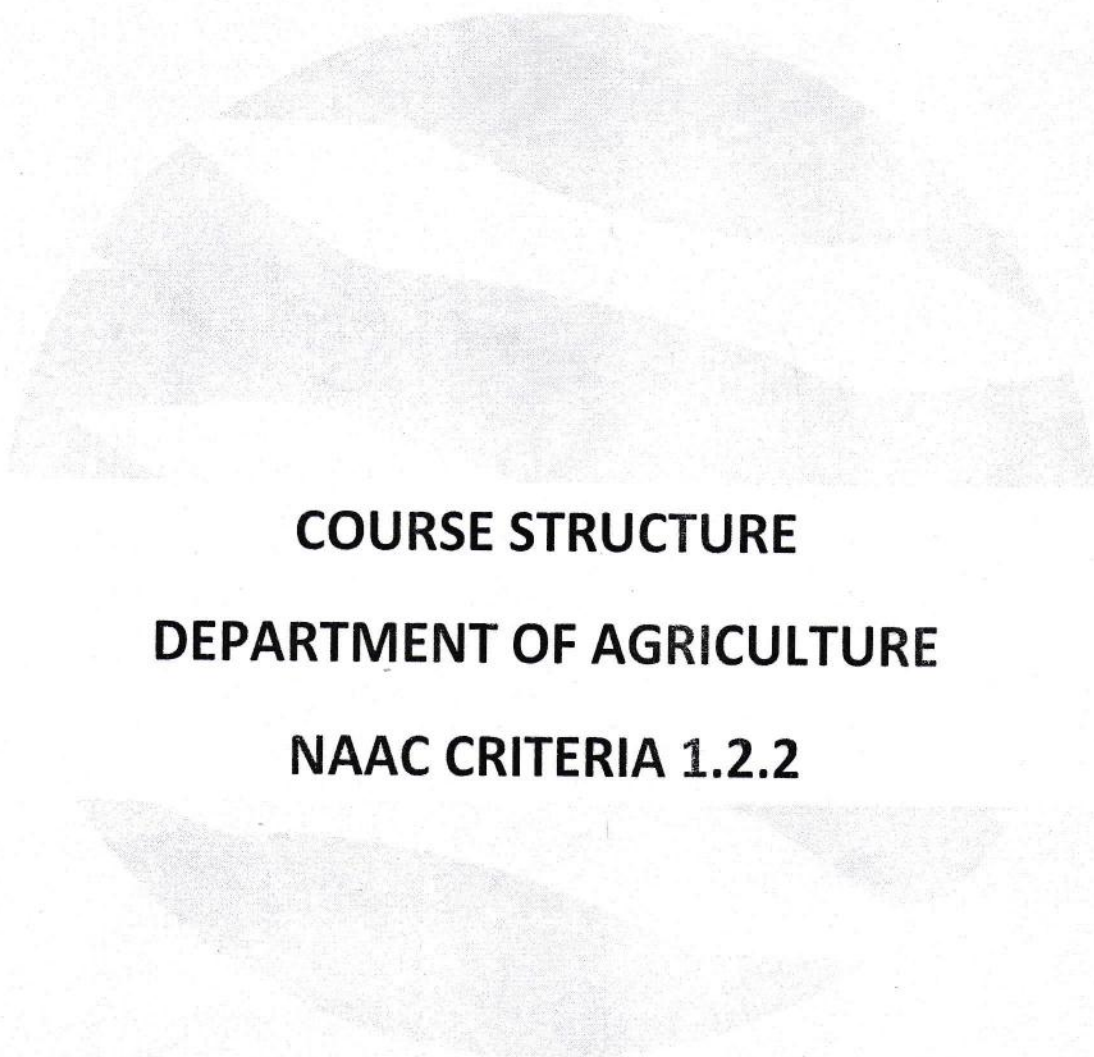


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COURSE STRUCTURE

DEPARTMENT OF AGRICULTURE

NAAC CRITERIA 1.2.2



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Programme Outcomes of B.Sc. (Hons.) agriculture:

After completion of the program of B.Sc. in (Hons.) Agriculture, every student will know the following attributes:

PO1: Agriculture scenario of India and world.

PO2: They will know the crops, weeds, insect and diseases.

PO3: They will learn different resources both natural and artificial and their rational utilization

PO4: They will know seed to seed process i.e. production to marketing and value addition

PO5: They will learn marketing skill and commercial management of agricultural farms.

PO6: They will gain knowledge both on agriculture enterprises and related enterprises

PO7: They will have good communication skills and personality

PO8: They will be eligible to start their own agricultural based business or industries

PO9: They will have good knowledge of seeds and their production techniques

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Discipline-wise Courses

S.No	Course Code	Course Title	Credit Hours
Agronomy			
1.	BAG 106	Fundamentals of Agronomy	4(3+1)
3.	BAG 301	Crop Production Technology – I (<i>Kharif</i> crops)	2(1+1)
4.	BAG 409	Introductory Agro-meteorology & Climate Change	2(1+1)
5.	BAG 401	Crop Production Technology – II (<i>Rabi</i> crops)	2(1+1)
6.	BAG 407	Farming System & Sustainable Agriculture	1(1+0)
7.	BAG 591	Practical Crop Production - I (<i>Kharif</i> crops)	2(0+2)
8.	BAG 507	Geoinformatics and Nanotechnology and Precision Farming	2(1+1)
9.	BAG 010	Weed Management	3(2+1) *
10.	BAG 691	Practical Crop Production - II (<i>Rabi</i> crops)	2(0+2)
11.	BAG 607	Principles of Organic Farming	2(1+1)
12.	BAG 601	Rainfed Agriculture & Watershed Management	2(1+1)
13.	BAG 011	System Simulation and Agro-advisory	3(2+1) *
Plant Breeding & Genetics			
14.	BAG 201	Fundamentals of Genetics	3(2+1)
15.	BAG 302	Fundamentals of Plant Breeding	3(2+1)
16.	BAG 406	Principles of Seed Technology	3(1+2)
17.	BAG 003	Commercial Plant Breeding	3(1+2)*
18.	BAG 506	Crop Improvement-I (<i>Kharif</i> crops)	2(1+1)
19.	BAG 606	Crop Improvement-II (<i>Rabi</i> crops)	2(1+1)
20.	BAG 008	Micro propagation Technologies	3(1+2)*
Soil Science & Agricultural Chemistry			
21.	BAG 103	Fundamentals of Soil Science	3(2+1)
22.	BAG 404	Problematic soils and their Management	2(2+0)
23.	BAG 502	Manures, Fertilizers and Soil Fertility Management	3(2+1)
Entomology			
24.	BAG 207	Fundamentals of Entomology	4(3+1)
26.	BAG 006	Biopesticides & Biofertilizers	3(2+1)*
27.	BAG 504	Pests of Crops and Stored Grain and their Management	3(2+1)
28.	BAG 605	Management of Beneficial Insects	2(1+1)
Agricultural Economics			
29.	BAG 205	Fundamentals of Agricultural Economics	2(2+0)
30.	BAG 303	Agricultural Finance and Co-Operation	3(2+1)
31.	BAG 408	Agricultural Marketing Trade & Prices	3(2+1)
32.	BAG 001	Agribusiness Management	3(2+1)*
33.	BAG 608	Farm Management, Production & Resource Economics	2(1+1)

