Fifth Dean

B.Sc (Hons.) Agriculture Second Year/ Third Semester

Crop Production Technology- I (kharif Crops)

Course Code: AG 215

Course Objective

1. To know about the origin, distribution, climatic requirements and varieties of *kharif* crops
2. To learn about the method of nursery preparation and transplanting in rice.
3. To familiarize the students with the identification of common weeds in the *kharif* crops
4. To study about the morphological description of *kharif*crops.
5. To learn the yield contributing characters and able to calculate the yield in the crops.

Course Outcome:

After completion of the course, a student will be able to

COURSE OUTCOME (CO)	DESCRIPTION
CO1	Students learned the origin, distribution, climatic requirements and varieties of *kharif* crops
CO2	Students learned the method of nursery preparation and transplanting in rice.
CO3	Students can identify the common weeds of the *kharif*crops
CO4	Learned the morphological description of *kharif*crops.
CO5	Students know and can calculate the yield in the kharif season crops

	CO	**PO1** Basic Agriculture knowledge	**PO2** Problem Solving	**PO3** Field Experimentations	**PO4** Modern implementation usage	**PO5** Modern Horticultural implements	**PO6** Modern plant protection implements	**PO7** Extension Programme	**PO8** Environment and sustainability	**PO9** Ethics	**PO10** Individual and team work	**PO11** Communication	**PO12** Lifelong learning
CO1	Students learned the origin, distribution, climatic requirements and varieties of *kharif* crops	3		3	1	1	1		2		3		2
CO2	Students learned the method of nursery preparation and transplanting in rice.	3	1	3	2	1	1		2		3		3
CO3	Students can identify the common weeds of the *kharif*crops	3		3	1	1	3		3	2	3		3
CO4	Learned the morphological description of *kharif*crops.	3	1	3	1	1	1		1		2		3
CO 5	Students know and can calculate the yield in the kharif season crops	3	3	3	1	1	1		1		3		3
3: Strong contribution, 2: average contribution, 1: Low contribution													

Fundamentals of Plant Breeding

Course Code: AG 216

Course Objective

1. Basic knowledge of concept, nature , history and role of plant breeding.
2. To learn about Male sterility, Self-incompatibility, modes of reproduction and genetics with relation to plant breeding
3. To study about the biometrical techniques employed in plant breeding

4. To familiarize the students about the genetic basis and breeding methods in self-pollinated, cross-pollinated and asexually propogated crops.

5. To aware the students about the concepts of wide hybridization, polyploidy, mutation breeding and role of biotechnology in the plant breeding

Course Outcome:

After completion of the course, a student will be able to

COURSE OUTCOME (CO)	DESCRIPTION
CO1	Students learned about the basics, role, history and functions of plant breeding
CO2	Learned the concept of male sterility, self-incompatibility and mode of reproduction and also role of genetics in plant breeding
CO3	Students can employ and practice biometrical analysis in plant breeding
CO4	Knows the genetic basis and various methods in different breeding populations
CO5	Familiarized in the role of biotechnology, polyploidy, wide hybridization and mutation breeding..

	CO	PO1 Basic Agriculture knowledge	PO2 Problem Solving	PO3 Field Experimentations	PO4 Modern implementation usage	PO5 Modern Horticultural implements	PO6 Modern plant protection implements	PO7 Extension Programme	PO8 Environment and sustainability	PO9 Ethics	PO10 Individual and team work	PO11 Communication	PO12 Lifelong learning
CO1	Students learned about the basics, role, history and functions of plant breeding	3		3	1	1	1		3		3		3
CO2	Learned the concept of male sterility, self-incompatibility and mode of reproduction and also role of genetics in plant breeding	3		3	1	1	1		3		3		3
CO3	Students can employ and practice biometrical analysis in plant breeding	3		3	2	1	1		3		3		3
CO4	Knows the genetic basis and various methods in different breeding populations	3		3	2	1	3		3		3		3
CO 5	Familiarized in the role of biotechnology, polyploidy, wide hybridization and mutation breeding..	3		3	3	1	3		3		3		3
3: Strong contribution, 2: average contribution, 1: Low contribution													

Agricultural Finance and Co-Operation

Course Code: BM 271

Course Objective

1. To know about agricultural finance in India.
2. To understand function of various agriculture financial institution.
3. To understand Preparation and analysis of financial statements
4. To know about agricultural cooperation in India

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Course Outcome:

After completion of the course, a student will be able to

COURSE OUTCOME (CO)	DESCRIPTION
CO1	Understand various sources of agricultural finance
CO2	Students are able to understand Preparation and analysis of balance sheet
CO3	Students are able to understand the principles of cooperation, significance of cooperatives in Indian agriculture
CO4	Able to preparation of project reports and SWOT analysis
CO5	Acquired knowledge of Techno-economic parameters for preparation of projects

CO-PO MAPPING:

