Fourth Dean

B.Sc (Hons.) Agriculture Third Year/ Fifth Semester (III/V)

Principles of plant breeding

Course Code: AG 301

Course Objective

1. To impart knowledge to the students on the ultrastructure of cell and cell organelles
2. To impart knowledge to the students on the principles of genetics
3. To learn applications of plant breeding for improving agricultural productivity

Course Outcome:

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

COURSE OUTCOME (CO)	DESCRIPTION
CO1	understand the basic concepts of the ultrastructure of cell, cell organelles, chromosomes and nucleic acids
CO2	apply the principles of inheritance to plant breeding
CO3	acquaint with the fundamentals of chromosomal and cytoplasmic inheritance, sex determination, mutations and chromosomal aberrations
CO4	Understand cell division, mendelian genetics,
CO5	Acquaint with fundamentals of gene action and genomic approaches

CO-PO MAPPING:

	CO	**PO1** Basic Agriculture knowledge	**PO2** Problem Solving	**PO3** Field Experimentations	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 the basic concepts of the ultrastructure of cell, cell organelles, chromosomes and nucleic acids	3	3	1	1		3		1				3
CO2	apply the principles of inheritance to plant breeding	3	2	3	2		1		3				2
CO3	acquaint with the fundamentals of chromosomal and cytoplasmic inheritance, sex determination, mutations and chromosomal aberrations	3	2	3	1		2		2				3
CO4	Understand cell division, mendelian genetics,	3	2	2	2		3		3				3
CO5	Acquaint with fundamentals of gene action and genomic approaches	3	1	3	1		2		3				3
3: Strong contribution, 2: average contribution, 1: Low contribution													

Field Crop-I (Kharif)

Course Code:(AG-302

Objectives:

- To gain basic knowledge of field crops (kharif)
- To study how to increase the production and productivity of kharif crops.
- To improve crop varieties/hybrids suited to diverse agro-ecologies.
- To focus has always remained on the management of the scientific development of improved crop cultivars and appropriate crop production.

Outcome:

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

COURSE OUTCOME (CO)	DESCRIPTION
CO1	Students gain knowledge regarding kharif crops in Agriculture.
CO2	They understand the basics of kharif crops
CO3	They gain knowledge to increase the production and productivity of cereal crops
CO4	They came to know about the scientific development of improved crop cultivars and appropriate crop production.
CO5	Able to know about the Role of various crops in the national economy.

CO-PO MAPPING:

	CO	**PO1** Basic Agriculture knowledge	**PO2** Problem Solving	**PO3** Field Experimentations	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 gain knowledge regarding kharif crops in Agriculture.	3	2	2	1	1	3	3	3	1	3	1	3
CO2	They understand the basics of kharif crops	3	3	3	1	2	3	3	3	1	3	2	2
CO3	They gain knowledge to increase the production and productivity of cereal crops.	3	2	2	1	2	2	3	3	2	1	2	3
CO4	They came to know about the scientific development of improved crop cultivars and appropriate crop production.	3	2	2	2	2	3	3	3	2	2	3	3
CO5	Able to know about the Role of various crops in the national economy.	3	2	1	1	1	2	3	3	2	2	2	3
3: Strong contribution, 2: average contribution, 1: Low contribution													

Practical Crop Production I (Cereals,Pulses and Fodder crops))

COURSE CODE: AG303

COURSE OBJECTIVES:

- Basics knowledge of crop planning, raising field crops in multiple cropping systems
- In depth knowledge offield preparation, seed treatment, nursery raising
- Knowledge of sowing, nutrient management, water management
- Type of field preparation, nursery bed preparation, irrigation, time of irrigation
- Preparation of balance sheet including cost of cultivation, net returns
- Basics of weed management and management of insect pests and diseases of crops harvesting

COURSE OUTCOMES (CO):