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Agricultural Engineering			
34.	BAG 203	Soil and Water Conservation Engineering	2(1+1)
35.	BAG 305	Farm Machinery and Power	2(1+1)
36.	BAG 403	Renewable Energy and Green Technology	2(1+1)
37.	BAG 602	Protected Cultivation and Secondary Agriculture	2(1+1)
Plant Pathology			
38.	BAG 206	Fundamentals of Plant Pathology	4(3+1)
39.	BAG 503	Diseases of Field and Horticultural Crops and their Management-I	3(2+1)
40.	BAG 603	Diseases of Field and Horticultural Crops and their Management-II	3(2+1)
41.	BAG 501	Principles of Integrated Pest and Disease Management	2(1+1)
Horticulture			
42.	BAG 101	Fundamentals of Horticulture	2(1+1)
43.	BAG 306	Production Technology for Vegetables and Spices	2(1+1)
44.	BAG 405	Production Technology for Fruit and Plantation Crops	2(1+1)
45.	BAG 402	Production Technology for Ornamental Crops, MAP and Landscaping	2(1+1)
46.	BAG 009	Hi-tech. Horticulture	3(2+1)*
47.	BAG 004	Landscaping	3(2+1)*
48.	BAG 604	Post-harvest Management and Value Addition of Fruits and Vegetables	2(1+1)
Food Science & Technology			
49.	BAG 609	Principles of Food Science & Nutrition	2(2+0)
Agricultural Extension and Communication			
50.	BAG 110	Rural Sociology & Educational Psychology	2(2+0)
51.	BAG 208	Fundamentals of Agricultural Extension Education	3(2+1)
52.	BAG 209	Communication Skills and Personality Development	2(1+1)
53.	BAG 505	Entrepreneurship Development and Business Communication	2(1+1)
54.	BAG 012	Agricultural Journalism	3(2+1)*
Biochemistry / Physiology / Microbiology/ Environmental Sciences (Basic Science)			
55.	BAG 204	Fundamentals of Crop Physiology	2(1+1)
56.	BAG 202	Agricultural Microbiology	2(1+1)
57.	BAG 307	Environmental Studies & Disaster Management	3(2+1)
58.	BAG 102	Fundamentals of Plant Biochemistry and Biotechnology	3(2+1)
	BAG104	Introduction to Forestry	2 (1+1)
Statistics, Computer Application and I.P.R.			
59.	BAG 308	Statistical Methods	2(1+1)
60.	BAG 304	Agri-Informatics	2 (1+1)
61.	BAG 508	Intellectual Property Rights	1(1+0)
Animal Production			

62.	BAG309	Livestock and Poultry Management	4(3+1)
Language			
63.	BAG 105	Comprehension & Communication Skills in English	2(1+1)
Remedial Courses			
64.	BAG 107	Introductory Biology	2(1+1)
65.	BAG 108	Elementary Mathematics	2(2+0)
2.	BAG 109	Agricultural Heritage	1(1+0)
Non-Gradual Courses			
	BAG 158	NSS/NCC/Physical Education & Yoga Practices	2(0+2)
	BAG 111	Human Values & Ethics	1(1+0)
*: Elective course, 2(1+1)= 2 lecture per week (1 for lecture and 1 for practical)			

Semester: 7th

BAG751	Rural Agricultural Work Experience and Agro-industrial Attachment (RAWE & AIA)			MM
	Activities	No. of weeks	Credit hours	100
	General Orientation & On campus training by different faculties	1	14	
	Village attachment	8		
	Unit attachment in Univ./ College. KVK/ Research Station Attachment	5		
	Plant clinic	2	2	
	Agro-Industrial Attachment	3	4	
	Project Report Preparation, Presentation and Evaluation	1		
	Total weeks for RAWE & AIA	20	20	100

Semester: 8th

Subject Code	Title of the module (ELP PROGRAMME)	Credits
BAG851	Production Technology for Bioagents and Biofertilizer	0+10
BAG852	Seed Production and Technology	0+10
BAG853	Mushroom Cultivation Technology	0+10
BAG854	Soil, Plant, Water and Seed Testing	0+10
BAG855	Commercial Beekeeping	0+10
BAG856	Poultry Production Technology	0+10
BAG857	Commercial Horticulture	0+10
BAG858	Floriculture and Landscaping	0+10
BAG859	Food Processing	0+10
BAG860	Agriculture Waste Management	0+10
BAG861	Organic Production Technology	0+10
BAG862	Commercial Sericulture	0+10

ELP: Experiential Learning Programme

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Examination Scheme (First Semester)

I Semester (Credit hours distribution)			
S.No	Course Code	Course Title	Credit Hours
1.	BAG101	Fundamental of horticulture	2 (1+1)
2.	BAG102	Fundamentals of Plant Biochemistry and Biotechnology	3(2+1)
3.	BAG103	Fundamentals of Soil Science	3 (2+1)
4.	BAG104	Introduction to Forestry	2 (1+1)
5.	BAG105	Comprehension & Communication Skills in English	2 (1+1)
6.	BAG106	Fundamentals of Agronomy	4(3+1)
7.	BAG107/BAG108	Introductory Biology*/ Elementary Mathematics*	2(1+1)/2(2+0)*
8.	BAG109	Agricultural Heritage*	1(1+0)*
9.	BAG110	Rural Sociology & Educational Psychology	2(2+0)
10.	BAG111	Human Values & Ethics (Non-gradual)**	1(1+0)
11.	BAG 158	NSS/NCC/Physical Education & Yoga Practices**	2(0+2)
TOTAL			18+03**+03**

*R: Remedial course; **NC: Non-gradual courses, 3(2+1): 3 lectures per week, (2+1) :indicate 2 Lecture and one practical

Evaluation scheme								
Subject Code	Paper name	L	P	IAM			ESM	Total
				AT	UT	TA		
Theory Subjects								
BAG101	Fundamental of horticulture	1	0	10	20	5	50	85
BAG102	Fundamentals of Plant Biochemistry and Biotechnology	2	0	10	20	5	50	85
BAG103	Fundamentals of Soil Science	2	0	10	20	5	50	85
BAG104	Introduction to Forestry -	1	0	10	20	5	50	85
BAG105	Comprehension & Communication Skills in English	1	0	10	20	5	50	85
BAG106	Fundamentals of Agronomy	3	0	10	20	5	50	85
BAG107	Introductory Biology*/	1	0	10	20	5	50	85
BAG108	Elementary Mathematics*	2	0	10	30	10	50	100
BAG109	Agricultural Heritage*	1	0	10	30	10	50	100
BAG110	Rural Sociology & Educational Psychology	2	0	10	30	10	50	100
BAG111	Human Values & Ethics (Non-gradial)**	1	0	10	30	10	50	100
Laboratory/ Practical								
BAG151	Fundamental of Horticulture Lab	0	1				15	15
BAG152	Fundamentals of Plant Biochemistry and Biotechnology Lab	0	1				15	15
BAG153	Fundamentals of Soil Science Lab	0	1				15	15
BAG154	Introduction to Forestry Lab	0	1				15	15
BAG155	Comprehension & Communication Skills in English Lab	0	1				15	15
BAG156	Fundamentals of Agronomy Lab	0	1				15	15
BAG157	Introductory Biology Lab*	0	1				15	15
BAG158	NSS/NCC/Physical Education & Yoga Practices**	0	2				100	100
Total		17	7					1100

L: Lecture, P: Practical, AT: Attendance, UT: Unit Test, TA: Teacher Assessment, ESM: End Semester Mark

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Examination Scheme (Third Semester)