	CO	**PO1** Basic Agriculture knowledge	**PO2** Problem Solving	**PO3** Field Experimentations	**PO4** Modern implementation usage	**PO5** Modern Horticultural implements	**PO6** Modern plant protection implements	**PO7** Extension Programme	**PO8** Environment and sustainability	**PO9** Ethics	**PO10** Individual and team work	**PO11** Communication	**PO12** Lifelong learning
CO1	Understand Sources of agricultural finance	3	3					2	3		2	2	3
CO2	Students are able to understand Preparation and analysis of balance sheet	2	3					2	3		2	2	3
CO3	Students are able to understand the principles of cooperation, significance of cooperatives in Indian agriculture	2	2					1	3		1	1	3
CO4	Able to preparation of project reports and SWOT analysis	2	3					2	3		3	2	3
CO 5	Acquired knowledge of Techno-economic parameters for preparation of projects	2	3					2	3		2	2	3
3: Strong contribution, 2: average contribution, 1: Low contribution													

Fundamentals of Plant Pathology

Course Code: AG217

Course objective

1. To know about plant diseases, scope and objectives of Plant Pathology
2. Familiar with Causes / factors affecting disease development.
3. Knowledge of Important plant pathogenic organisms.
4. Knowledge of Epidemiology and plant disease management

Course Outcome

After completion of course, a student will be able to

COURSE OUTCOME (CO)	DESCRIPTION
CO1	Able to know what are the basic criteria regarding plant diseases and Plant Pathology
CO2	Can use the basic knowledge regarding different factors affecting disease development
CO3	Students are able to know about Important plant pathogenic organisms
CO4	Study of Epidemiology and factors affecting it
CO5	By the end of course students will be able to control of different pests by plant disease management.

CO-PO MAPPING

	CO	**PO1** Basic Agricultural knowledge	**PO2** Problem Solving	**PO3** Lab/Field Experimentations	**PO4** Modern implements usage	**PO5** Modern Horticultural/ Agricultural implements	**PO6** Modern plant protection implements	**PO7** Extension Programme	**PO8** Ethics	**PO9** Individual and team work	**PO10** Communication	**PO11**Lifelong learning
CO1	Able to know what are the basic criteria regarding plant diseases and Plant Pathology	3	3	2	2	3		3		1	1	3
CO 2	Can use the basic knowledge regarding different factors affecting disease development	3	3	3	2	3	3	3				2
CO 3	Students are able to know about Important plant pathogenic organisms	3	3	2		3	1	3			1	3
CO 4	Study of Epidemiology and factors affecting it	3	3	3	3		2	3		2	1	3
CO5	By the end of course students will be able to control of different pests by plant disease management.	3	3	3	3	1	3	3	1			3
1: Low contribution, 2: average contribution, 3: Strong contribution												

Farm Machinery and Power

Course Code: AE246

Course Objective

1. To introduce the basic knowledge of farm mechanization.
2. To educate the students about working principles, care, repair and maintenance of I C engine and other farm implements.
3. To impart the knowledge of operation, care, repair and maintenance of tractor.
4. To impart the knowledge of tillage, sowing, planting, harvesting, horticultural, hill agriculture, intercultural implements.
5. To provide the knowledge to solve numerical problems based on power, draft, cost of tractor operation with attached implements.

Course Outcome:

After completion of the course, a student will be able to

COURSE OUTCOME (CO)	DESCRIPTION
CO1	know the basic knowledge of farm mechanization and can promote the application of farm machinery in agriculture.
CO2	know the working principle of I C engine and they can repair and maintain the I C engine.
CO3	know the tractor operation in the field and students can repair and maintain the tractor.
CO4	have the knowledge about different farm implements like tillage, sowing, planting, and others.
CO5	have the ability to solve the numerical problems based on power, draft, cost of tractor operation with attached implements.

CO-PO MAPPING:

	CO	**PO1** Basic Agriculture knowledge	**PO2** Problem Solving	**PO3** Field Experimentations	**PO4** Modern implements usage	**PO5** Modern Agricultural/ Horticultural implements	**PO6** Modern plant protection implements	**PO7** Extension Programme	**PO8** Environment and sustainability	**PO9** Ethics	**PO10** Individual and team work	**PO11** Communication	**PO12** Lifelong learning
CO1	know the basic knowledge of farm mechanization and can promote the application of farm machinery in agriculture.	3	1	3	2	3	3				3		3
CO2	know the working principle of I C engine and they can repair and maintain the I C engine.	2	3	2	3	3	2				3		3
CO3	know the tractor operation in the field and students can repair and maintain the tractor.	3	2	3	3	3	3				2		3
CO4	have the knowledge about different farm implements like tillage, sowing, planting, and others.	3	1	2	2	3	3				2		3
CO5	have the ability to solve the numerical problems based on power, draft, cost of tractor operation with attached implements.	2	3	2	2	2	2				2		3
3: Strong contribution, 2: average contribution, 1: Low contribution													

Production Technology for Vegetables and Spices

Course Code: HT 226

Course objective:

1. To give knowledge about importance and scope of vegetables and spices in human nutrition.
2. To know about origin, geographical distribution, soil and climate requirement of vegetable crops.
3. Familiar with different improved varieties and methods of sowing in different vegetables.
4. Knowledge of various inter cultural operations and their managementfor vegetable crops.
5. Knowledge of crop protection measure in different crops

Course Outcome

After completion of course, a student will be able to

COURSE OUTCOME (CO)	DESCRIPTION
CO1	Able to understand about the basic criteria for selection of vegetable crops on the basis of soil and climate requirement.
CO2	Learn the basic knowledge regarding different cultural practices followed for vegetable crops
CO3	Able to know about sowing time of specific varieties for different vegetables according to region and season.
CO4	Study of irrigation and nutrient management and their applications in production vegetables
CO5	By the end of course students will be able to know different physiological disorders and can control different insect pests and diseases.