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

COURSE OUTCOME (CO)	DESCRIPTION
CO1	Students will have knowledge of crop planning, raising field crops in multiple cropping systems
CO2	In depth knowledge offield preparation, seed treatment, nursery raising
CO3	Knowledge of Preparation of balance sheet including cost of cultivation, net returns
CO4	Type of irrigation, time of irrigation, field preparation, nursery bed preparation,
CO5	Knowledge of threshing, drying, winnowing, storage and marketing of produce

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	PO 11. Communication	PO 12. Life-long learning
CO1	Students will have knowledge of crop planning, raising field crops in multiple cropping systems	3	3	3	2	2	3	2	3	2	3	2	3
CO2	In depth knowledge offield preparation, seed treatment, nursery raising	3	3	3	2	3	3	2	3	2	2	2	3
CO3	Knowledge of Preparation of balance sheet including cost of cultivation, net returns	3	3	3	2	3	3	2	3	2	2	3	3
CO4	Type of irrigation, time of irrigation, field preparation, nursery bed preparation,	3	3	3	2	3	3	2	3	2	2	2	3
CO5	Knowledge of threshing, drying, winnowing, storage and marketing of produce	3	3	3	2	3	3	2	3	2	2	2	3
3: Strong contribution, 2: average contribution, 1: Low contribution													

Production Technology of Spices, Aromatic, Medicinal and Plantation Crops

Course Code: HT320

Course objective:

1. To Know about cultivation of Spices, Aromatic, Medicinal and Plantation Crops
2. To Know about propagation material of Spices, Aromatic, Medicinal and Plantation Crops
3. Knowledge regarding importance of medicinal plant on human health
4. Knowledge of harvesting and processing method of Spices and Aromatic Plants

Course Outcome

After completion of course, a student will be able to

COURSE OUTCOME (CO)	DESCRIPTION
CO1	Gives information regarding Cultivation of Spices, Aromatic, Medicinal and Plantation Crops
CO2	Able to know about different medicinal properties of medicinal plants and their use
CO3	Students are able to know aromatic plants and their use
CO4	Students can use the basic knowledge of importance of plantation crops
CO5	Students can use the basic knowledge of harvesting and processing of spices, medicinal, aromatic and plantation 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	Gives information regarding Cultivation of Spices, Aromatic, Medicinal and Plantation Crops	3	3	2	1	3	3	2	3				3
CO2	Able to know about different medicinal properties of medicinal plants and their use	3	3		1	3	3	1	3				3
CO3	Students are able to know aromatic plants and their use	3	3	2	3	3	3	2	3				3
CO4	Students can use the basic knowledge of importance of plantation crops	3	3		3			3	3				3
CO5	Students can use the basic knowledge of harvesting and processing of spices, medicinal, aromatic and plantation crops	3	3	3	3		2		3				3
3: Strong contribution, 2: average contribution, 1: Low contribution													

Farming Systems and Sustainable Agriculture
Course Code: AG304

Course Objective:

1. To introduce basic knowledge and concepts of sustainable agriculture.
2. To impart the basic knowledge of natural resources and their conservation.
3. To introduce the basic problems related to irrigation and drainage in agriculture land.
4. To introduce basic knowledge and concepts of organic farming.
5. To provide knowledge about farming systems and IFS model.

Course Outcome:

At the completion of the course the student will:

COURSE OUTCOME (CO)	DESCRIPTION
CO1	have knowledge about the present status of sustainable agriculture with its elements and goals.
CO2	be able to conserve the land as natural resource using different farming practices.
CO3	be able to solve the problem of water logging using irrigation and drainage practices.
CO4	have the knowledgeof organic farming with its elements and importance.
CO5	be able to select and can perform the analyses of the farming system and IFS model for different lad conditions.

