Design	4	-	3	20	80	100
3MTCSE2	**Elective-II** **2.1** Drives andcontrol **2.2** Intelligent Control **2.3** Digital Signal Processing **2.4** Microprocessor Based ControlSystem	3	1	3	20	80	100
	TOTAL	**7**	**1**	**-**	**40**	**160**	**200**

Additional Registrar
Jaipur National University
Jaipur

Subject code	Subject Name	Teaching Hours Per Week	Duration of ESE	Evaluation Scheme		
				Sessional	Practical	Total
3MTCSE3	Advance Control System Lab	6	3	60	40	100
3MTCSE4	Dissertation Part –I	12	3	180	120	300
	TOTAL	**18**	**-**	**240**	**160**	**400**
Total Semester Credits		**17**		**Grand Total**		**600**

BRANCH: M.TECH. (POWER SYSTEM ENGINEERING)YEAR: II

SEMESTER: IV

PAPERS

Subject Code	Subject Name	Teaching Hours Per Week	Duration of ESE	Evaluation Scheme		
				Sessional	Practical	Total
4MTCSE1	Dissertation Part–II	18	3	360	240	600
	TOTAL	**18**	**-**	**360**	**240**	**600**
Total Semester Credits		**15**		**Grand Total**		**600**

Additional Registrar
Jaipur National University
Jaipur

The Board members suggested the following changes in the proposed scheme

Prof. R.P.Maheswari proposed the following suggestion

- Introduction of Dissertation program stage wise in the scheme to get the industrial exposure and hands on practice.
- Offering a separate course on 'Control Systems Design, and requested a tutorial session for this Subject.
- Introduce the latest subjects like Modern Control System to be added in the elective courses.

RESOLUTION

[No.: BOS/EE/2016/2]

- UNANIMOUSLY RESOLVED THAT the scheme and syllabus content of M.Tech. Control System Engineering. Programme was approved and is subject to the final approval of Academic Council

Board of Studies recommended the above resolutions to be presented in the Academic Council for further final approval

The meeting ended with the vote of thanks to the Chair

Chairperson

Additional Registrar
Jaipur National University
Jaipur

JAIPUR NATIONAL UNIVERSITY, JAIPUR

BOARD OF STUDIES

2016-17

CBCS / Elective Implemented

SCHOOL OF ENGINEERING AND TECHNOLOGY

Additional Registrar
Jaipur National University
Jaipur

BOARD OF STUDIES IN THE SCHOOL OF ENGINEERING AND TECHNOLOGY

AGENDA

The meeting of the Board of studies in electrical engineering for the year 2016-17, will be held on 1**0 July 2016** at 10:30 A.M. in Director's office, SOET, Engineering Block Main Campus, Jaipur National University, Jaipur.

The following agenda will be discussed in the meeting:

Item No. 1 Confirmation of the minutes of the meeting held on 10 July, 2015

Item No. 2 Action taken report.

Item No. 3 To discuss and approve the introduction of new programme in M.Tech. Control System Engineering and approve the proposed elective course system in the programme.

Additional Registrar
Jaipur National University
Jaipur

BOARD OF STUDIES MEETING IN THE SCHOOL OF ENGINEERING AND TECHNOLOGY

Minutes of the Meeting held on 09July 2016

The new CBCS (Choice Based Credit System) syllabus as per the AICTE Model Curriculum for Undergraduate Degree Courses in Engineering & Technology (Electrical Engineering) and was approved by the BOS along with the suggestions given by the various members.

In the meeting following members were present:

S.No.	Name of Person	Designation
1.	Prof. H.N. Verma Vice Chancellor, JNU, Jaipur	Chairman
2.	Prof. R.P.Maheswari Professor, Department of Electrical Engineering, IIT Roorkee.	External Expert
3.	Prof. (Dr.)Vijay Bhaduria Professor, Department of Electronics & Communication Engineering, MNNIT ,Allahbad	External Expert
4.	Prof. O.S.Joshi Director, JNU, Jaipur	Member
5.	Prof. Sudhir Kumar Sharma Joint Director, JNU, Jaipur	Member
6.	Prof. R.K.Yadav Professor, Head of Department, Department of Electrical Engineering JNU,Jaipur	Member
7.	Mr. M.Sashilal, Associate Professor, Department of Electrical Engineering, JNU, Jaipur	Member
8.	Mr. Devendra Doda, Associate Professor, Department of Electrical Engineering, JNU, Jaipur	Member

Additional Registrar
Jaipur National University
Jaipur

Item No.1

Confirmation of the minutes of the meeting held on 10 July 2015.The minutes of the meeting held on 10 July 2015 were read and confirmed unanimously by all the members.

Resolution
[No. BOS/SOET/EE/2016/1]

Unanimously resolved that the minutes of BOS meeting held on 10 July 2015 were hereby confirmed.

Item No.2

2. Action Taken Report

The curriculum discussed and approved vides **Resolution no. BOS/SOET/EE/2015/1** with suggestions has been implemented from **July 2016** for the M.Tech. Courses

Item No. 3

To discuss and approve the introduction of new programme in M.Tech. Control System Engineering and approve the proposed elective course system in M.Tech CSE

Prof. R.K.Yadav recommended the introduction of new program M.Tech. Control System Engineering. He had explained about the importance of Electrical Engineering in the present era. He also discussed about the applications of this branch in almost every sphere of our life and has made it very important over the traditional branches of engineering. The laboratories under this branch provide platform for learning not only theory but also practical aspects of engineering.

Proposed Program Structure:

S. No.	Category	Suggested Breakup of Marks (Total 2500)
1	Personality Development Course (English)/Writing Skills	200
2	Professional core courses	1000
3	Elective courses relevant to chosen specialization/branch	300
4	Dissertation Work	900
Total		**2400**

Additional Registrar
Jaipur National University
Jaipur

Requirements of marks

The minimum percentage of marks to pass the examination in each Semester shall be:

- 40 percent Marks in each written paper with internal and external assessment.,

- 50% Marks in aggregate of each semester Practical examination.