III Semester (Credit hours distribution)			
S.No	Course Code	Course Title	Credit Hours
1.	BAG301	Crop Production Technology – I (<i>Kharif</i> Crops)	2 (1+1)
2.	BAG302	Fundamentals of Plant Breeding	3(2+1)
3.	BAG303	Agricultural Finance and Cooperation	3 (2+1)
4.	BAG304	Agri- Informatics	2 (1+1)
5.	BAG305	Farm Machinery and Power	2 (1+1)
6.	BAG306	Production Technology for Vegetables and Spices	2(1+1)
7.	BAG307	Environmental Studies and Disaster Management	3(2+1)
8.	BAG308	Statistical Methods	2(1+1)
9.	BAG309	Livestock and Poultry Management	4(3+1)
TOTAL			23 (14+9)

3(2+1): 3 lectures per week, (2+1): indicate 2 Lecture and one practical

Evaluation scheme								
Subject Code	Paper name	L	P	IAM			ESM	Total
				AT	UT	TA		
Theory Subjects								
BAG301	Crop Production Technology – I (<i>Kharif</i> Crops)	1	0	10	20	5	50	85
BAG302	Fundamentals of Plant Breeding	2	0	10	20	5	50	85
BAG303	Agricultural Finance and Cooperation	2	0	10	20	5	50	85
BAG304	Agri- Informatics	1	0	10	20	5	50	85
BAG305	Farm Machinery and Power	1	0	10	20	5	50	85
BAG306	Production Technology for Vegetables and Spices	1	0	10	20	5	50	85
BAG307	Environmental Studies and Disaster Management	2	0	10	20	5	50	85
BAG308	Statistical Methods	1	0	10	20	5	50	85
BAG309	Livestock and Poultry Management	3	0	10	20	5	50	85
Laboratory/ Practical								
BAG351	Crop Production Technology – I (<i>Kharif</i> Crops) Lab	0	1				15	15
BAG352	Fundamentals of Plant Breeding Lab	0	1				15	15
BAG353	Agricultural Finance and Cooperation Lab	0	1				15	15
BAG354	Agri- Informatics Lab	0	1				15	15
BAG355	Farm Machinery and Power Lab	0	1				15	15
BAG356	Production Technology for Vegetables and Spices Lab	0	1				15	15
BAG357	Environmental Studies and Disaster Management Lab	0	1				15	15
BAG358	Statistical Methods Lab	0	1				15	15
BAG359	Livestock and Poultry Management Lab	0	1				15	15
Total		14	9					900

L: Lecture, P: Practical, AT: Attendance, UT: Unit Test, TA: Teacher Assessment, ESM: End Semester Mark

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Examination Scheme (Fifth Semester)

V Semester (Credit hours distribution)			
S.No	Course Code	Course Title	Credit Hours
1.	BAG501	Principles of Integrated Pest and Disease Management	3(2+1)
2.	BAG502	Manures, Fertilizers and Soil Fertility Management	3(2+1)
3.	BAG503	Diseases of Field and Horticultural Crops and their Management -I	3(2+1)
4.	BAG504	Pests of Crops and Stored Grain and their Management	3 (2+1)
5.	BAG505	Entrepreneurship Development and Business Communication	2 (1+1)
6.	BAG506	Crop Improvement-I (<i>Kharif Crops</i>)	2 (1+1)
7.	BAG507	Geoinformatics and Nano-technology and Precision Farming	2(1+1)
8.	BAG508	Intellectual Property Rights	1 (1+0)
9.	BAG591	Practical Crop Production – I (<i>Kharif crops</i>)	2 (0+2)
10.		Elective Course*	3 credits
TOTAL			21(12+9)+3

21(12+9)+3:21 lectures per week, (12+9) :indicate 12 Lecture and nine practical and 3 : credit hours of elective course

Evaluation scheme								
Subject Code	Paper name	L	P	IAM			ESM	Total
				AT	UT	TA		
Theory Subjects								
BAG501	Principles of Integrated Pest and Disease Management	2	0	10	20	5	50	85
BAG502	Manures, Fertilizers and Soil Fertility Management	2	0	10	20	5	50	85
BAG503	Diseases of Field and Horticultural Crops and their Management -I	2	0	10	20	5	50	85
BAG504	Pests of Crops and Stored Grain and their Management	2	0	10	20	5	50	85
BAG505	Entrepreneurship Development and Business Communication	1	0	10	20	5	50	85
BAG506	Crop Improvement-I (<i>Kharif Crops</i>)	1	0	10	20	5	50	85
BAG507	Geoinformatics and Nano-technology and Precision Farming	1	0	10	20	5	50	85
BAG508	Intellectual Property Rights	1	0	10	30	10	50	100
	Elective Course*	0	0	10	20	5	50	85
Laboratory/ Practical								
BAG551	Principles of Integrated Pest and Disease Management	0	1				15	15
BAG552	Manures, Fertilizers and Soil Fertility Management	0	1				15	15
BAG553	Diseases of Field and Horticultural Crops and their Management -I	0	1				15	15
BAG554	Pests of Crops and Stored Grain and their Management	0	1				15	15
BAG555	Entrepreneurship Development and Business Communication	0	1				15	15
BAG556	Crop Improvement-I (<i>Kharif Crops</i>)	0	1				15	15
BAG557	Geoinformatics and Nano-technology and Precision Farming	0	1				15	15
BAG559	Elective Course**	0	0				15	15
BAG591	Practical Crop Production – I (<i>Kharif crops</i>)	0	2				100	100
Total		12	9					1000

* To be selected from elective course list, **No of practical hours will be decided on the basis of student subject preference, L: Lecture, P: Practical, AT: Attendance, UT: Unit Test, TA: Teacher Assessment, ESM: End Semester Marks

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Semester: 7th Semester

BAG751	Rural Agricultural Work Experience and Agro-industrial Attachment (RAW & AIA)			MM
	Activities	No. of weeks	Credit hours	100
	General Orientation & On campus training by different faculties	1	14	
	Village attachment	8		
	Unit attachment in Univ./ College. KVK/ Research Station Attachment	5		
	Plant clinic	2	2	
	Agro-Industrial Attachment	3	4	
	Project Report Preparation, Presentation and Evaluation	1		
	Total weeks for RAW & AIA	20	20	
				100

Course Objectives:

1. To make the students familiar with a package of practices of the farmers.
2. To make them familiar with the kind of Agri-based industries.
3. To orient them with national and international advances in agriculture
4. To develop skill for identification of crop pest and diseases and their management.

Agro- Industrial Attachment: The students would be attached with the agro-industries for a period of 3 weeks to get an experience of the industrial environment and working.

Educational tour will be conducted in break between IV & V Semester or VI & VII Semester

RAW component I

Village Attachment Training Programme

S.No.	Activity	Duration
	Orientation and Survey of Village	1 week
	Agronomical Interventions	1 week
	Plant Protection Interventions	1 week
	Soil Improvement Interventions (Soil sampling and testing)	1 week
	Fruit and Vegetable production interventions	1 Week
	Food Processing and Storage interventions	1 week
	Animal Production Interventions	1 week
	Extension and Transfer of Technology activities	1 week

RAW Component –II

Agro Industrial Attachment: Students shall be placed in Agro-and Cottage industries and Commodities Boards for 03 weeks. Industries include Seed/Sapling production, Pesticides-insecticides, Post harvest-processing value addition, Agri-finance institutions, etc.