CO-PO MAPPING:

	CO/PO	**PO1** Basic Agriculture knowledge	**PO2** Problem Solving	**PO3** Field Experimentations	usage	**PO5** Modern Agricultural/ 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	have knowledge about the present status of sustainable agriculture with its elements and goals.	3	2	3	2	2	1				3		2
CO2	be able to conserve the land as natural resource using different farming practices.	2	3	2	3	2	1		1		3		3
CO3	be able to solve the problem of water logging using irrigation and drainage practices.	3	2	3	1	2	2				2		3
CO4	have the knowledge of organic farming with its elements and importance.	3	2	2	2	3	3				2		3
CO5	be able to select and can perform the analyses of the farming system and IFS model for different lad conditions.	3	3	2	2	2	2				2		3
3: Strong contribution, 2: average contribution, 1: Low contribution													

Crop Pests and Stored Grain Pests and Their Management

COURSE CODE: AG305

COURSE OBJECTIVES:

- Knowledge and concept of different pests of crops
- Basics of damage caused by insect pests to different crops (Field crops, Fruits and vegetables ornamental plants oilseeds and fiber crops)
- Knowledge of management practices including physical, cultural, mechanical biological and chemical measures
- Basic concepts Integrated pest Management
- Study of biology and life cycle of insect pests and its application in their control

COURSE OUTCOMES (CO):

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

COURSE OUTCOME (CO)	DESCRIPTION
CO1	Know about the concept of major and minor pests of the major agricultural crops
CO2	Management of different pests using a set of techniques
CO3	Mode of damage caused by insects of different crops
CO4	Integrated pest Management and its application on different crops
CO5	Familiar with biology and life cycle of insect pests and its application in their control

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	PO 11. Communication	PO 12. Life-long learning
CO1	Know about the concept of major and minor pests of the major agricultural crops	3	2	2	2	1	3	2	3	2	1	2	2
CO2	Management of different pests using a set of techniques	2	3	2	2	2	3	2	3	2	2	1	2
CO3	Mode of damage caused by insects of different crops	3	2	3	3	2	3	2	3	2	2	1	2
CO4	Integrated pest Management and its application on different crops	3	2	3	3	2	3	2	3	2	1	1	2
CO5	Know about biology and life cycle of insect pests and its application in their control	2	2	2	3	2	3	2	2	2	1	1	2
3: Strong contribution, 2: average contribution, 1: Low contribution													

Extension Methodologies for Transfer of Agriculture Technology

Course Code: AG-306

Objectives:

- Creating awareness among the participants about what a new Extensionist is all about how learning resources.
- The students will be learning about the new innovations being brought into the Agricultural Extension in India.
- Obtain idea on various development programmes in agriculture and allied area to help farmers.
- Visit to village institutions to study their role in development programme and extension work. Organization of need based training programme for rural youth.
- Identification of Agricultural problems of the village through participatory rural appraisal (PRA) techniques. Showcases the Modern Agricultural Technology and maintenance of Information corner in the village.

Outcome:

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

COURSE OUTCOME (CO)	DESCRIPTION
CO1	Able to know what are functioning regarding the K.V.K, ICAR, ATMA and ATIC.
CO2	They understand the rural constraints and salutations.
CO3	Students can use the basic knowledge regarding Demonstration and exhibition.
CO4	Students can figure out the measures all the systems of surveying method in rural areas.
CO5	Students understand Decentralized extension delivery system.

CO-PO MAPPING:

	CO	**PO1** Basic Agriculture knowledge	**PO2** Problem Solving	**PO3** Field Experimentations	usage	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	Able to know what are functioning regarding the K.V.K, ICAR, ATMA and ATIC.	3	1	2	1	2	3	3	3	2	3	2	3
CO2	They understand the rural constraints and salutations.	3	3	3	1	2	3	3	3	1	3	3	2
CO3	Students can use the basic knowledge regarding Demonstration and exhibition.	3	2	1	1	2	2	3	3	1	1	2	3
CO4	Students can figure out the measures all the systems of surveying method in rural areas.	3	2	2	2	2	3	3	3	1	2	3	3
CO5	Students understand Decentralized extension delivery system.	3	1	1	1	3	2	3	3	2	2	2	3
3: Strong contribution, 2: average contribution, 1: Low contribution													