A candidate shall be promoted to the next semester if he/she passes at least 20% of the papers prescribed in the semester failing which he/she shall be declared as fail in that semester and he/she shall be required to get re-admission in the failed semester and shall have to appear in all the papers currently in force

Additional Registrar
Jaipur National University
Jaipur

Proposed Scheme

SEMESTER: I

Subject code	Subject Name	Teaching Hours Per Week		Duration of ESE	Evaluation Scheme		
		L	T		Mid Term Test	End Term Test	Total
1MTCSE1	Basic Control System	3	1	3	20	80	100
1MTCSE2	Systems Engineering	3	1	3	20	80	100
1MTCSE3	Digital Control Systems	3	1	3	20	80	100
1MTCSE4	**Elective-I** **4.1** Real Time Instrumentation Techniques **4.2** Advance PowerElectronics **4.3** Linear System Theory **4.4** Robot Dynamics &Control	3	1	3	20	80	100
1MTCSE5	Writing Skills & Presentation-I	4	-	3	20	80	100
	Total	**16**	**4**	**-**	**100**	**400**	**500**

Subject Code	Subject Name	Teaching Hours Per Week	Duration Of ESE	Evaluation Scheme		
				Sessional	Practical	Total
1MTCSE6	Simulation Lab	6	3	60	40	100
	TOTAL	**6**	**-**	**60**	**40**	**100**
Total Semester Credit		**23**		**Grand Total**		**600**

Additional Registrar
Jaipur National University
Jaipur

BRANCH: M.TECH. (POWER SYSTEM ENGINEERING) YEAR: I

SEMESTER: II

Subject code	Subject Name	Teaching Hours Per Week		Duration of ESE	Evaluation Scheme		
		L	T		Mid Term Test	End Term Test	Total
2MTCSE1	Control Devices	4	-	3	20	80	100
2MTCSE2	Modern Control System	3	1	3	20	80	100
2MTCSE3	Non-Linear And Adaptive Control	3	1	3	20	80	100
2MTCSE4	**Elective-II** **4.1** Optimal And Robust Control **4.2** Multi-Variable Control System **4.3** Measurement System& ErrorAnalysis **4.4** Power System Dynamics &Control	3	1	3	20	80	100
2MTCSE5	Writing Skills & Presentation-II	4	0	3	20	80	100
	TOTAL	**17**	**3**	**-**	**100**	**400**	**500**

Subject Code	Subject Name	Teaching Hours Per Week	Duration Of ESE	Evaluation Scheme		
				Sessional	Practical	Total
2MTCSE6	Control System Lab	6	3	60	40	100
	TOTAL	**6**	**-**	**60**	**40**	**100**
Total Semester Credits		**23**		**Grand Total**		**600**

Additional Registrar
Jaipur National University
Jaipur

BRANCH: M.TECH. (POWER SYSTEM ENGINEERING)YEAR: II

SEMESTER: III

PAPERS

Subject code	Subject Name	Teaching Hours Per Week		Duration of ESE	Evaluation Scheme		
		L	T		Mid Term Test	End Term Test	Tota
3MTCSE1	Control Systems Design	4	-	3	20	80	100
3MTCSE2	**Elective-II** **2.1** Drives andcontrol **2.2** Intelligent Control **2.3** Digital Signal Processing **2.4** Microprocessor Based ControlSystem	3	1	3	20	80	100
	TOTAL	**7**	**1**	**-**	**40**	**160**	**200**

Subject code	Subject Name	Teaching Hours Per Week	Duration of ESE	Evaluation Scheme		
				Sessional	Practical	Total
3MTCSE3	Advance Control System Lab	6	3	60	40	100
3MTCSE4	Dissertation Part –I	12	3	180	120	300
	TOTAL	**18**	**-**	**240**	**160**	**400**
Total Semester Credits		**17**		**Grand Total**		**600**

Additional Registrar
Jaipur National University
Jaipur

BRANCH: M.TECH. (POWER SYSTEM ENGINEERING) YEAR: II

SEMESTER: IV

PAPERS

Subject Code	Subject Name	Teaching Hours Per Week	Duration of ESE	Evaluation Scheme		
				Sessional	Practical	Total
4MTCSE1	Dissertation Part–II	18	3	360	240	600
	TOTAL	**18**	**-**	**360**	**240**	**600**
Total Semester Credits		**15**		**Grand Total**		**600**

The Board members suggested the following changes in the proposed scheme

Prof. R.P.Maheswari proposed the following suggestion

- Introduction of Dissertation program stage wise in the scheme to get the industrial exposure and hands on practice.
- Offering a separate course on 'Control Systems Design, and requested a tutorial session for this Subject.
- Introduce the latest subjects like Modern Control System to be added in the elective courses.

RESOLUTION

[No.: BOS/EE/2016/2]

- UNANIMOUSLY RESOLVED THAT the scheme and syllabus content of M.Tech. Control System Engineering. Programme was approved and is subject to the final approval of Academic Council

Board of Studies recommended the above resolutions to be presented in the Academic Council for further final approval

The meeting ended with the vote of thanks to the Chair

Additional Registrar
Jaipur National University
Jaipur

Chairperson

JAIPUR NATIONAL UNIVERSITY, JAIPUR

BOARD OF STUDIES

2016-17

SCHOOL OF FASHION DESIGN

Additional Registrar
Jaipur National University
Jaipur

BOARD OF STUDIES IN THE SCHOOL OF FASHION DESIGN

AGENDA

The meeting of the Board of Studies in School of FashionDesign for the year 2016-17, will be held on 23th April 2016 at 1:00 pm in Board room of Jaipur National University.

The following agenda will be discussed in the meeting:

- Confirmation of the minutes of the meeting held on 13th December2015.
- To discuss and approve the proposed revised syllabus of B.DES (Fashion).
- To discuss and approve the introduction of new program Diploma **in Fashion** and to approve the syllabus.
- To discuss and approve the introduction of new program **MBA Fashion Management**and to approve the syllabus.
- To discuss and approve Value Added Course.
- To discuss and approve the courses having focus on employability/ entrepreneurship/ skill development.
- Any other matter with the permission of Chair.

Additional Registrar
Jaipur National University
Jaipur

BOARD OF STUDIES IN THE DEPARTMENT OF Fashion Design

Minutes of the meeting held on 23rd April 2016

The meeting of the Board of Studies in Schoolof Fashion Design, for the year 2016-17, was held on 23rd April 2016 at 1:00 pm in Board room of Jaipur National University.