Activities and Tasks during Agro-Industrial Attachment Programme

Acquaintance with industry and staff

Study of structure, functioning, objective and mandates of the industry

Study of various processing units and hands-on trainings under supervision of industry staff

Ethics of industry

Employment generated by the industry

Contribution of the industry promoting environment

Learning business network including outlets of the industry

Skill development in all crucial tasks of the industry

Documentation of the activities and task performed by the students

Performance evaluation, appraisal and ranking of students

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Course Outcomes:

After completing the course, students will be able to:

1. Students will acquire knowledge on agricultural business.
2. They will get updated knowledge on local practices and problems being faced by the stock holders.
3. They can develop plant clinic.
4. Will have basic knowledge of agri-based industries.

Sanjiv Kumar
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8th Semester

Modules for Skill Development and Entrepreneurship: A student has to register 20 credits opting for two modules of (0+10) credits each (total 20 credits) from the package of modules in the **VIII semester**.

Subject Code	Title of the module (elp PROGRAMME)	Credits
BAG851	Production Technology for Bioagents and Biofertilizer	0+10
BAG852	Seed Production and Technology	0+10
BAG853	Mushroom Cultivation Technology	0+10
BAG854	Soil, Plant, Water and Seed Testing	0+10
BAG855	Commercial Beekeeping	0+10
BAG856	Poultry Production Technology	0+10
BAG857	Commercial Horticulture	0+10
BAG858	Floriculture and Landscaping	0+10
BAG859	Food Processing	0+10
BAG860	Agriculture Waste Management	0+10
BAG861	Organic Production Technology	0+10
BAG862	Commercial Sericulture	0+10

Evaluation of Experiential Learning Programme/ HOT

S.No.	Parameters	Max. Marks
1	Project Planning and Writing	10
2	Presentation	10
3	Regularity	10
4	Monthly Assessment	10
5	Output delivery	10
6	Technical Skill Development	10
7	Entrepreneurship Skills	10
8	Business networking skills	10
9	Report Writing Skills	10
10	Final Presentation	10
Total		100


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ELECTIVE COURSES

Elective Courses : A student can select three elective courses out of the following and offer during 4th, 5th and 6th semesters.

Examination Scheme (Semester wise)

(Credit hours distribution)			
S.No	Course Code	Course Title	Credit Hours
1.	BAG001	Agribusiness Management	3(2+1)
2.	BAG002	Agrochemicals	3(2+1)
3.	BAG003	Commercial plant Breeding	3(1+2)
4.	BAG004	Landscaping	3(2+1)
5.	BAG005	Food safety and Standards	3(2+1)
6.	BAG006	Biopesticides & Biofertilizers	3(2+1)
7.	BAG007	Protected Cultivation	3(2+1)
8.	BAG008	Micro Propagation technologies	3(1+2)
9.	BAG009	Hi-Tech Horticulture	3(2+1)
10.	BAG010	Weed Management	3(2+1)
11.	BAG011	System Simulation and Agro-advisory	3(2+1)
12.	BAG012	Agriculture Journalism	3(2+1)
TOTAL			36 (21+15)

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Evaluation scheme								
Subject Code	Paper name	L	P	IAM			ESM	Total
				AT	UT	TA		
Theory Subjects								
BAG001	Agribusiness Management	2	0	10	20	5	50	85
BAG002	Agrochemicals	2	0	10	20	5	50	85
BAG003	Commercial Plant Breeding	1	0	10	20	5	50	85
BAG004	Landscaping	2	0	10	20	5	50	85
BAG005	Food Safety and Standards	2	0	10	20	5	50	85
BAG006	Biopesticides & Biofertilizers	2	0	10	20	5	50	85
BAG007	Protected Cultivation	2	0	10	20	5	50	85
BAG008	Micro propagation Technologies	1	0	10	20	5	50	85
BAG009	Hi-tech. Horticulture	2	0	10	20	5	50	85
BAG010	Weed Management	2	0	10	20	5	50	85
BAG011	System Simulation and / agro-advisory	2	0	10	20	5	50	85
BAG012	Agricultural Journalism	2	0	10	20	5	50	85
Laboratory/ Practical								
BAG051	Agribusiness Management	0	1				15	15
BAG052	Agrochemicals	0	1				15	15
BAG053	Commercial Plant Breeding	0	2				15	15
BAG054	Landscaping	0	1				15	15
BAG055	Food Safety and Standards	0	1				15	15
BAG056	Biopesticides & Biofertilizers	0	1				15	15
BAG057	Protected Cultivation	0	1				15	15
BAG058	Micro propagation Technologies	0	2				15	15
BAG059	Hi-tech. Horticulture	0	1				15	15
BAG060	Weed Management	0	1				15	15
BAG061	System Simulation and Agro-advisory	0	1				15	15
BAG062	Agricultural Journalism	0	1				15	15

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BAG001- AGRIBUSINESS MANAGEMENT	
Teaching Scheme Lectures and Practical: 3 hr./week (2+1) Tutorials: Nil Credits: 3	Examination Schemes Class Test: 20 Teachers Assessment: 5 Attendance: 10 End Semester Exam:50

Course Objectives:

1. To examine the complexity of managing in a global world.
2. To use agribusiness management thought to develop a better understanding of agriculture.
3. To develop an ability to work with moral and ethical dilemmas and make decisions using critical thinking.
4. To expose students to several models of agribusiness management.

Syllabus

Theory

Transformation of agriculture into agribusiness, various stakeholders and components of agribusiness systems. Importance of agribusiness in the Indian economy and New Agricultural Policy. Distinctive features of Agribusiness Management: Importance and needs of agro-based industries, Classification of industries and types of agro based industries. Institutional arrangement, procedures to set up agro based industries. Constraints in establishing agro-based industries. Agri-value chain: Understanding primary and support activities and their linkages. Business environment: PEST & SWOT analysis. Management functions: Roles & activities, Organization culture. Planning, meaning, definition, types of plans. Purpose or mission, goals or objectives, Strategies, policies, procedures, rules, programs and budget. Components of a business plan, Steps in planning and implementation. Organization staffing, directing and motivation. Ordering, leading, supervision, communications, control. Capital Management and Financial management of Agribusiness. Financial statements and their importance. Marketing Management: Segmentation, targeting & positioning. Marketing mix and marketing strategies. Consumer behaviour analysis, Product Life Cycle (PLC). Sales & Distribution Management. Pricing policy, various pricing methods. Project Management definition, project cycle, identification, formulation, appraisal, implementation, monitoring and evaluation. Project Appraisal and evaluation techniques.

Practical

Study of agri-input markets: Seed, fertilizers, pesticides. Study of output markets: grains, fruits, vegetables, flowers. Study of product markets, retail trade commodity trading, and value added products, Study of financing institutions- Cooperative, Commercial banks, RRBs, Agribusiness Finance Limited, NABARD. Preparations of projects and Feasibility reports for agribusiness entrepreneur, Appraisal, evaluation techniques of identifying viable project- Non-discounting techniques, Case study of agro-based industries, Trend and growth rate of prices of agricultural commodities, Net present worth technique for selection of viable project, Internal rate of return.

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Text and Reference books:

1. G. L. Meena, S. S. Burark, D. C. Pant and Rajesh Sharma, 2017. Fundamentals of Agribusiness Management, Agrotech Publishing Academy, Udaipur, ISBN: 978-81-8321-418-6. First edition.
2. Gittinger, J.P, 1984, Economic Analysis of Agricultural Projects, John Hopkins University Press.
3. Kotler, Philip, 1999, Marketing Management, Prentice Hall of India, New Delhi,
4. L.L. Somani and G. L. Meena, 2017. Agribusiness & Farm Management at a Glance, Vol-2, Basic & Applied Fundamentals, Agrotech Publishing Academy, Udaipur, ISBN: 978-81-8321-429-2. Second edition.
5. Mamoria, C. B., Joshi, R. L. and Mulla, N. I. 2005, Principles and Practices of Marketing in India, Kitab Mahal, Allahabad.
6. Sudha, G.S, 2000, Business Management, RBSE Publishers, Jaipur.
7. Tripathi, P. C. and Reddy, P. N. Principles of Management, Tata McGraw Hill Education Private Limited, New Delhi, 2008.