Fundamentals of Farm Business Management

Course Code: AG 307

Course Objective

1. To introduce the basic knowledge of farm/ agri business management.
2. To introduce the different methods of agricultural marketing.
3. To make students familiar with financial management.
4. To focus on benefits of agro based industries for Indian economic system

Course Outcome:

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

COURSE OUTCOME (CO)	DESCRIPTION
CO1	Students are familiar with basic knowledge of farm/ agri-business management.
CO2	Students can understand and may use the different methods of agricultural marketing.
CO3	Students can identify final account i.e. Trading A/C, P/L A/C and balance Sheets.
CO4	Students are able to figure out benefits of agro based industries for Indian economic system and society.

CO-PO MAPPING:

	CO	**PO1** Basic Agriculture knowledge	**PO2** Problem Solving	**PO3** Field Experimentations	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 familiar with basic knowledge of farm/ agri-business management.	3	3		1				3		2	3	3
CO2	Students can understand and may use the different methods of agricultural marketing.	3	3		2				3		2	3	2
CO3	Students can identify final account i.e. Trading A/c, P/L A/C and balance Sheets.	3	2		1				3	2	1	3	3
CO4	Students are able to figure out benefits of agro based industries for Indian economic system and society.	3	3		1				3		2	3	3
3: Strong contribution, 2: average contribution, 1: Low contribution													

Fundamentals of Rural Sociology and Educational Psychology

COURSE CODE: ED301

COURSE OBJECTIVES:

- Basic Concepts and Definition of Educational Psychology
- Knowledge of rural sociology
- Knowledge of social groups and social stratification
- Role of social values, culture and customs in agricultural extension
- Basic concept, definition and types of personality and intelligence
- Knowledge of concept of learning and leadership

COURSE OUTCOMES (CO):

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

COURSE OUTCOME (CO)	DESCRIPTION
CO1	Basics concept, definition and scope of Educational Psychology
CO2	Basic Concepts of rural sociology and social stratification
CO3	Knowledge of role of values, culture and customs in agricultural extension
CO4	Detailed knowledge of types and factors affecting personality and intelligence
CO5	Basics knowledge of concept of learning and leadership

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	PO 11. Communication	PO 12. Life-long learning
CO1	Basics concept, definition and scope of Educational Psychology	3	2	2	3	2	1	2	2	3	3	2	2
CO2	Basic Concepts of rural sociology and social stratification	3	2	2	3	1	2	2	2	2	2	1	1
CO3	Knowledge of role of values, culture and customs in agricultural extension	3	3	1	3	1	1	2	3	3	2	2	2
CO4	Detailed knowledge of types and factors affecting personality and intelligence	2	2	2	3	2	2	1	2	3	2	2	2
CO5	Basics knowledge of concept of learning and leadership	2	3	2	3	1	1	2	2	3	2	2	2
3: Strong contribution, 2: average contribution, 1: Low contribution													

Renewable Energy

Course Code: AE322

Course objective:

1. To give knowledge about importance and scope of renewable energy in the sector of agriculture.
2. To know about current scenario of renewable energy in India and different types of renewable energy.
3. To educate the students about biomass and conversion of biomass to Bio gas and other use full form and different method of biomass conversion.
4. To aware the students about the fundamentals of solar energy and its conversion techniques to boost agriculture sector.
5. To provide Knowledge of wind energy and its importance and different conversion method for boost the agriculture sector.