The following members attended the meeting:

S.N	Members	Names
1	**Chairperson**	Prof. H.N Verma (Vice Chancellor)
2	**External Members**	Ms. Anamika Debnath (Associate professor in National Institute of Fashion Technology, Kolkata)
		Mr. RishabManocha (Associate Professor, Modart)
		Dr. DeepikaPurohit (Assistant Professor in Banasthali University)
		Mr. Sharad Mathur (CEO, SharadMathur)
3	**Internal Members**	Dr. L. N. Pachori s (Guest Faculty)
		Ms. Kusum Joria (Assistant professor)
		Mr. Abhishek Choudhary (Assistant professor

Vice Chancellor, addressed the members and introduced external BOS Members to the board and further internal members introduced themselves.

Additional Registrar
Jaipur National University
Jaipur

Item No. 1

1. Confirmation of the minutes of the meeting held on 13th December 2015.

The minutes of the meeting held on 13thDecember2015were read and confirmed unanimously by all the members.

RESOLUTION
[No.: BOS/FD/2016/1]

UNANIMOUSLY RESOLVED THAT the minutes of BOS Meeting held on 13thDecember2015were hereby confirmed.

Item No. 2

The Chair presented the proposed revised syllabus of B.DES (Fashion) in front of the Board

Initially the Board discussed on the proposal of the introduction of new courses in various semesters of B.DES.Various discussions took place. The board gave few suggestions also and finally approved the introduction of the following courses:

Semester	Addition of Course	Removal of Course
I	• Basic of fashion BDFD-101 • Sustainable design BDFD-102 • Communication skill BDFD-103 • Basic of design BDFDP-104. • Visualization and Representation – I BDFDP -105 • Material exploration BDFDP-106.	• Drawing and sketching (T)FSD-001 • History of Art and design I (T) FSD-002 • Basic design FSD-003 • Communication skill (T) FSD-004 • Computer Application (T) FSD-105 • Drawing and sketching (P) FSD-006 • Basic of Design (P) FSD-007
II	• Introduction to textile BDFD-201. • Fabric study BDFD-202 • Western Art AppreciationBDFD-203 . • Visualization and representation – II BDFDP-204 . • Material Exploration – II – BDFDP-205.	• History of Indian Costume II (T)- BDFD-201 • Art Appreciation – I (T) BDFD-202 • Construction Technique –I (T) BDFD-203 • Surface Embellishment (T) – BDFD-204 • Material Studies (T) – BDFD-205 • Environmental studies (T) – BDFD-206 • Pattern Makin (P) –

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		BDFDP-207 • Material Studies (P) BDFDP-208 • Surface embellishment (P) – BDFDP-209
III	• History of Western Costumes BDFD-301. • Construction and Sewing Techniques BDFDP-304. • Fabric Construction BDFDP-307.	• Fabric Study BDFD-301 • Garment Construction – I BDFDP-304 • Material Exploration BDFDP-307
V	• Surface ornamentation –I BSFDP-504	• Material Exploration BDFDP-504

Mr. AbhishekChoudharythen presented the proposed minor changes in the syllabus of B.DES Fashion . The board discussed and finally approved the following proposed changes .

Semester	Particulars	Remarks
IV	Course title Garment **Construction – II BDFDP-406** to be changed to **Garment Construction – I BDFDP-407.**	Approved with suggested changes.
V	Course title **Professional Practices BDFD-504** is shifted to **VI Semester** and is to be replaced by **Merchandising and Production methods BDFD-503.**	Approved with suggested changes.
VI	Course title **Merchandising and Production Method BDFD-601** is shifted to be V **Semester** and is by Professional **Practices BDFD-601**	Approved with suggested changes.

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RESOLUTION
[No.: BOS/FD2016/2]

UNANIMOUSLY RESOLVED THAT the above proposed revised syllabus of program B.DES is approved with suggested changes subject to the final approval of the Academic Council.

The approved revised curriculum is attached as Annexure 1

Item No. 3

Ms. Kusum Joria proposed the introduction of new Program "**Diploma in Fashion**". She explained the need of the program in market share of fashion and textile industries, demand for professional course also increases keeping in the mind same would like topropose.
The Diploma in Fashion makes use of a hands-on approach through teaching learners how to design, create patterns, and construct garments through various exercises and projects in short span of time. Learners are exposed to the world of fashion by exploring fashion across the ages and into contemporary fashion culture using trend forecasting. Business acumen is also taught so that students are prepared for the working world.

Ms. KusumJoriathen presented the proposed syllabus of "**Diploma in Fashion".** Various discussions took place and few changes were suggested in the proposed curriculum.

The approved proposed curriculum of Diploma in Fashion is given below: -

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SCHOOL OF FASHION DESIGN

DIPLOMA IN FASHION

Semester I

S.No	Paper Code	Subject	Internal Assessment	End Term	Total Marks	Credit	Contact Hours
1.	DFD-101	Theory of Textile	40	60	100	4	4
2	DFD-102	History of fashion	40	60	100	4	4
3	DFD-103	Communication skills and personality Development	40	60	100	4	4
4	DFDP-104	Fashion Model Drawing & Illustration	40	60	100	3	6
5	DFDP-105	Pattern Making & Construction-I	40	60	100	3	6
6	DFDP-106	Elements/Principle of design and Fashion	40	60	100	3	6
		Total			600	21	30

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SCHOOL OF FASHION DESIGN

DIPLOMA IN FASHION

Semester II

S.No	Paper Code	Subject	Internal Assessment	End Term	Total Marks	Credit	Contact Hours
1.	DFD-201	Merchandising & Production Methods	40	60	100	4	4
2	DFDP-202	Fashion Illustration	40	60	100	2	4
3	DFDP-203	Draping	40	60	100	3	6
4	DFDP-204	Design Collection & Portfolio	40	60	100	3	6
5	DFDP-205	Digital Design	40	60	100	2	4
6	DFDP-206	Pattern Making & Construction-II	40	60	100	3	6
7	DFDP-207	Surface Ornamentation	40	60	100	2	4
		Total			700	20	34

RESOLUTION
[No.: BOS/FD2016/3]

UNANIMOUSLY RESOLVED THAT the proposal of introduction of **Diploma in Fashion** from Academic Year 2016-17 is approved along with the proposed syllabus (changes suggested to be incorporated) subject to the final approval of the Academic Council.