Course Outcomes:**After completing the course, students will be able to:**

1. Students will be able to effectively evaluate the impact of trade policy, common markets, trading blocks, market instability, commodity problems, trade agreements and environmental regulations on imports and exports in international trade to be able to improve production decision making.

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BAG002- AGROCHEMICALS	
Teaching Scheme Lectures and Practical: 3 hr./week (2+1) Tutorials: Nil Credits: 3	Examination Schemes Class Test: 20 Teachers Assessment: 5 Attendance: 10 End Semester Exam: 50

Course Objectives:

1. To know the chemicals present in different agrochemical products
2. To study the different formulation methods
3. Learn about chemicals composition and formulations.

Syllabus

Theory

An introduction to agrochemicals, their type and role in agriculture, effect on environment, soil, human and animal health, merits and demerits of their uses in agriculture, management of agrochemicals for sustainable agriculture. Herbicides-Major classes, properties and important herbicides. Fate of herbicides. Fungicides - Classification – Inorganic fungicides - characteristics, preparation and use of sulfur and copper, Mode of action-Bordeaux mixture and copper oxychloride. Organic fungicides- Mode of action- Dithiocarbamates-characteristics, preparation and use of Zineb and maneb. Systemic fungicides- Benomyl, carboxin, oxycarboxin, Metalaxyl, Carbendazim, characteristics and use. Introduction and classification of insecticides: inorganic and organic insecticides Organochlorine, Organophosphates, Carbamates, Synthetic pyrethroids Neonicotinoids, Biorationals. Insecticide Act and rules. Insecticides banned, withdrawn and restricted use, Fate of insecticides in soil & plant. IGRs Biopesticides, Reduced risk insecticides, Botanicals, plant and animal systemic insecticides their characteristics and uses. Fertilizers and their importance. Nitrogenous fertilizers: Feedstocks and Manufacturing of ammonium sulphate, ammonium nitrate, ammonium chloride, urea. Slow release N-fertilizers. Phosphatic fertilizers: feedstock and manufacturing of single superphosphate. Preparation of bone meal and basic slag. Potassic fertilizers: Natural sources of potash, manufacturing of potassium chloride, potassium sulphate and potassium nitrate. Mixed and complex fertilizers: Sources and compatibility- preparation of major, secondary and micronutrient mixtures. Complex fertilizers: Manufacturing of ammonium phosphates, nitrophosphates and NPK complexes. Fertilizer control order. Fertilizer logistics and marketing Plant bio-pesticides for ecological agriculture, Bio-insect repellent.

Practical

Sampling of fertilizers and pesticides, Pesticides application technology to study about various pesticides appliances, Quick tests for identification of common fertilizers, Identification of anion and cation in fertilizer, Calculation of doses of insecticides to be used, To study and identify various formulations of insecticide available in market, Estimation of nitrogen in Urea, Estimation of water soluble P_2O_5 and citrate soluble P_2O_5 in single super phosphate, Estimation of potassium in Muriate of Potash/ Sulphate of Potash by flame photometer, Determination of copper content in copper oxychloride, Determination of sulphur content in sulphur fungicide, Determination of thiram, Determination of ziram content.

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Text and Reference books:

1. Jaganathan, R. and R. Jayakumar. 2003. Weed Science Principles, Kalyani Publishers, New Delhi.
2. Gupta, O. P. 1998. Modern Weed Management. Agro Botanica Bikaner, India.
3. Rao, V.S. 2000. Principles of Weed science. Oxford & IBH Publishing Co. New Delhi.

Course Outcomes:

After completing the course, students will be able to:

1. Students will be familiarized about the agrochemical and their classification.
2. Different weed control methods and management through these agrochemicals will be studied.
3. Different chemicals and its formulations for weed management will be understood.

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BAG003- COMMERCIAL PLANT BREEDING	
Teaching Scheme Lectures and Practical: 3 hr./week (1+2) Tutorials: Nil Credits: 3	Examination Schemes Class Test: 20 Teachers Assessment: 5 Attendance: 10 End Semester Exam:50

Course Objectives:

1. To impart knowledge on genetic diversity, inheritance and variation in crops
2. To make the student understand different breeding methods in asexually propagated, self and cross pollinated crops
3. To learn IPR, patenting, Plant Breeders and Farmers Rights

Syllabus

Theory

Types of crops and modes of plant reproduction. Line development and maintenance breeding in self and cross pollinated crops (A/B/R and two line system) for development of hybrids and seed production. Genetic purity test of commercial hybrids. Advances in hybrid seed production of maize, rice, sorghum, pearl millet, castor, sunflower, cotton pigeon pea, Brassica etc. Quality seed production of vegetable crops under open and protected environment. Alternative strategies for the development of the line and cultivars: haploid inducer, tissue culture techniques and biotechnological tools. IPR issues in commercial plant breeding: DUS testing and registration of varieties under PPV & FR Act. Variety testing, release and notification systems in India. Principles and techniques of seed production, types of seeds, quality testing in self and cross pollinated crops.

Practical

Floral biology in self and cross pollinated species, selfing and crossing techniques, Techniques of seed production in self and cross pollinated crops using A/B/R and two line system, Learning techniques in hybrid seed production using male-sterility in field crops, Understanding the difficulties in hybrid seed production, Tools and techniques for optimizing hybrid seed production, Concept of rouging in seed production plot, Concept of line its multiplication and purification in hybrid seed production, Role of pollinators in hybrid seed production, Hybrid seed production techniques in sorghum, pearl millet, maize, rice, rapeseed-mustard, sunflower, castor, pigeon pea, cotton and vegetable crops, Sampling and analytical procedures for purity testing and detection of spurious seed, Seed drying and storage structure in quality seed management, Screening techniques during seed processing viz., grading and packaging, Visit to public private seed production and processing plants

Text and Reference books:

1. Chopra, V.L. 2000. *Breeding of Field Crops* (Edt.), Oxford and IBH Publishing Co. Pvt. Ltd., New Delhi.
2. Mandal, AK., P.K. Ganguli and S. Banerjee. 1993. *Advances in Plant Breeding*. Vol. I and II. CBS Publishers and Distributors, New Delhi.
3. Manjit S. Kang 2004. *Crop Improvement: Challenges in the Twenty-First Century* (Edt). International Book Distributing Co. Lucknow.