CO-PO MAPPING:

	CO	**PO1** Basic Agriculture knowledge	**PO2** Problem Solving	**PO3** Field Experimentations	**PO4** Modern implementation usage	**PO5** Modern Agricultural /Horticultural implements	**PO6** Modern plant protection implementsimplementsimplements	**PO7** Extension Programme	**PO8** Environment and sustainability	**PO9** Ethics	**PO10** Individual and team work	**PO11** Communication	**PO12** Lifelong learning
CO1	Able to understand about the basic criteria for selection of vegetable crops on the basis of soil and climate requirement.	3	3	2	1	2	2	2	3				3
CO2	Learn the basic knowledge regarding different cultural practices followed for vegetable crops	3	3	3	1	2	2	1	3				3
CO3	Able to know about sowing time of specific varieties for different vegetables according to region and season.	3	3	2	1	2	3	2	3				3
CO4	Study of irrigation and nutrient management and their applications in production vegetables	3	3	3	1		2	2	3				3
CO5	By the end of course students will be able to know different physiological disorders and can control different insect pests and diseases.	3	3		1		2		3				3
3: Strong contribution, 2: average contribution, 1: Low contribution													

Name of Course/subject: Environmental Studies and Disaster Management

Course Code: ES217

Course Objective

- To gain the knowledge of scope and importance of multidisciplinary nature of environmental studies.
- To learn about the natural resources and its categories; renewable and non-renewable.
- To study about the concept of biodiversity and it's conservation
- To familiarize the students about the definition, causes, effects and control of environmental pollution.
- To aware the students about the meaning and nature of natural disasters.

Course Outcome:

After completion of the course, a student will be able to

COURSE OUTCOME (CO)	DESCRIPTION
CO1	Students learned about the knowledge of scope and importance of multidisciplinary nature of environmental studies
CO2	Learned about the different types of natural resources.
CO3	Students learned about the concept of biodiversity and it's conservation.
CO4	Students familiarize about the definition, causes, effects and control of environmental pollution.
CO5	Learned about the meaning, types and effects of natural disasters.

CO-PO mapping

	CO	**PO1** Basic Agriculture knowledge	**PO2** Problem Solving	**PO3** Field Experimentations	**PO4** Modern implementation usage	**PO5** Modern Horticultural implements	**PO6** Modern plant protection implements	**PO7** Extension Programme	**PO8** Environment and sustainability	**PO9** Ethics	**PO10** Individual and team work	**PO11** Communication	**PO12** Lifelong learning
CO1	Students learned about the knowledge of scope and importance of multidisciplinary nature of environmental studies	2	1	1	1	1	1		3		3		3
CO2	Learned about the different types of natural resources.	2	1	2	1	1	1		3		3		3
CO3	Students learned about the concept of biodiversity and it's conservation.	2	1	1	1	1	1		3		2		3
CO4	Students familiarize about the definition, causes, effects and control of environmental pollution.	2	1	1	1	1	1		3		3		3
CO5	Learned about the meaning, types and effects of natural disasters.	2	1	1	1	1	1		3		2		3
3: Strong contribution, 2: average contribution, 1: Low contribution													

Livestock & Poultry Management, AG218

Objectives:

- To study External body parts of cattle and buffalo.
- To study Methods of identification marks and dehorning of animal.
- Study of computerized database on dairy farm and Vaccination and control of ecto and endo parasites in cattle and buffalo.
- Preparation of feeding schedule and feeding different categories of cattle and buffalo.
- To study about the method of milking and composition.

Outcome:

After completion of the course, a student will be able to

COURSE OUTCOME (CO)	DESCRIPTION
CO1	Students gain knowledge regarding livestock in Agriculture.
CO2	They understand the basics of knowledge of breeds of animals.
CO3	They gain knowledge regarding various livestock programs in India.
CO4	They have knowledge about the different livestock programs of Govt of India.
CO5	Able to know about the Role of women Place of livestock in the national economy.