Item No. 4

Ms. KusumJoriaproposed the introduction of new Program "**MBA Fashion Management**". She explained that throughout the specialized program, Fashion MBA **students create a diverse portfolio of experiences by participating in built-in industry projects** as a part of Experiential Learning. The main objective of the MBA in Fashion Business at Jaipur National University is to **equip its postgraduate students with keys to decipher the ever-changing fashion industry.**

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Ms. KusumJoriathen presented the proposed syllabus of "**MBA Fashion Management".** Various discussions took place and few changes were suggested in the proposed curriculum.

The approved proposed curriculum of MBA Fashion Management is given below.

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SCHOOL OF FASHION DESIGN

MBA in Fashion Management

Semester I

S.No	Paper Code	Course Title	Credit	Contact hrs per Week		Class Duration		Marks Allocation		
				L	P	Theory	Practical	* Internal Assessment	End Term	Total
								40	60	100
1	MBAFM-101	Business communication	4	4		1 Hours		40	60	100
2	MBAFM-102	Business environment	4	4		1 Hours		40	60	100
3	MBAFM-103	Principles and practices of management	4	4		1 Hours		40	60	100
4	MBAFM-104	Organizational behavior	4	4		1 Hours		40	60	100
5	MBAFM-105	Introduction to global fashion industry	4	4		1 Hours		40	60	100
6	MBAFM-106	Fabric knowledge	4	4		1 Hours		40	60	100
7	MBAFM-107	Computer application in Fashion Management	3		6		2Hours	40	60	100
		Total	**27**							**700**

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SCHOOL OF FASHION DESIGN

MBA in Fashion Management

Semester II

S.No	Paper Code	Course Title	Credit	Contact hrs per Week		Class Duration		Marks Allocation		
				L	P	Theory	Practical	* Internal Assessment	End Term	Total
								40	60	100
1	MBAFM-201	Research Methodology	4	4		1 Hours		40	60	100
2	MBAFM-202	Management accounting-1	4	4		1 Hours		40	60	100
3	MBAFM-203	Marketing Management	4	4		1 Hours		40	60	100
4	MBAFM-204	Operation and production Management	4	4		1 Hours		40	60	100
5	MBAFM-205	Human Resource Management	4	4		1 Hours		40	60	100
6	MBAFMP-206	Design Process and Design Thinking	3		6		2Hours	40	60	100
7	MBAFM-207	Study of Garment Manufacturing process	4	4		1 Hour		40	60	100
		Total	**27**							**700**

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SCHOOL OF FASHION DESIGN

MBA in Fashion Management

Semester III

S.No	Paper Code	Course Title	Credit	Contact hrs per Week		Class Duration		Marks Allocation		
				L	P	Theory	Practical	* Internal Assessment	End Term	Total
								40	60	100
1	MBAFM-301	Strategic Management	4	4		1 Hour		40	60	100
2	MBAFM-302	Management accounting-II	4	4		1 Hour		40	60	100
3	MBAFM-303	Customer RelationshipManagement	4	4		1 Hour		40	60	100
4	MBAFM-304	Fashion Forecasting	4	4		1 Hour		40	60	100
5	MBAFM-305	Product Development	4	4		1 Hour		40	60	100
6	MBAFM-306	Merchandising and production methods	4	4		1 Hour		40	60	100
7		Summer internship project								100
		Total	**24**							**700**

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SCHOOL OF FASHION DESIGN

MBA in Fashion Management

Semester IV

S.No	Paper Code	Course Title	Credit	Contact hrs per Week		Class Duration		Marks Allocation		
				L	P	Theory	Practical	* Internal Assessment	End Term	Total
								40	60	100
1	MBAFM-401	Entrepreneurship and Development	4	4		1 Hour		40	60	100
2	MBAFM-402	Visual Merchandising	4	4		1 Hour		40	60	100
3	MBAFM-403	Project Management	4	4		1 Hour		40	60	100
4	MBAFM-404	Retail Management	4	4		1 Hour		40	60	100
5	MBAFM-405	Advertising and Branding	4	4		1 Hour		40	60	100
6		Summer internship project								200
		Total	**20**							**700**

RESOLUTION
[No.: BOS/FD2016/4]

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UNANIMOUSLY RESOLVED THAT the proposal of introduction of **MBA Fashion Management** from Academic Year 2016-17 is approved along with the proposed syllabus (changes suggested to be incorporated) subject to the final approval of the Academic Council.

Item No. 5

To discuss and approve Value Added Course.

Ms. KusumJoria explained the need of the introduction of proposed value-added course "**Color Consultant**". She gave the following reason:

Acquire all the professional skills to accurately & confidently identify undertone, seasonal palette & flow colors for men and women. You will make your client look healthier, more vibrant, energetic and younger-looking.

Ms. KusumJoria then presented the proposed structure of the syllabus of Value-Added Course

The board appreciated the concept and proposed few changes in the syllabus.

RESOLUTION
[No.: BOS/FD2016/5]

UNANIMOUSLY RESOLVED THAT the introduction of value added course on "**Color Consultant**" from academic session 2016-2017 is approved along with the proposed syllabus changes suggested to be incorporated subject to the final approval of Academic Council.