4. Poehlman, J.M. 1987. *Breeding of Field Crops*. AVI Publishing Co., INC, East Port, Connecticut, USA. 51
5. Ram, H.H. and H.G. Singh. 1994. *Crop Breeding and Genetics*. Kalyani Publishers, New Delhi.
6. Sharma, A.K. 2005. *Breeding Technology of Crop Plants* (Edt.). Yash Publishing House, Bikaner.
7. Ram, H.H. 2005. *Vegetable Breeding — Principles and Practices*. Kalyani Publishers, New Delhi.
8. Agarwal, R.L. 1991. *Seed Technology*. Oxford & IBH Publishing Co. Delhi.
9. Dhirenra Khare and Mohan S. Bhat. 2000. *Seed Technology*. Scientific Publishers India), Jodhpur.
10. Maloo, S.R., Intodia, S.K. and Pardeep Singh. 2008. *Beej Pradyogiki*. Agrotech Publishing Academy.
11. A.K. Joshi and B.D. Singh. 2005. *Seed Technology*. Kalyani Publishers, New Delhi.
12. Arya, P.S. 2001. *Vegetable Breeding and Seed Production*. Kalyani Pub., Ludhiana
13. Singh, B.D. 2005. *Plant Breeding*. Kalyani Publishing House, New Delhi.
14. Singh, P. 2001. *Essentials of Plant Breeding-Principles and Methods*. Kalyani Publishing House, New Delhi.
15. Shekhawat, S. S. (ed) (2016). *Advances and Current Issues in Agriculture*, Vol. III. Shiksha Prakashan, S. M. S. Highway, Jaipur.

Course Outcomes:

After completing the course, students will be able to:
1. Origin and diversity of different crops, components of inheritance and variations will be understood.
2. Students will be able to apply different breeding techniques for crop improvement
3. Gain knowledge on IPR, patent, Plant Breeders and Farmers Rights followed.

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BAH004- LANDSCAPING	
Teaching Scheme Lectures and Practical: 3 hr./week (2+1) Tutorials: Nil Credits : 3	Examination Schemes Class Test: 20 Teachers Assessment: 5 Attendance: 10 End Semester Exam:50

Course Objectives:

1. To educate students on production technology of cut flowers, ornamental crops and turf management.
2. To study the Landscape use of trees, shrubs and climbers
3. Exposing the students to different styles of landscape gardening.
4. To know about harvesting and post-harvest handling of flower crops.

Syllabus

Theory

Importance and scope of landscaping. Principles of landscaping, garden styles and types, terrace gardening, vertical gardening, garden components, adornments, lawn making, rockery, water garden, walk-paths, bridges, other constructed features etc. gardens for special purposes. Trees: selection, propagation, planting schemes, canopy management, shrubs and herbaceous perennials: selection, propagation, planting schemes, architecture. Climber and creepers: importance, selection, propagation, planting, Annuals: selection, propagation, planting scheme, Other garden plants: palms, ferns, grasses and cacti succulents. Pot plants: selection, arrangement, management. Bio-aesthetic planning: definition, need, planning; landscaping of urban and rural areas, Peri-urban landscaping, Landscaping of schools, public places like bus station, railway station, townships, river banks, hospitals, play grounds, airports, industries, institutions. Bonsai: principles and management, lawn: establishment and maintenance, CAD application.

Practical

Identification of trees, shrubs, annuals, pot plants, Propagation of trees, shrubs and annuals, care and maintenance of plants, potting and repotting, identification of tools and implements used in landscape design, training and pruning of plants for special effects, lawn establishment and maintenance, layout of formal gardens, informal gardens, special type of gardens (sunken garden, terrace garden, rock garden) and designing of conservatory and lath house, Use of computer software, visit to important gardens, parks/institutes.

Text and Reference books:

1. Bose, T. Ornamental Plants and Garden Design in Tropics and subtropics, Vol-2 sets Daya
2. Arora J. S. 2006 Introductory Ornamental Horticulture Falyard Publishers, Ludhiana
3. Gopalaswamiengar, K.S. Tropical and Subtropical Gardening in India, The Biosali Press, Bangalore
4. Bose, T.K. Malti, R.G. Das, B. V. & Das, P. Floriculture and Landscaping (2004) Nayaprakash
5. Bose, T.K. and Mukherjee, D. Gardening in India (2001) Oxford & IBH Publishers
6. Chadha, K.L. and Chaudhary, B. Ornamental Horticulture in India (1986) ICAR
7. H.S.Grewal and Parminder Singh Landscape designing and ornamental plants (2014)
8. K.V.Peter. Ornamental plants (2009) New India publishing agency

9. R.K. Roy Fundamentals of Garden designing (2013) New India publishing agency
10 Randhawa, G.S. Amitabha Mohan Mahayay Floriculture in India (2004) Allied Publishers Pvt. Ltd., New Delhi
11 Tiwari, A.K. Fundamentals of Ornamental Horticulture and Landscaping Gardening NIPA

Course Outcomes:

After completing the course, students will be able to:

- 1.Familiarized with the production technology of cut flowers, ornamental crops and turf management.
- 2.Landscape use of trees, shrubs and climbers were studied.
- 3.Learnt about the various styles of gardening.
- 4.Got familiarized with the harvesting and post-harvest handling of flower crops.

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BAG005- FOOD SAFETY AND STANDARDS	
Teaching Scheme Lectures and Practical: 3 hr./week (2+1) Tutorials: Nil Credits: 3	Examination Schemes Class Test: 20 Teachers Assessment: 5 Attendance: 10 End Semester Exam: 50

Course Objectives:

1. To disseminate the knowledge of properties of products, unit operations and packaging involved in dairy and food engineering.
2. To introduce the students to dairy industry, properties and processing of milk, manufacture of dairy products, sanitation and effluent treatment in dairy industry
3. To expose the students to the fundamental knowledge of food, its properties and different methods of food processing

Syllabus

Theory

Food Safety- Definition, Importance, Scope and Factors affecting Food Safety. Hazards and Risks, Types of hazards- Biological, Chemical, Physical hazards. Management of hazards- Need, Control of parameters. Temperature control. Food storage. Product design. Hygiene and Sanitation in Food Service Establishments- Introduction. Sources of contamination and their control. Waste Disposal. Pest and Rodent Control. Personnel Hygiene. Food Safety Measures. Food Safety Management Tools- Basic concepts. PRPs, GHPs, GMPs, SSOPs etc. HACCP- ISO series. TQM- concept and need for quality, components of TQM, Kaizen. Risk Analysis. Accreditation and Auditing, Water Analysis, Surface Sanitation and Personal Hygiene. Food laws and Standards- Indian Food Regulatory Regime, FSSAI. Global Scenario CAC. Other laws and standards related to food. Recent concerns- New and Emerging Pathogens. Packaging, Product labeling and Nutritional labeling. Genetically modified foods/ transgenics. Organic foods. Newer approaches to food safety. Recent Outbreaks. Indian and International Standards for food products.

Practical

Water quality analysis physico-chemical and microbiological. Preparation of different types of media, Microbiological Examination of different food samples, Assessment of surface sanitation by swab/rinse method, Assessment of personal hygiene, Chemical tests for identification of bacteria, Scheme for the detection of food borne pathogens, Preparation of plans for implementation of FSMS - HACCP, ISO: 22000.

Text and Reference books:

1. Pandey, R.H. 1997. Postharvest Technology of fruits and vegetables (Principles and practices). Saroj Prakashan, Allahabad.
2. Sudheer, K P. and Indira, V. 2000. Post Harvest Engineering of horticultural crops. New India Publishing House.

Course Outcomes:

After completing the course, student will be able to:

1. The students will gain knowledge about dairy and food processing engineering
2. The students will understand the process of manufacturing of dairy products and thermal processing of food.