CO-PO MAPPING:

	CO	**PO1** Basic Agriculture knowledge	**PO2** Problem Solving	**PO3** Field Experimentations	**PO4** Modern implementation usage	**PO5** Modern Horticultural implements	**PO5** Modern Agricultural/Horticultural implements	**PO7** Extension Programme	**PO8** Environment and sustainability	**PO9** Ethics	**PO10** Individual and team work	**PO11** Communication	**PO12** Lifelong learning
CO1	Students gain knowledge regarding livestock in Agriculture.	3	1	2	1	1	3	3	3		3	1	3
CO2	They understand the basics of knowledge of breeds of animals.	3	3	3	1		3	3	3		3	3	2
CO3	They gain knowledge regarding various livestock programs in India.	3	2	1	1		2	3	3	1	1	2	3
CO4	They have knowledge about the different livestock programs of Govt of India.	3	2	2	2		3	3	3		2	3	3
CO 5	Able to know about the Role of women Place of livestock in the national economy.	3	1	1	1	1	2	3	3		2	3	3
3: Strong contribution, 2: average contribution, 1: Low contribution													

B.Sc (Hons.) Agriculture First Year/ Fourth Semester

Crop Production Technology–II (Rabi Crops)

Course Code: AG221
Course Objectives

- Basic concept of origin, geographical distribution, economic importance, soil and climatic requirements, varieties, cultural practices and yield of Rabi crops.
- Knowledge of soil and climatic requirements, varieties, cultural practices and yield of Rabi crops.
- Basic knowledge of origin, geographical distribution, economic importance, soil and climatic requirements, varieties, cultural practices and yield of oil seed crops and pulses crops.
- Knowledge of oil and climatic requirements, varieties, cultural practices and yield of fodder crops.
- Basic concept of origin, geographical distribution, economic importance, soil and climatic requirements, varieties, cultural practices and yield of medicinal and aromatic crops

COURSE OUTCOMES (CO):

After completion of the course, a student will be able to

COURSE OUTCOME (CO)	DESCRIPTION
CO1	Students will have basic knowledge of origin, geographical distribution, economic importance, soil and climatic requirements, varieties, cultural practices and yield of Rabi crops
CO2	Knowledge of soil and climatic requirements, varieties, cultural practices and yield of Rabi crops
CO3	Basic knowledge of origin, geographical distribution, economic importance, soil and climatic requirements, varieties, cultural practices and yield of oil seed crops and pulses crops
CO4	Basic concept of origin, geographical distribution, economic importance, soil and climatic requirements, varieties, cultural practices and yield of medicinal and aromatic crops
CO5	Knowledge of oil and climatic requirements, varieties, cultural practices and yield of fodder crops and cereal crops

CO-PO MAPPING:

	CO	PO 1. Basic Agriculture knowledge	PO 2. Problem Solving	PO 3. Field Experimentations	PO 4. Modern implementation usage	PO 5. Modern Horticultural implements	PO 6. Modern Plant Protection implements	PO 7. Extension Program	PO 8. Environment and sustainability	PO 9. Ethics	PO 10. Individual and team work
CO1	Students will have basic knowledge of origin, geographical distribution, economic importance, soil and climatic requirements, varieties, cultural practices and yield of *Rabi* crops	3	3	3	3	3	2	3	3	2	3
CO2	Knowledge of soil and climatic requirements, varieties, cultural practices and yield of *Rabi* crops	3	2	3	2	2	2	3	2	1	2
CO3	Basic knowledge of origin, geographical distribution, economic importance, soil and climatic requirements, varieties, cultural practices and yield of oil seed crops and pulses crops	3	2	3	3	3	2	3	2	2	2
CO4	Basic concept of origin, geographical distribution, economic importance, soil and climatic requirements, varieties, cultural practices and yield of medicinal and aromatic crops	2	2	2	2	2	2	2	3	2	2
CO5	Knowledge of oil and climatic requirements, varieties, cultural practices and yield of fodder crops and cereal crops.	2	3	2	2	2	2	2	3	2	2
3: Strong contribution, 2: average contribution, 1: Low contribution											

Production technology for ornamental crops, maps and landscaping

Course Code: HT-227

Course Objectives:

- Importance and scope of ornamental crops, medicinal and aromatic plants and landscaping. Principles of landscaping.
- The objective is to provide the training to the trainers in the production and processing of medicinal and aromatic plants
- Access to our production fields, laboratory and interaction with the scientists will provide opportunities to the participants to learn and understand alternative crop production processing and quality aspects
- Understand the post harvest technology of medicinal and aromatic plants Understand cold chain management.
- To make the students aware of post harvest technology and management of medicinal and aromatic plants.

COURSE OUTCOMES (CO):

After completion of the course, a student will be able to

COURSE OUTCOME (CO)	**DESCRIPTION**
CO1	The course is designed to cover a wide spectrum of the subject matter to provide complete overview of this sector.
CO2	Demonstrate a fundamental understanding of plant identification, selection, use and maintenance of plant material best suited for conventional and sustainable landscapes
CO3	To know importance of Ornamental crops, Medicinal and Aromatic crops.
CO4	Aims at obtaining maximum production at minimum cost.
CO5	To study the different cut flowers like rose, gerbera and carnation under protected conditions

CO-PO MAPPING:

	CO	PO1 Basic Agriculture knowledge	PO2 Problem Solving	PO3 Field Experimentations	PO4 Modern implements usages	PO5 Modern Agricultural/Horticultural implements	PO6 Modern plant protection implements	PO7 Extension Programme	PO8 Environment and sustainability	PO9 Ethics	PO10 Individual and team work	PO11 Communication	PO12 Lifelong learning
CO1	The course is designed to cover a wide spectrum of the subject matter to provide complete overview of this sector.	3	3	2	2	3	3		3	2	1	1	3
CO2	Demonstrate a fundamental understanding of plant identification, selection, use and maintenance of plant material best suited for conventional and sustainable landscapes	3	2	3	2	3	2		3	2	3	1	2
CO3	To know importance of Ornamental crops, Medicinal and aromatic crops.	3	2	3	2	3	2		3	3	2	1	3
CO4	Aims at obtaining maximum production at minimum cost.	3	2	3	2	3	3		3	2	3	3	3
CO5	To study the different cut flowers like rose, gerbera and carnation under protected conditions	3	1	1	2	3	2		3	3	3	2	3
3: Strong contribution, 2: average contribution, 1: Low contribution													

Renewable Energy and Green Technology

Course Code: AE275

Course objective:

1. To provide information to the students about classification of energy resources.
2. To impart knowledge to the student about the role and importance of energy resources in agricultural sector.
3. To make familiarization with types of biogas plants, gasifiers, biodiesel and bio oil production.
4. To make familiarization with solar energy gadgets.
5. To study about the introduction and application of wind and solar energy.

Course Outcome:

After completion of course, a student will be able to

COURSE OUTCOME (CO)	DESCRIPTION
CO1	Understand the various classification of energy resources and their contribution in agricultural sector.
CO2	Familiarization with biomass utilization for biofuel production and their application.
CO3	Familiarization with solar energy gadgets, solar cooker solar water pump and solar distillation collection and their application.
CO4	Learn about bio gas and various models of bio gas plant and gasifiers.
CO5	Able to understand bio alcohol, biodiesel and bio-oil production and their utilization as bioenergy resources, introduction of solar energy.

CO-PO MAPPING:

	CO	**PO1** Basic Agriculture knowledge	**PO2** Problem Solving	**PO3** Field Experimentations	**PO4** Modern implementation usage	**PO5** Modern Agricultural /Horticultural implements	**PO6** Modern plant protection implements	**PO7** Extension Program	**PO8** Environment and sustainability	**PO9** Ethics	**PO10** Individual and team work	**PO11** Communication	**PO12** Lifelong learning
CO1	Understand the various classification of energy resources and their contribution in agricultural sector.	3	1	1	2	2	1	2	3	1	1	1	3
CO2	Familiarization with biomass utilization for biofuel production and their application.	3	2		1		1	1	3	1	1	1	3
CO3	Familiarization with solar energy gadgets, solar cooker solar water pump and solar distillation collection and their application.	3	2	1	1	2	2	2		1	1	1	3
CO4	Learn about bio gas and various models of bio gas plant and gasifiers.	3	2	1	3	3		3		1	1	1	3
CO5	Able to understand bio alcohol, biodiesel and bio-oil production and their utilization as bioenergy resources, introduction of solar energy.	3	2	1	3		2		1	1	1	1	3
3: Strong contribution, 2: average contribution, 1: Low contribution													

Problematic soils and their management

Course Code: AG222

Course Objective

1. To introduce the concept of problematic soil and its management.
2. To learn about remote sensing and GIS technologies for diagnosis of problematic soil.
3. To study about the reclamation of problematic soil under different Agro systems.
4. To familiarize the students about the concept of Irrigation water quality.
5. To aware the students about the Land capability classification.

Course Outcome:

After completion of the course, a student will be able to

COURSE OUTCOME (CO)	DESCRIPTION
CO1	Students learned about the different types of problematic soil and its management.
CO2	Learned about the remote sensing and GIS technologies for diagnosis of problematic soil.
CO3	Students learned about the reclamation of problematic soil under different Agro systems. .
CO4	Students knew about the concept of Land capability classification
CO5	Familiarized about the Irrigation water quality

CO-PO MAPPING:

	CO	**PO1** Basic Agriculture knowledge	**PO2** Problem Solving	**PO3** Field Experimentations	**PO4** Modern implementation usage	**PO5** Modern Horticultural implements	**PO6** Modernplant protection implements	**PO7** ExtensionProgramme	**PO8** Environment and sustainability	**PO9** Ethics	**PO10** Individual and team work	**PO11** Communication	**PO12** Lifelong learning
CO1	Students learned about the different types of problematic soil and its management.	3	1	2	2	1	1		3		2		3
CO2	Learned about the remote sensing and GIS technologies for diagnosis of problematic soil.	3	1	1	2	1	1		3		3		3
CO3	Students learned about the reclamation of problematic soil under different Agro systems. .	3	1	2	2	1	1		3		2		3
CO4	Students knew about the concept of Land capability classification	3	1	2	1	1	1		3		3		3
CO5	Familiarized about the Irrigation water quality	3	1	2	2	1	1		3		2		3
3: Strong contribution, 2: average contribution, 1: Low contribution													

Production Technology for Fruits and Plantation Crops

Course Code: HT228

Course objective:

1. Importance of fruit and planation crop industry in India, its classification, soil and climate in relation to fruit production.
2. Knowledge about advanced technologies and rootstocks used to grow intensively high quality fruit crops for enhancing the crop production.
3. Familiar the students about climate, soil and varieties for fruit crops.
4. Knowing the principles and methods of orchard establishment, training, pruning and other horticultural practices needed for fruit production.