The revised curriculum is attached as Annexure 2

Item No. 6

Ms. KusumJoriapresented the proposal of approval of the courses having focus on employability/ entrepreneurship/ skill development in B.DesFashion , Diploma in Fashion Design and MBA Fashion Management . The following papers have been proposed in this category :

Basic of Fashion	BDFD-101
Sustainable Design (Environmental Studies)	BDFD-102
Communication Skills	BDFD-103
Basic Of Design	BDFDP-104
Visualization & Representation-I	BDFDP-105
Material Exploration-I	BDFDP- 106
Computer Application	BDFDP- 107
Introduction to textile	BDFD-201
Fabric Study (Woven)	BDFD-202
Western Art Appreciation	BDFD-203
Visualization & Representation-II	BDFDP-204

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Material Exploration-II	BDFD-205
History of Western Costumes	BDFD-301
Construction Techniques I (T)	BDFDP-304
Fabric Construction	BDFDP-307
Surface Ornamentation-I	BDFDP-504
Theory of Textile	DFD-101
History of fashion	DFD-102
Communication skills and personality Development	DFD-103
Fashion Model Drawing & Illustration	DFDP-104
Pattern Making & Construction-I	DFDP-105
Elements/Principle of design and Fashion	DFDP-106
Merchandising & Production Methods	DFD-201
Fashion Illustration	DFD-202
Draping	DFDP-203
Design Collection & Portfolio	DFDP-204
Digital Design	DFDP-205
Pattern making & Construction-II	DFDP-206
Surface Ornamentation	DFDP-207
Business communication	MBAFM-101
Business environment	MBAFM-102
Principles and practices of management	MBAFM-103
Organizational behavior	MBAFM-104
Introduction to global fashion industry	MBAFM-105
Fabric knowledge	MBAFM-106
Computer application in Fashion Management	MBAFM-107
Research Methodology	MBAFM-201
Management accounting-I	MBAFM-202
Marketing Management	MBAFM-203
Operation and production Management	MBAFM-204
Human Resource Management	MBAFM-205
Design Process and Design Thinking	MBAFMP-206
Study of Garment Manufacturing process	MBAFM-207
Strategic Management	MBAFM-301
Management accounting-II	MBAFM-302
Customer Relationship Management	MBAFM-303
Fashion Forecasting	MBAFM-304
Product Development	MBAFM-305
Merchandising and production methods	MBAFM-306
Summer internship project	

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Entreprenuership and Development	MBAFM-401
Visual Merchandising	MBAFM-402
Project Management	MBAFM-403
Retail Management	MBAFM-404
Advertising and Branding	MBAFM-405
Summer internship project	

RESOLUTION
[No.: BOS/FD2016/6]

UNANIMOUSLY RESOLVED THAT that the proposal of ProgramB.Des Fashion, Diploma in Fashion Design and MBA Fashion Management having focus on employability / entrepreneurship/ skill development is approved, subject to the final approval of Academic Council.

There was no other point for discussion.

Board of Studies recommended the above resolutions to be presented in the Academic Council for further final approval.

The meeting ended with the vote of thanks to the Chair.

Chairperson

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JAIPUR NATIONAL UNIVERSITY, JAIPUR

BOARD OF STUDIES

2016-17

SCHOOL OF FASHION DESIGN

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BOARD OF STUDIES IN THE SCHOOL OF FASHION DESIGN

AGENDA

The meeting of the Board of Studies in School ofFashion Design for the year 2016-17, will be held on 23th April 2016 at 1:00 pm in Board room of Jaipur National University.

The following agenda will be discussed in the meeting:

- Confirmation of the minutes of the meeting held on 13thDecember2015.
- To discuss and approve the proposed revised syllabus of B.DES **(Fashion).**
- To discuss and approve the introduction of new program Diploma **in Fashion**and to approve the syllabus**.**
- To discuss and approve the introduction of new program **MBA Fashion Management**and to approve the syllabus.
- To discuss and approve Value Added Course.
- To discuss and approve the courses having focus on employability/ entrepreneurship/ skill development.
- Any other matter with the permission of Chair.

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BOARD OF STUDIES IN THE DEPARTMENT OF Fashion Design

Minutes of the meeting held on 23rd April 2016

The meeting of the Board of Studies in School of Fashion Design, for the year 2016-17, was held on 23rd April 2016 at 1:00 pm in Board room of Jaipur National University.

The following members attended the meeting:

S.N	Members	Names
1	**Chairperson**	Prof. H.N Verma (Vice Chancellor)
2	**External Members**	Ms. AnamikaDebnath (Associate professor in National Institute of Fashion Technology, Kolkata)
		Mr. RishabManocha (Associate Professor, Modart)
		Dr. DeepikaPurohit (Assistant Professor Banasthali University)
		Mr. SharadMathur (CEO, SharadMathur)
3	**Internal Members**	Dr. L. N. Pachori (Guest Faculty)
		Ms. KusumJoria (Assitant professor)
		Mr. AbhishekChoudhary (Assistant professor

Vice Chancellor, addressed the members and introduced external BOS Members to the board and further internal members introduced themselves.

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Item No. 1

1. Confirmation of the minutes of the meeting held on 13th December 2015.

The minutes of the meeting held on 13thDecember2015were read and confirmed unanimously by all the members.

RESOLUTION
[No.: BOS/FD/2016/1]

UNANIMOUSLY RESOLVED THAT the minutes of BOS Meeting held on 13thDecember2015were hereby confirmed.

Item No. 2

The Chair presented the proposed revised syllabus of B.DES (Fashion) in front of the Board Initially the Board discussed on the proposal of the introduction of new courses in various semesters of B.DES.Various discussions took place. The board gave few suggestions also and finally approved the introduction of the following courses:

Semester	Addition of Course	Removal of Course
I	• Basic of fashion BDFD-101 • Sustainable design BDFD-102 • Communication skill BDFD-103 • Basic of design BDFDP-104 . • Visualization and Representation – I BDFDP -105 • Material exploration BDFDP-106 .	• Drawing and sketching (T)FSD-001 • History of Art and design I (T) FSD-002 • Basic design FSD-003 • Communication skill (T) FSD-004 • Computer Application (T) FSD-105 • Drawing and sketching (P) FSD-006 • Basic of Design (P) FSD-007
II	• Introduction to textile BDFD-201. • Fabric study BDFD-202 • Western Art AppreciationBDFD-203. • Visualization and representation – II BDFDP-204. • Material Exploration – II – BDFDP-205.	• History of Indian Costume II (T)- BDFD-201 • Art Appreciation – I (T) BDFD-202 • Construction Technique –I (T) BDFD-203 • Surface Embellishment (T) – BDFD-204 • Material Studies (T) – BDFD-205 • Environmental studies (T) – BDFD-206 • Pattern Makin (P) –

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		BDFDP-207 • Material Studies (P) BDFDP-208 • Surface embellishment (P) – BDFDP-209
III	• History of Western Costumes BDFD-301. • Construction and Sewing Techniques BDFDP-304. • Fabric Construction BDFDP-307.	• Fabric Study BDFD-301 • Garment Construction – I BDFDP-304 • Material Exploration BDFDP-307
V	• Surface ornamentation –I BSFDP-504	• Material Exploration BDFDP-504

Mr. AbhishekChoudharythen presented the proposed minor changes in the syllabus of B.DES Fashion. The board discussed and finally approved the following proposed changes.