Course Outcome

After completion of course, a student will be able to

COURSE OUTCOME (CO)	DESCRIPTION
CO1	Able to know about role, advantage, importance and scope of renewable energy in the field of agriculture.
CO2	Aware the students about different types of renewable energy and its current scenario in India.
CO3	Able to know about the different types of biomass and conversion of biomass methods to Bio gas and other use full form and different method of biomass conversion.
CO4	Aware the students about the fundamentals of solar energy and its conversion techniques to boost agriculture sector.
CO5	Students able to know about the wind energy and its importance and different conversion method for boost the agriculture sector

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 implementsimplements	**PO7** Extension Programme	**PO8** Environment and sustainability	**PO9** Ethics	**PO10** Individual and team work	**PO11** Communication	**PO12** Lifelong learning
CO1	Able to know about role, advantage, importance and scope of renewable energy in the field of agriculture.	3	3	2	1	-	-	3	3				3
CO2	Aware the students about different types of renewable energy and its current scenario in India.	3	3	2	1	-	-	1	3				3
CO3	Able to know about the different types of biomass and conversion of biomass methods to Bio gas and other use full form and different method of biomass conversion.	3	3	2	1	-	-	2	3				3
CO4	Aware the students about the fundamentals of solar energy and its conversion techniques to boost agriculture sector.	3	3	3	1	-	-	2	3				3
CO 5	Students able to know about the wind energy and its importance and different conversion method for boost the agriculture sector	3	3		1	-	-		3				3
3: Strong contribution, 2: average contribution, 1: Low contribution													

B.Sc.(H) Agriculture Third year/Sixth semester (III/VI)

Crop Physiology

COURSE CODE: AG310

COURSE OBJECTIVES:

- Knowledge of Seed Physiology, Seed structures, Morphological, physiological and biochemical changes during seed development
- Basics concept of Seed viability and vigour, Factors affecting seed viability and vigour
- Knowledge of Growth and Development, Definition, Determinate and Indeterminate growth, Monocarpic and Polycarpic species with examples
- Basic concepts of Crop Water Relations, Physiological importance of water to plants
- Factors affecting WUE. Photosynthesis, Energy synthesis, Significance of C3, C4 and CAM pathway

COURSE OUTCOMES (CO):

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

COURSE OUTCOME (CO)	DESCRIPTION
CO1	Knowledge of Physiological maturity, Morphological and physiological changes associated with physiological maturity in crop
CO2	Basics concept of Seed viability and vigour, Factors affecting seed viability and vigour
CO3	In depth knowledge of morphological, physiological and biochemical changes during seed germination
CO4	Basic concepts of – Seed dormancy – Definition – types of seed dormancy – Advantages and disadvantages of seed dormancy
CO5	Fruit ripening – Metamorphic changes – Climateric and non-climateric fruits – Hormonal regulation of fruit ripening (with ethrel, CCC, Polaris, paclobuterozole)

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	PO 6. Modern Plant Protection implements	PO 7. Extension Program	PO 8. Environment and sustainability	PO 9. Ethics	PO 10. Individual and team work	PO 11. Communication	PO 12. Life-long learning
CO1	Knowledge of Physiological maturity, Morphological and physiological changes associated with physiological maturity in crop	2	2	2	2	1	2	2	3	3	1	1	2
CO2	Basics concept of Seed viability and vigour, Factors affecting seed viability and vigour	2	2	1	2	2	2	2	3	2	2	1	2
CO3	In depth knowledge of morphological, physiological and biochemical changes during seed germination	2	2	2	1	1	2	2	3	1	2	1	2
CO4	Basic concepts of – Seed dormancy – Definition – types of seed dormancy – Advantages and disadvantages of seed dormancy	2	2	2	2	1	2	2	3	2	1	1	2
CO5	Fruit ripening – Metamorphic changes – Climateric and non-climateric fruits – Hormonal regulation of fruit ripening (with ethrel, CCC, Polaris, paclobuterozole)	2	2	1	1	2	1	2	2	3	1	1	2
3: Strong contribution, 2: average contribution, 1: Low contribution													

Weed Management

Course Code :-AG-311

B. Sc (Hons.) Agriculture VI semester

Objectives:

- To gain basic knowledge of weed management
- To study various measures of weed control
- To Assess and develop appropriate methods of weed control in organic system
- To study to increase the production and productivity of crops.