Course Outcome

After completion of course, a student will be able to

COURSE OUTCOME (CO)	DESCRIPTION
CO1	Aware about the major and minor fruits crops and different varieties suitable for different climatic regions. Also about plantation crops.
CO2	Students aware about cultural practices for the cultivation of major and minor fruit crops and planation crops.
CO3	Students also aware about the flowering physiology and factors involved in fruit-set, unfruitfulness, fruit growth and development.
CO4	Familiar with the important physiological disorders and its management.
CO5	Aware about the different propagation techniques applied in horticultural crops including micro-propagation.

CO-PO mapping

	CO	**PO1** Basic Agriculture knowledge	**PO2** Problem Solving	**PO3** Field Experimentations	**PO4** Modern implementation usage	**PO5** Modern Horticultural implements	**PO6** Modernplant protection implements	**PO7** ExtensionProgramme	**PO8** Environment and sustainability	**PO9** Ethics	**PO10** Individual and team work	**PO11** Communication	**PO12** Lifelong learning
CO1	Aware about the major and minor fruits crops and different varieties suitable for different climatic regions. Also about plantation crops.	3	2	1	3	3		3	2	1	2	3	3
CO2	Students aware about cultural practices for the cultivation of major and minor fruit crops and planation crops.	2	3	1	2	3		2	3	1	3	2	3
CO3	Students also aware about the flowering physiology and factors involved in fruit-set, unfruitfulness, fruit growth and development.	3	2		2	3	1	3	2	1	3	3	3
CO4	Familiar with the important physiological disorders and its management.	3	2	1	3	3	2	2	3	1	2	1	3
CO5	Aware about the different propagation techniques applied in horticultural crops including micro-propagation.	3	3	3	1	3	1	3	2	1	3	3	3
		3: Strong contribution, 2: average contribution, 1: Low contribution											

Principle of Seed Technology
COURSE CODE: AG223

COURSE OBJECTIVES:

- Basic concept of Seed and seed technology: introduction, definition and importance
- Knowledge of Foundation and certified seed production of important crops
- Basic knowledge of Seed certification, phases of certification, procedure for seed certification
- Basic concepts of detection of genetically modified crops, Transgene contamination in non-GM crops
- Seed marketing: structure and organization, sales generation activities

COURSE OUTCOMES (CO):

After completion of the course, a student will be able to

COURSE OUTCOME (CO)	DESCRIPTION
CO1	Students will have basic knowledge of Seed and seed technology: introduction, definition and importance
CO2	Knowledge of Foundation and certified seed production of important crops
CO3	Knowledge of Seed marketing: structure and organization, sales generation activities
CO4	Basic concepts of Seed drying, processing and their steps, seed testing for quality assessment
CO5	Basic concepts of Duty and powers of seed inspector, offences and penalties. Seeds Control Order

CO-PO MAPPING:

	CO	**PO1** Basic Agriculture knowledge	**PO2** Problem Solving	**PO3** Field Experimentations	**PO4** Modern implementation usage	**PO5** Modern Horticultural implements	**PO6** Modernplant protection implements	**PO7** ExtensionProgramme	**PO8** Environment and sustainability	**PO9** Ethics	**PO10** Individual and team work	**PO11** Communication	**PO12** Lifelong learning
CO1	Students will have basic knowledge of Seed and seed technology: introduction, definition and importance	1	2	3	3	3	2	3	3	2	3	1	3
CO2	Knowledge of Foundation and certified seed production of important crops	2	2	3	2	2	2	3	2	1	2	1	3
CO3	Knowledge of Seed marketing: structure and organization, sales generation activities	3	2	3	3	3	1	3	2	2	2	1	3
CO4	Basic concepts of Seed drying, processing and their steps, seed testing for quality assessment	2	2	1	2	2	2	2	3	1	2	1	3
CO5	Basic concepts of Duty and powers of seed inspector, offences and penalties. Seeds Control Order	2	3	2	2	2	2	2	3	2	2	1	3
3: Strong contribution, 2: average contribution, 1: Low contribution													

Statistical Methods

Course Code: MT 223

Course Objective:

- To understand the basics of statistics
- To understand the application of statistics in agriculture
- To know how to apply various tests and their significance in research work
- To understand the sampling methods

COURSE OUTCOMES (CO):

After completion of the course, a student will be able to

COURSE OUTCOME (CO)	DESCRIPTION
CO1	To learn the application of statistics
CO2	To impart knowledge in understanding of various tests in agriculture
CO3	To understand the sampling methods in research work
CO4	To learn the various attributes of chi-square test, one sample and two sample test, analysis of variance etc.
CO5	Interpret the results of various tests in agriculture

CO-PO MAPPING:

	CO	**PO1** Basic Agriculture knowledge	**PO2** Problem Solving	**PO3** Field Experimentations	**PO4** Modern implementation usage	**PO5** Modern Horticultural implements	**PO6** Modernplant protection implements	**PO7** ExtensionProgramme	**PO8** Environment and sustainability	**PO9** Ethics	**PO10** Individual and team work	**PO11** Communication	**PO12** Lifelong learning
CO1	To learn the application of statistics	1	3	3	3	3	2	3	3	2	3	1	3
CO2	To impart knowledge in understanding of various tests in agriculture	2	3	3	2	2	2	3	2	1	2	1	3
CO3	To understand the sampling methods in research work	3	3	3	3	3	1	3	2	2	2	2	3
CO4	To learn the various attributes of chi-square test, one sample and two sample test, analysis of variance etc.	2	3	1	2	2	2	2	3	1	2	1	3
CO5	Interpret the results of various tests in agriculture	2	3	2	2	2	2	2	3	2	2	3	3
3: Strong contribution, 2: average contribution, 1: Low contribution													

Agricultural Marketing Trade & Prices

Course Code - BM272

Course Objectives

1. To imparting knowledge of agriculture marketing.
2. To know the different systems agriculture marketing.
3. To understand the pricing policy in Agriculture.
4. To learn about the Agriculture Cooperation and Agreements in indian agriculture.
5. To understand the finance policy in Agriculture.

After completion of the course, a student will be able to

COURSE OUTCOME (CO)	DESCRIPTION
CO1	To Enable students to gain knowledge on agricultural marketing and prospects for improving agricultural marketing system.
CO2	To analyze Marketing Functions, Market Information and Intelligence.
CO3	Imparting knowledge of the marketing efficiency and agricultural prices.
CO4	Student will understand the basics of the marketing trade
CO5	To Provide the platform to the students of Marketing of Agricultural Inputs.

	CO	**PO1** Basic Agriculture knowledge	**PO2** Problem Solving	**PO3** Field Experimentations	**PO4** Modern implementation usage	**PO5** Modern Horticultural implements	**PO6** Modernplant protection implements	**PO7** Extension Programme	**PO8** Environment and sustainability	**PO9** Ethics	**PO10** Individual and team work	**PO11** Communication	**PO12** Lifelong learning
CO1	To Enable students to gain knowledge on agricultural marketing and prospects for improving agricultural marketing system.	3	1	2	2	1	1	3	3	2	2	3	3
CO2	To analyze Marketing Functions, Market Information and Intelligence.	3	1	1	2	1	1	3	3	2	3	3	3
CO3	Imparting knowledge of the marketing efficiency and agricultural prices.	3	1	2	2	1	1	3	3	2	2	3	3
CO4	Student will understand the basics of the marketing trade	3	1	2	1	1	1	3	3	3	3	3	3
CO5	To Provide the platform to the students of Marketing of Agricultural Inputs.	3	1	2	2	1	1	3	3	3	2		3
3: Strong contribution, 2: average contribution, 1: Low contribution													

Agrometerology & Climate change

Course Code: AG 224

Course Objective

- To understand the basics of agricultural meterology
- To understand the role of solar radiation in agriculture
- To know the process of precipitation and weather hazards
- To understand the agriculture and weather relations

Course Outcome

After completion of the course, a student will be able to

COURSE OUTCOME (CO)	**DESCRIPTION**
CO1	Learn the significance of Meterology
CO2	To understand the process of solar radiation and its significance in agriculture
CO3	To understand the agriculture and weather relations and its significance in agriculture
CO4	To impart knowledge about precipitation process, and importance in Indian agriculture
CO5	To understand the causes of global warming and its effect on agriculture

CO-PO mapping

	CO	**PO1** Basic Agriculture knowledge	**PO2** Problem Solving	**PO3** Field Experimentations	**PO4** Modern implementation usage	**PO5** Modern Horticultural implements	**PO6** Modernplant protection implements	**PO7** Extension Programme	**PO8** Environment and sustainability	**PO9** Ethics	**PO10** Individual and team work	**PO11** Communication	**PO12** Lifelong learning
CO1	Learn the significance of meterology	3	3	2	2	1	1	1	3	1	2	1	3
CO2	To understand the process of solar radiation and its significance in agriculture	3	3	1	2	1	1	1	3	1	3	1	3
CO3	To understand the agriculture and weather relations and its significance in agriculture	3	2	2	2	1	1	1	3	1	2	1	3
CO4	To impart knowledge about precipitation process, and importance in Indian agriculture	3	3	2	1	1	1	1	3	1	3	1	3
CO5	To understand the causes of global warming and its effect on agriculture	3	3	2	2	1	1	1	3	1	2	2	3
3: Strong contribution, 2: average contribution, 1: Low contribution													

Elective Subjects

Agribusiness Management

Course Code: AG 235

Course Objective:

- To make students aware about the concept of agribusiness.
- To make students aware about the different type of the agro based industries.
- To make students aware of micro and macro environmental forces and their impact on agri-business.
- To make students aware about agricultural marketing.
- To make students familiar with financial management.

Course Outcome:

After completion of the course, a student will be able to

COURSE OUTCOME (CO)	DESCRIPTION
CO1	Students are well aware about the agribusiness concepts and importance.
CO2	Students are well aware about different type agro-based industries and their importance.
CO3	Students have knowledge about agribusiness environment including suppliers, competitors, customers, political and economic system.
CO4	Students have knowledge about different marketing techniques, PLC, pricing strategies and marketing mix.
CO5	Student can understand financial management concepts applied to the agro-based industries.