Semester	Particulars	Remarks
IV	Course title Garment **Construction – II BDFDP-406** to be changed to **Garment Construction – I BDFDP-407**.	Approved with suggested changes.
V	Course title **Professional Practices BDFD-504** is shifted to **VI Semester** and is to be replaced by **Merchandising and Production methods BDFD-503**.	Approved with suggested changes.
VI	Course title **Merchandising and Production Method BDFD-601** is shifted to be **V Semester** and is by **Professional Practices BDFD-601**	Approved with suggested changes.

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RESOLUTION
[No.: BOS/FD2016/2]

UNANIMOUSLY RESOLVED THAT the above proposed revised syllabus of program B.DES is approved with suggested changes subject to the final approval of the Academic Council.

The approved revised curriculum is attached as Annexure 1

Item No. 3

Ms. KusumJoriaproposed the introduction of new Program "**Diploma in Fashion**". She explained the need of the program in market share of fashion and textile industries, demand for professional course also increases keeping in the mind same would like topropose .
The Diploma in Fashion makes use of a hands-on approach through teaching learners how to design, create patterns, and construct garments through various exercises and projects in short span of time. Learners are exposed to the world of fashion by exploring fashion across the ages and into contemporary fashion culture using trend forecasting. Business acumen is also taught so that students are prepared for the working world.

Ms. KusumJoriathen presented the proposed syllabus of "**Diploma in Fashion".** Various discussions took place and few changes were suggested in the proposed curriculum.

The approved proposed curriculum of Diploma in Fashion is given below: -

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SCHOOL OF FASHION DESIGN

DIPLOMA IN FASHION

Semester I

S.No	Paper Code	Subject	Internal Assessment	End Term	Total Marks	Credit	Contact Hours
1.	DFD-101	Theory of Textile	40	60	100	4	4
2	DFD-102	History of fashion	40	60	100	4	4
3	DFD-103	Communication skills and personality Development	40	60	100	4	4
4	DFDP-104	Fashion Model Drawing & Illustration	40	60	100	3	6
5	DFDP-105	Pattern Making & Construction-I	40	60	100	3	6
6	DFDP-106	Elements/Principle of design and Fashion	40	60	100	3	6
		Total			600	21	30

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SCHOOL OF FASHION DESIGN

DIPLOMA IN FASHION

Semester II

S.No	Paper Code	Subject	Internal Assessment	End Term	Total Marks	Credit	Contact Hours
1.	DFD-201	Merchandising & Production Methods	40	60	100	4	4
2	DFDP-202	Fashion Illustration	40	60	100	2	4
3	DFDP-203	Draping	40	60	100	3	6
4	DFDP-204	Design Collection & Portfolio	40	60	100	3	6
5	DFDP-205	Digital Design	40	60	100	2	4
6	DFDP-206	Pattern Making & Construction-II	40	60	100	3	6
7	DFDP-207	Surface Ornamentation	40	60	100	2	4
		Total			700	20	34

RESOLUTION
[No.: BOS/FD2016/3]

UNANIMOUSLY RESOLVED THAT the proposal of introduction of **Diploma in Fashion** from Academic Year 2016-17 is approved along with the proposed syllabus (changes suggested to be incorporated) subject to the final approval of the Academic Council.

Item No. 4

Ms. KusumJoriaproposed the introduction of new Program "**MBA Fashion Management**". She explained that throughout the specialized program, Fashion MBA **students create a diverse**

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portfolio of experiences by participating in built-in industry projects as a part of Experiential Learning. The main objective of the MBA in Fashion Business at Jaipur National University is to **equip its postgraduate students with keys to decipher the ever changing fashion industry.**

Ms. KusumJoriathen presented the proposed syllabus of "**MBA Fashion Management".** Various discussions took place and few changes were suggested in the proposed curriculum.

The approved proposed curriculum of MBA Fashion Management is given below.

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SCHOOL OF FASHION DESIGN

MBA in Fashion Management

Semester I

S.No	Paper Code	Course Title	Credit	Contact hrs per Week		Class Duration		Marks Allocation		
				L	P	Theory	Practical	* Internal Assessment	End Term	Total
								40	60	100
1	MBAFM-101	Business communication	4	4		1 Hours		40	60	100
2	MBAFM-102	Business environment	4	4		1 Hours		40	60	100
3	MBAFM-103	Principles and practices of management	4	4		1 Hours		40	60	100
4	MBAFM-104	Organizational behavior	4	4		1 Hours		40	60	100
5	MBAFM-105	Introduction to global fashion industry	4	4		1 Hours		40	60	100
6	MBAFM-106	Fabric knowledge	4	4		1 Hours		40	60	100
7	MBAFM-107	Computer application in Fashion Management	3		6		2Hours	40	60	100
		Total	**27**							**700**

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SCHOOL OF FASHION DESIGN

MBA in Fashion Management

Semester II

S.No	Paper Code	Course Title	.Credit	Contact hrs per Week		Class Duration		Marks Allocation		
				L	P	Theory	Practical	* Internal Assessment	End Term	Total
								40	60	100
1	MBAFM-201	Research Methodology	4	4		1 Hours		40	60	100
2	MBAFM-202	Management accounting-1	4	4		1 Hours		40	60	100
3	MBAFM-203	Marketing Management	4	4		1 Hours		40	60	100
4	MBAFM-204	Operation and production Management	4	4		1 Hours		40	60	100
5	MBAFM-205	Human Resource Management	4	4		1 Hours		40	60	100
6	MBAFMP-206	Design Process and Design Thinking	3		6		2Hours	40	60	100
7	MBAFM-207	Study of Garment Manufacturing process	4	4		1 Hour		40	60	100
		Total	**27**							**700**