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3. Project Directorate of Biological Control. 1994. Technology for mass production of natural enemies. Technical Bulletin-4.
4. Rabindra, R.J., Kennedy, J.A., Subrahiah, N., Rajeshkharan, D. and Srinivasan, M.R. 2001. Microbial control of crop pests. ITM J.
5. Dhaliwal, GS & Koul, O. P. 1997. Pesticides and pest management. Kalyani Publ., New Delhi

Course Outcomes:

After completing the course students will be able to:

1. Development of biofertilizers and biopesticides
2. Understanding the impacts of soil, crop and environmental health
3. Development of skill to set up bio-fertilizer and biopesticides units

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BAG007- PROTECTED CULTIVATION	Teaching Scheme Lectures and Practical: 3 hr./week (2+1) Tutorials: Nil Credits: 3	Examination Schemes Class Test: 20 Teachers Assessment: 5 Attendance: 10 End Semester Exam: 50

Course Objectives:

1. To enable the students to know the basics of protected cultivation.
2. To impart knowledge about the various techniques involved in protected cultivation.
3. To provide technical know-how on secondary agriculture.

Syllabus

Theory

Protected cultivation- importance and scope, Status of protected cultivation in India and World types of protected structure based on site and climate, Climatic material involved in greenhouse/poly house. Greenhouse design, environment control, artificial lights, Automation. Soil preparation and management, Substrate management, Types of benches and containers. Irrigation and fertigation management, Propagation and production of quality planting material of horticultural crops. Greenhouse cultivation of important horticultural crops – rose, carnation, chrysanthemum, gerbera, orchid, anthurium, lily, tulip, tomato, bell pepper, cucumber, strawberry, etc. Cultivation of economically important medicinal and aromatic plants, Off-season production of flower and vegetable, Insect pest and disease management.

References:

1. Brahma Singh, Brij Singh, Naveed Sabir and Munir Hussain, 2014, *Advances in Protected Cultivation*, New India Publishing Agency, New Delhi.
2. Donell Hunt, 2013, *Power and Machinery for Greenhouse*, 10th edition, MedTec Publishers, New Delhi.
3. Jana, B. L., 2008, *Precision Farming*, AgroTech Publishing Academy, Green house: Science and Technology, 2016, Kailash S. S. C. Kaushik and A. K. Mishra, Himanshu Publication, Udaipur.
4. Green House Technology - Application and Practice, Sharma A. and V. A. S. Bokhe, 2006, Agro Tech, publication, Udaipur.
5. Principles of Agricultural Engineering, Vol. I, 2012, Michael A. M. and T. P. Ojha, Jain Brothers, New Delhi.
6. Post Harvest Technology of Cereals, Pulses and Oil Seeds, 1979, Chakraverty, A. Oxford and IBH Pub, New Delhi.
7. Agricultural Process Engineering, 1955, Henderson, G. M. and R. L. Perry, John Wiley and Sons, New York.
8. Unit operation of Agricultural Engineering, 2004, S. S. H. M. and Singh, K. K. Vikas Publication House, New Delhi.

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| 9. K. RadhaManohar and C. Ignathianilane, 2015. Greenhouse Technology and Management. 2nd edition. B. S. Publications. |
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Course Outcomes:

After completing the course, students will be able to:

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| 1. The students will understand the basic concepts of protected cultivation. |
| 2. The students will design improved protected cultivation measures. |
| 3. The students will analyse cost economics in secondary agriculture. |

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BAG008- MICRO PROPAGATION TECHNOLOGIES	
Teaching Scheme Lectures and Practical: 3 hr./week (1+2) Tutorials: Nil Credits: 3	Examination Schemes Class Test: 20 Teachers Assessment: 5 Attendance: 10 End Semester Exam:50

Course Objectives:

1. To impart skill oriented knowledge on media preparation and handling of tools for propagation
2. To teach students on propagation methods
3. To familiarize with the maintenance and after care of propagated plants

Syllabus

Theory

Introduction, History, Advantages and limitations; Types of cultures (seed, embryo, organ, callus, cell), Stages of micropropagation, Axillary bud proliferation (Shoot tip and meristem culture, bud culture), Organogenesis (callus and direct organ formation), Somatic embryogenesis, cell suspension cultures, Production of secondary metabolites, Somaclonal variation, Cryopreservation.

Practical

Identification and use of equipments in tissue culture, Laboratory, Nutrition media composition, sterilization techniques for media, containers and small instruments, sterilization techniques for explants, Preparation of stocks and working solution, Preparation of working medium, Culturing of explants: Seeds, shoot tip and single node, Callus induction, Induction of somatic embryos, regeneration of whole plants from different explants, Hardening procedures.

References:

1. Chawala H S (2000). *Introduction to Plant Biotechnology*. Oxford & IBH, New Delhi.
2. Gupta, P. K. (2008). *Elements of Biotechnology*. Rastogi Publications, Meerut
3. Ray V. Herren (2005). *Introduction to Biotechnology (An Agricultural revolution)*
4. Shekhawat, M. S. (2013). *Plant Biotechnology, In vitro Principles, Techniques and Applications*. MJP Publishers, Chennai
5. Mascarenhas, A. F. (2008). *Plant Book of Plant Tissue Culture*. ICAR, New Delhi
6. Singh BD. 2005. *Biotechnology, Expanding Horizons*. Anand Publishers, New Delhi.

Course Outcomes:

After completing the course, students will be able to
1. Students benefited with hands-on training in media preparation handling of tools for propagation
2. Students learnt about mother plant selection and propagation techniques.
3. Students familiarized with the maintenance and after care of propagated plants

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B.A. 2009- HI-TECH. HORTICULTURE	
Teaching Scheme	Examination Schemes
Lectures and Practical: 3 hr./week (2+1)	Class Test: 20
Tutorials: Nil	Teacher's Assessment: 5
Credits: 3	Attendance: 10
	End Semester Exam: 50

Course Objectives:

1. To teach fundamentals of horticulture and horticultural practices
2. To impart knowledge on different types of plant propagation and also structures used in farms
3. To expose the students to different horticulture vegetables, fruits, species, aromatic and medicinal crops.

Syllabus

Theory

Introduction & importance; Nursery management and mechanization; micro propagation of horticultural crops; Modern field preparation and planting methods, Protected cultivation: advantages, controlled conditions, method and techniques. Micro irrigation systems and its components; EC, pH based fertilizer scheduling, energy management, high density orcharding, Components of precision farming: Remote sensing, Geographical Information System (GIS), Differential Geo-positioning System (DGPS), Variable Rate applicator (VRA), application of precision farming in horticultural crops (fruits, vegetables and ornamental crops); mechanized harvesting of produce.

Practical

Types of polyhouses and shade net houses, Intercropping operations, tools and equipments identification and application. Micro propagation, Drip irrigation, micro-irrigation, EC, pH based fertilizer scheduling, nursery management, visit to PG horticultural nursery.

References:

1. Hartman, HT and Kester, DE (1986). Plant propagation: Principles and practices. Prentice Hall of India Pvt. Ltd., Bombay.
1. Gill, SS, Bal, JS and Sharma, AS (1985). Raising Fruit Nurseries. Kalyani Publishers, New Delhi.
2. Chadha, K.L. Handbook of horticulture (2002) ICAR, New Delhi
3. Chadda K.L. Advances in horticulture (2009) Narosa Publishing House, New Delhi
4. Anonymous 2003. *Proc. All India Seminar on Protected and Prospects for Protective Cultivation*. Organised by Institute of Engineers, Ahmedabad, Pp.12-13, 2003.
5. Chandra, S & Som, V. 2001. *Cultivating Vegetables in Green House*. Indian Horticulture 45: 17- 18.
6. Prasad S & Kumar U. 2005. *Green house Management of Horticultural Crops*. 2nd Ed. Agrobios.
7. Tiwari GN. 2003. *Green House Technology for Cultivation of Environment*. Narosa Publ. House.