	CO	**PO1** Basic Agriculture knowledge	**PO2** Problem Solving	**PO3** Field Experimentations	**PO4** Modern implementation usage	**PO5** Modern Horticultural implements	**PO6** Modern plant protection implements	**PO7** Extension Programme	**PO8** Environment and sustainability	**PO9** Ethics	**PO10** Individual and team work	**PO11** Communication	**PO12** Lifelong learning
CO1	Students are well aware about the agribusiness concepts and importance.	**3**	1	**3**	**3**	1	1	3	1	2	**3**	3	3
CO2	Students are well aware about different type agro-based industries and their importance.	**3**	2	**3**	**3**	1	1	3	1	3	**3**	3	3
CO3	Students have knowledge about agribusiness environment including suppliers, competitors, customers, political and economic system.	**3**	1	**2**	**3**	1	1	3	**2**	2	2	3	3
CO4	Students have knowledge about different marketing techniques, PLC, pricing strategies and marketing mix.	**3**	1	**2**	**3**	1	**2**	3	2	3	3	3	3
CO5	Student can understand financial management concepts applied to the agro-based industries.	**3**	2	**3**	**3**	1	**2**	3	1	2	2	3	3
3: Strong contribution, 2: average contribution, 1: Low contribution													

Agrochemicals

Course Code : AG 236

Course Objectives:

1. Current concept of agrochemicals.
2. To learn about formulation of agrochemicals.
3. To impart the knowledge of the principles and components of fertilizers used in crops.
4. To familiarize the students about the basics methods of used different pesticides etc.
5. To study the basic concept sulphur content in soil.

Course Outcome:

CO1	Students learned about the Introduction, definition, goal and current concepts of different agrochemical.
CO2	Knowledge of sampling of fertilizer and pesticide
CO3	Students familiarize with the different methods of pesticides, herbicides and insecticides
CO4	Gained the knowledge of the various concepts plant bio-pesticides foe ecological agriculture
CO5	Studied the basic concept of fertilizer and their importance.

CO-PO Mapping

	CO	**PO1** Basic Agriculture knowledge	**PO2** Problem Solving	**PO3** Field Experimentations	**PO4** Modern implementation usage	**PO5** Modern Horticultural implements	**PO6** Modernplant protection implements	**PO7** Extension Programme	**PO8** Environment and sustainability	**PO9** Ethics	**PO10** Individual and team work	**PO11** Communication	**PO12** Lifelong learning
CO1	Learn the significance of meterology	3	1	2	2	2	1	1	2	1	2	2	2
CO2	To understand the process of solar radiation and its significance in agriculture	3	1	2	2	3	1	1	2	1	3	3	2
CO3	To understand the agriculture and weather relations and its significance in agriculture	3	1	2	3	3	1	2	2	1	3	3	2
CO4	To impart knowledge about precipitation process, and importance in Indian agriculture	3	1	2	2	3	1	1	2	1	2	2	1
CO5	To understand the causes of global warming and its effect on agriculture	3	1	2	3	2	1	1	2	1	3	2	1
3: Strong contribution, 2: average contribution, 1: Low contribution													

Commercial Plant Breeding

Course Code: AG 237

Course Objective

1. Basic knowledge of modes of reproduction
2. To learn about the line development and maintenance breeding
3. To impart the knowledge of genetic purity testing
4. To familiarize the students with haploid inducer mechanism
5. To study the variety testing, release and notification system in India.

Course Outcome:

After completion of the course, a student will be able to

COURSE OUTCOME (CO)	DESCRIPTION
CO1	To learn about the types of crops and modes of plant reproduction
CO2	To familiarize the students with development of hybrids and its seed production of different crops
CO3	To gain the knowledge about PPV & FR Act and its implication in breeding
CO4	To understand the tissue culture techniques and biotechnological tools
CO5	To study the quality testing in self and cross-pollinated crops

CO-PO mapping

	CO	**PO1** Basic Agriculture knowledge	**PO2** Problem Solving	**PO3** Field Experimentations	**PO4** Modern implementation usage	**PO5** Modern Horticultural implements	**PO6** Modern plant protection implements	**PO7** Extension Programme	**PO8** Environment and sustainability	**PO9** Ethics	**PO10** Individual and team work	**PO11** Communication	**PO12** Lifelong learning
CO1	Students learned about the types of crops and modes of plant reproduction	**3**	1	**3**	**3**	1	1	1	1	1	**3**	1	3
CO2	Students familiarize with development of hybrids and its seed production of different crops	**3**	2	**3**	**3**	1	1	1	1	1	**3**	2	3
CO3	Students gained the knowledge about PPV & FR Act and its implication in breeding	**3**	1	**2**	**3**	1	1	1	**2**	1	2	3	3
CO4	Students learned the tissue culture techniques and biotechnological tools	**3**	1	**2**	**3**	1	**2**	1	2	1	3	2	3
CO5	Students studies the quality testing in self and cross-pollinated crops	**3**	2	**3**	**3**	1	**2**	1	1	1	2	3	3
3: Strong contribution, 2: average contribution, 1: Low contribution													