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SCHOOL OF FASHION DESIGN

MBA in Fashion Management

Semester III

S.No	Paper Code	Course Title	Credit	Contact hrs per Week		Class Duration		Marks Allocation		
				L	P	Theory	Practical	*. Internal Assessment	End Term	Total
								40	60	100
1	MBAFM-301	Strategic Management	4	4		1 Hour		40	60	100
2	MBAFM-302	Management accounting-II	4	4		1 Hour		40	60	100
3	MBAFM-303	Customer RelationshipManagement	4	4		1 Hour		40	60	100
4	MBAFM-304	Fashion Forecasting	4	4		1 Hour		40	60	100
5	MBAFM-305	Product Development	4	4		1 Hour		40	60	100
6	MBAFM-306	Merchandising and production methods	4	4		1 Hour		40	60	100
7		Summer internship project								100
		Total	**24**							**700**

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SCHOOL OF FASHION DESIGN

MBA in Fashion Management

Semester IV

S.No	Paper Code	Course Title	Credit	Contact hrs per Week		Class Duration		Marks Allocation		
				L	P	Theory	Practical	* Internal Assessment	End Term	Total
								40	60	100
1	MBAFM-401	Entrepreneurship and Development	4	4		1 Hour		40	60	100
2	MBAFM-402	Visual Merchandising	4	4		1 Hour		40	60	100
3	MBAFM-403	Project Management	4	4		1 Hour		40	60	100
4	MBAFM-404	Retail Management	4	4		1 Hour		40	60	100
5	MBAFM-405	Advertising and Branding	4	4		1 Hour		40	60	100
6		Summer internship project								200
		Total	**20**							**700**

RESOLUTION
[No.: BOS/FD2016/4]

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UNANIMOUSLY RESOLVED THAT the proposal of introduction of **MBA Fashion Management** from Academic Year 2016-17 is approved along with the proposed syllabus (changes suggested to be incorporated) subject to the final approval of the Academic Council.

Item No. 5

To discuss and approve Value Added Course.

Ms. KusumJoria explained the need of the introduction of proposed value-added course "**Color Consultant**". She gave the following reason:

Acquire all the professional skills to accurately & confidently identify undertone, seasonal palette & flow colors for men and women. You will make your client look healthier, more vibrant, energetic and younger-looking.

Ms. KusumJoria then presented the proposed structure of the syllabus of Value Added Course

The board appreciated the concept and proposed few changes in the syllabus.

RESOLUTION
[No.: BOS/FD2016/5]

UNANIMOUSLY RESOLVED THAT the introduction of value added course on "**Color Consultant**" from academic session 2016-2017 is approved along with the proposed syllabus changes suggested to be incorporated subject to the final approval of Academic Council.

The revised curriculum is attached as Annexure 2

Item No. 6

Ms. KusumJoriapresented the proposal of approval of the courses having focus on employability/ entrepreneurship/ skill development in B.DesFashion , Diploma in Fashion Design and MBA Fashion Management . The following papers have been proposed in this category :

Basic of Fashion	BDFD-101
Sustainable Design (Environmental Studies)	BDFD-102
Communication Skills	BDFD-103
Basic Of Design	BDFDP-104
Visualization & Representation-I	BDFDP-105
Material Exploration-I	BDFDP- 106
Computer Application	BDFDP- 107
Introduction to textile	BDFD-201
Fabric Study (Woven)	BDFD-202
Western Art Appreciation	BDFD-203
Visualization & Representation-II	BDFDP-204

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Material Exploration-II	BDFD-205
History of Western Costumes	BDFD-301
Construction Techniques I (T)	BDFDP-304
Fabric Construction	BDFDP-307
Surface Ornamentation-I	BDFDP-504
Theory of Textile	DFD-101
History of fashion	DFD-102
Communication skills and personality Development	DFD-103
Fashion Model Drawing & Illustration	DFDP-104
Pattern Making & Construction-I	DFDP-105
Elements/Principle of design and Fashion	DFDP-106
Merchandising & Production Methods	DFD-201
Fashion Illustration	DFD-202
Draping	DFDP-203
Design Collection & Portfolio	DFDP-204
Digital Design	DFDP-205
Pattern making & Construction-II	DFDP-206
Surface Ornamentation	DFDP-207
Business communication	MBAFM-101
Business environment	MBAFM-102
Principles and practices of management	MBAFM-103
Organizational behavior	MBAFM-104
Introduction to global fashion industry	MBAFM-105
Fabric knowledge	MBAFM-106
Computer application in Fashion Management	MBAFM-107
Research Methodology	MBAFM-201
Management accounting-I	MBAFM-202
Marketing Management	MBAFM-203
Operation and production Management	MBAFM-204
Human Resource Management	MBAFM-205
Design Process and Design Thinking	MBAFMP-206
Study of Garment Manufacturing process	MBAFM-207
Strategic Management	MBAFM-301
Management accounting-II	MBAFM-302
Customer Relationship Management	MBAFM-303
Fashion Forecasting	MBAFM-304
Product Development	MBAFM-305
Merchandising and production methods	MBAFM-306
Summer internship project	

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Entreprenuership and Development	MBAFM-401
Visual Merchandising	MBAFM-402
Project Management	MBAFM-403
Retail Management	MBAFM-404
Advertising and Branding	MBAFM-405
Summer internship project	

RESOLUTION
[No.: BOS/FD2016/6]

UNANIMOUSLY RESOLVED THAT that the proposal of ProgramB.Des Fashion, Diploma in Fashion Design and MBA Fashion Management having focus on employability / entrepreneurship/ skill development is approved, subject to the final approval of Academic Council.

There was no other point for discussion.

Board of Studies recommended the above resolutions to be presented in the Academic Council for further final approval.

The meeting ended with the vote of thanks to the Chair.

Chairperson

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JAIPUR NATIONAL UNIVERSITY

JAIPUR

BOARD OF STUDIES

2016-17

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Jaipur

SCHOOL OF PHARMACEUTICAL SCIENCES

JAIPUR NATIONAL UNIVERSITY
BOARD OF STUDIES
SCHOOL OF PHARMACEUTICAL SCIENCES

AGENDA

The meeting of "Board of Studies" in School of Pharmaceutical Sciences for the academic session 2016-17 onwards will be held on 19th March, 2016 at 10:30 AM at Board Room, Admin Block, SADTM Campus, Jaipur National University, Jaipur.