Course Outcomes:

After completing the course, students will be able to:	
1. Fundamentals of horticulture and classification of crops learned.	
2. Different types of plant propagation techniques and structures used in the farm studied.	
3. Gained practical knowledge in plant propagation and pest and disease control	

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BAGD10- WEED MANAGEMENT	
Teaching Scheme Lectures and Practical: 3 hr./week (2+1) Tutorials: Nil Credits: 3	Examination Schemes Class Test: 20 Teachers Assessment: 5 Attendance: 10 End Semester Exam: 50

Course Objectives:

1. To identify the weed species, present in different agro-ecosystems
2. To study the different weed control methods
3. Learn about herbicides and its formulations and integrated weed management

Syllabus

Theory

Introduction to weeds, characteristics of weeds their harmful and beneficial effects on ecosystem. Classification, reproduction and dissemination of weeds. Herbicide classification, concept of adjuvant, surfactant, herbicide formulation and their use. Introduction to mode of action of herbicides and selectivity. Allelopathy and its application for weed management. Bio-herbicides and their application in agriculture. Concept of herbicide mixture and utility in agriculture. Herbicide compatibility with agro-chemicals and their application. Integration of herbicides with non chemical methods of weed management. Herbicide Resistance and its management.

Practical

Techniques of weed preservation, Weed identification and their losses study, Biology of important weeds, Study of herbicide formulations and mixture of herbicide, Herbicide and agrochemicals study, Shift of weed flora study in long term experiments, Study of methods of herbicide application, spraying equipments, Calculations of herbicide losses and weed control efficiency and weed index.

Reference:

1. Saraswat, V.N., Bhan, V.M. and Yaduraju, N.T. 2003. Weed Management, ICAR, New-Delhi.
2. Gupta, O.P. 2015. Weed Management: Principles and Practices (2nd Ed.), Agribios (India), Jodhpur.
3. Gupta, O.P. 2016. Modern Weed Management, Agribios (India), Jodhpur.
4. Das, T.K. 2008. Weed Science: Basics and Application, Jain Brothers, New-Delhi.
5. Rao, V.S. 2000. Principles of Weed Science (2nd edn.), Oxford and IBN Publishing Co., New Delhi.

Course Outcomes:

After completing the course, students will be able to
1. Will develop capability to identify the weeds of different crops.
2. Learn different methods to control weeds
3. Understanding different modules of IWM for different crops
4. Getting knowledge on different herbicides and their formulation

BAG011- SYSTEM SIMULATION AND AGROADVISORY	
Teaching Scheme Lectures and Practical: 3 (1+2) Tutorials: Nil Credits: 3	Examination Schemes Class Test: 20 Teaching Assessment: 5 Attendance: 10 End Semester Exam: 50

Course Objectives:

1. To learn the simulation modeling using large number of variables
2. To predict yield and crop response under different environment and input management
3. To rationalize inputs and practices for higher efficiencies
4. To develop decision support systems

Syllabus

Theory

System Approach for representing soil-plant-atmosphere continuum, system boundaries, Crop models, concepts & techniques, types of crop models, crop requirements, relational diagrams. Evaluation of crop response to weather elements. Elementary crop growth models; calibration, validation, verification and sensitivity analysis. Potential and achievable crop production- concept and modelling techniques for their estimation. Crop production in moisture and nutrients limited conditions; components of soil water and nutrients balance. Weather forecasting, types, methods, tools & techniques, forecast verification. Value added weather forecast, ITK for weather forecast and its validity; Crop weather advisories; Preparation of agro-advisory bulletin based on weather forecast. Use of crop simulation model for preparation of Agro-advisory and its effective dissemination.

Practical

Preparation of crop weather advisories, Preparation of agro-advisories based on weather forecast using various approaches such as pie charts, Working with statistical and simulation models for crop growth, Potential & achievable production; yield increase, Forest & disease forecasting models, Simulation with management of water and soil for management actions, Sensitivity analysis of varying weather and management parameters. Hands-on practical approaches in data analysis and preparation of agro-advisory, past and present technological data for medium range weather forecast, Feedback from farmers about the agro-advisory.

Course Outcomes:

After completing the course, students will be able to:
1. Development of skills for optimization of inputs and management practices.
2. Understanding climatic factors and their influence on crop growth and yield.
3. Understanding strategies and approaches for mitigation of climate change.

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BA AGRICULTURAL JOURNALISM	
Teaching Scheme	Examination Schemes
Lectures and Practical: 3 hrs. (2 + 1)	Class Test: 20
Tutorials: Nil	Teachers Assessment: 5
Credits: 3	Attendance: 10
	End Semester Exam: 50

Course Objectives:

1. The course is intended to provide the students with the concept of extension education and its importance in Agricultural Development.
2. To expose the students with various rural development programmes aimed at poverty alleviation and to increase employment opportunities and socio analysis.
3. To make the students learn about the new innovations being brought into the Agricultural Extension in India.
4. To learn about the new trends in agriculture extension.

Syllabus

Theory

Agricultural Journalism: The nature and scope of agricultural journalism characteristics and training of the agricultural journalist, how agricultural journalism is similar to and different from other types of journalism. News papers and magazines as communication media: Characteristics; kinds and functions of newspapers and magazines, characteristics of newspaper and magazine readers. Form and content of newspapers and magazines. Style of language of newspapers and magazines, parts of newspaper and magazines. The agricultural story: Types of agricultural stories, subject matter of the agricultural story, structure of the agricultural story. Gathering agricultural information: Sources of agricultural information, interviews, coverage of events, abstracting from research materials, wire services as agricultural news sources. Writing the story: Organizing the story, treatment of the story, writing the news lead and the body, readability measures. Illustrating agricultural story: Use of photographs, use of artwork (graphs, charts, maps, etc.), captions. Editing: Copying, Copy proofing, headline and title writing, proofreading, etc.

Practical

Practice in interviewing, gathering agricultural stories, gathering stories from research and scientific materials and from wire services, Writing of news type, agricultural stories, Selecting pictures and artwork for the news type of story, Practice in headline writing, headline and title writing, proofreading, layout proofing copy with a headline, formula, etc. to a publishing office.

References:

1. Ray, G. L. and Mondal, J. K. Agricultural Journalism including communication, Farm and Rural Journalism, Public Relations, Central Publication, 2007.
2. Bhaskaran et. AL. The Role of Journalism and Mass Communication, Agri-tech Publishing Company.
3. Narayanaswamy V. The Art and Science of Writing, Agri-tech Publishing, Delhi.
4. Kamat, M.G., Writing for the Media, Agri-tech Publishing, Delhi.
5. Indu Grover. Mass media and communication.

6. Arvind Kumar (1999). *Mass Media. An Introduction*, New Delhi.
7. Bhatt, S.C. (1993) *Basic Principles of Mass Media and Publications*, Delhi
8. Bhatnagar, R. (2001). *Mass Media and Broadcast*, All India Publisher Distributors, Delhi
9. Katyal, V.P (2007). *Principles of Media Ethics*, New Delhi Publishers, New Delhi.
10. Subin Mohan et al (2001) *Mass Media on farm*, New Delhi Publishers, Karnal.
11. A.K. Singh, 2014. *Applied Mass Communication and Public Relations*, Agrobios, Jodhpur

Course Outcomes:

After completing the course, students will be able to
1.Students learned the concept of cultural extension and development programs.
2.New innovations in the area of cultural extension media understood
3. Gained practical knowledge in research development and self-help groups
4.New trends in agriculture extension learned

Signature
Registrar
Invertis University
Bareilly