Agenda for the meeting is as follows:

1. Confirmation of minutes of meeting of previous BOS.
2. Action taken report.
3. To discuss and approve the syllabus of B.Pharm from academic session 2016-17 onwards.
4. To discuss and approve the syllabus of M.Pharm from academic session 2016-17 onwards.
5. To discuss and approve the syllabus of course work of Ph.D (Pharmaceutical Sciences) from academic session 2016-17 onwards.
6. To discuss and approve the introduction of Value Added Courses namely, Environmental Health and Hygiene" and "Non-conventional Energy Resources".
7. To approve the panel of examiners for theory and practical examinations.
8. Any other matter with the permission of Chair.

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BOARD OF STUDIES IN THE SCHOOL OF PHARMACEUTICAL SCIENCES

Minutes of the Meeting held on 19th March, 2016

The meeting of the "Board of Studies (BOS)" in School of Pharmaceutical Sciences for the academic session 2016-17 onwards was held on 19th March, 2016 at 10:30 AM at the Board Room, Admin Block, SADTM Campus, Jaipur National University, Jaipur.

Following members were present in the meeting:

S. No.	Name	Designation
1.	Prof. H.N. Verma Vice – Chancellor, Jaipur National University, Jaipur	Chairperson
2.	Prof. Birendra Shrivastava Director, School of Pharmaceutical Sciences, Jaipur National University, Jaipur	Director
3.	Prof. B.N. Suhagia Professor L.M. College of Pharmacy, Ahmedabad	External Member
4.	Prof. S.R. Wakode Professor DIPSAR, New-Delhi	External Member
5.	Dr. Ranjan Bairwa Associate Professor School of Pharmaceutical Sciences Jaipur National University, Jaipur	Internal Member
6.	Dr. Ganesh N. Sharma Associate Professor School of Pharmaceutical Sciences Jaipur National University, Jaipur	Internal Member
7.	Dr. Ajay Kumar Tiwari Associate Professor School of Pharmaceutical Sciences Jaipur National University, Jaipur	Internal Member
8.	Dr. Pankaj Sharma Associate Professor School of Pharmaceutical Sciences Jaipur National University, Jaipur	Internal Member

Chairperson of the Board addressed the members and introduced external BOS Members to the board and further, internal members introduced themselves.

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The summary of points discussed in the meeting is:

Item No. 1

Confirmation of minutes of meeting of previous BOS.

The minutes of meeting of previous BOS were confirmed.

RESOLUTION

[No.: BOS/2016/01]

The Board resolved that the minutes of previous BOS Meeting were hereby confirmed. The minutes of previous BOS Meeting is attached as Annexure (I).

Item No. 2

Action taken report

The decisions taken in the previous meeting have been implemented successfully.

1) As per the instructions of PCI, animal experiments for regular classes have been stopped.
2) For practicals in Pharmacology, "Ex-Pharmacology" software has been procured and practicals are conducted on the same.
3) The course work syllabus approved in the previous meeting has been implemented.
4) Value added courses – Entrepreneurship skills, Development of Leadership skills have been implemented.

Item No. 3

To discuss and approve the syllabus of B.Pharm from academic session 2016-17 onwards.

The board discussed about the syllabus of B.Pharm.

It was decided by BOS to continue the same syllabus of B.Pharm as approved in the BOS for session 2014-15, since there are no major changes in the tools and techniques of industries and hospitals.

RESOLUTION

[No.: BOS/B.Pharm/2016/02]

The BOS approved to continue the syllabus of B.Pharm as approved in the BOS for session 2014-15. The curriculum of B.Pharm from session 2016-17 onwards is attached as Annexure (II).

Item No. 4

To discuss and approve the syllabus of M.Pharm from academic session 2016-17 onwards.

The board discussed about the syllabus of M.Pharm.

It was decided by BOS to continue the same syllabus of M.Pharm as approved in the BOS for session 2014-15, since there are no major changes in the tools and techniques of industries and hospitals.

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RESOLUTION

[No.: BOS/M.Pharm/2016/03]

The BOS approved to continue the syllabus of M.Pharm as approved in the BOS for session 2014-15. The curriculum of M.Pharm from session 2016-17 onwards is attached as Annexure (III).

Item No. 5

To discuss and approve the syllabus of course work of Ph.D (Pharmaceutical Sciences) from academic session 2016-17 onwards.

The board discussed about the syllabus of course work of Ph.D (Pharmaceutical Sciences).

It was decided by BOS to continue the same syllabus of course work of Ph.D (Pharmaceutical Sciences) as approved in the BOS for session 2014-15.

RESOLUTION

[No.: BOS/Ph.D/2016/04]

The BOS approved to continue the same syllabus of course work of Ph.D (Pharmaceutical Sciences) as approved in the BOS for session 2014-15. The curriculum for which is attached as Annexure (IV).

Item No. 6

To discuss and approve the syllabus of Value Added Courses namely "Environmental Health and Hygiene" and "Non-conventional Energy Resources"

School of Pharmaceutical Sciences, Jaipur National University proposed to incorporate two Value Added Courses along with their scheme and syllabus:

i) Environmental Health and Hygiene.
ii) Non-conventional Energy Resources

The BOS accepted to approve the syllabus for above Value added courses as proposed by the school.

RESOLUTION

[No.: BOS/VAC/2016/05]

i) The BOS approved the schemes and syllabi for both the Value Added Courses- "Environmental Health and Hygiene" and "Non-conventional Energy Resources" to be effective from session 2016-17. The curriculum for Value Added Courses is attached as Annexure (V & VI).

Item No. 7

To approve the panel of examiners for theory and practical examinations.

School of Pharmaceutical Sciences, Jaipur National University proposed panel of external examiners for theory and practical examinations.

The BOS accepted the proposed panel of external examiners for theory and practical examinations with some suggestions.

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RESOLUTION

[No.: BOS/Panel/2016/06]

The BOS the approved the proposed panel of external examiners for theory and practical examinations with some suggestions. The final approved panel of external examiners is attached as Annexure (VII).

Item No. 8

Any other matter with the permission of Chair.

There was no any other matter for discussion.

Board of Studies recommended the above resolutions to be presented in the Academic Council for further final approval.

The meeting ended with the vote of thanks to the Chair.

Authorized Signatory

Additional Registrar
Jaipur National University
Jaipur