Outcome:

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

COURSE OUTCOME (CO)	DESCRIPTION
CO1	Students gain knowledge regarding weed management in crops
CO2	They understand the basics of weed management
CO3	They gain knowledge to increase the production and productivity of crops
CO4	A framework for IWM is consisting of multiple weed control in an integrated manner avoiding crop losses
CO5	Able to know about the Role of various crops in the national economy.

CO-PO MAPPING:

	CO	**PO1** Basic Agriculture knowledge	**PO2** Problem Solving	**PO3** Field Experimentations	**PO4** Modern implement usage	**PO5** Modern Agriculture/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 gain knowledge regarding weed management in cro	3	2	2	1	1	3	3	3	1	3	1	3
CO2	They understand the basics of weed management	3	3	3	1	2	3	3	3	1	3	2	2
CO3	They gain knowledge to increase the production and productivity of crops	3	2	2	1	2	2	3	3	2	1	2	3
CO4	A framework for IWM is consisting of multiple weed control in an integrated manner avoiding crop losses	3	2	2	2	2	3	3	3	2	2	3	3
CO5	Able to know about the Role of various crops in the national economy.	3	2	1	1	1	2	3	3	2	2	2	3
3: Strong contribution, 2: average contribution, 1: Low contribution													

Practical Crop Production II (Oil seeds and commercial crops)
COURSE CODE: AG312
COURSE OBJECTIVES:

- Basics knowledge of crop planning, raising field crops in multiple cropping systems
- In depth knowledge of field preparation, seed treatment, nursery raising
- Knowledge of sowing, nutrient management, water management
- Type of field preparation, nursery bed preparation, irrigation, time of irrigation
- Preparation of balance sheet including cost of cultivation, net returns
- Basics of weed management and management of insect pests and diseases of crops harvesting

COURSE OUTCOMES (CO):

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

COURSE OUTCOME (CO)	DESCRIPTION
CO1	Students will have knowledge of crop planning, raising field crops in multiple cropping systems
CO2	In depth knowledge of field preparation, seed treatment, nursery raising
CO3	Knowledge of Preparation of balance sheet including cost of cultivation, net returns
CO4	Type of irrigation, time of irrigation, field preparation, nursery bed preparation,
CO5	Knowledge of threshing, drying, winnowing, storage and marketing of produce

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	PO 11. Communication	PO 12. Life-long learning
CO1	Students will have knowledge of crop planning, raising field crops in multiple cropping systems	3	3	3	2	2	3	2	3	2	3	2	3
CO2	In depth knowledge of field preparation, seed treatment, nursery raising	3	3	3	2	3	3	2	3	2	2	2	3
CO3	Knowledge of Preparation of balance sheet including cost of cultivation, net returns	3	3	3	2	3	3	2	3	2	2	3	3
CO4	Type of irrigation, time of irrigation, field preparation, nursery bed preparation,	3	3	3	2	3	3	2	3	2	2	2	3
CO5	Knowledge of threshing, drying, winnowing, storage and marketing of produce	3	3	3	2	3	3	2	3	2	2	2	3
3: Strong contribution, 2: average contribution, 1: Low contribution													

Breeding of field and horticultural crops

Course Code: AG 313

Course Objective

1. To impart knowledge to the students on the botanical description, origin, distribution
2. To impart knowledge to the students on various breeding approaches.
3. To used knowledge in development of varieties / hybrids in various field and horticultural crops

Course Outcome:

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

COURSE OUTCOME (CO)	DESCRIPTION
CO1	understand the origin, distribution and different breeding methods to be adopted for the development of varieties / hybrids in various field and horticultural crops
CO2	study about the plant genetic resources, centres of diversity and breeding for resistance to biotic and abiotic stresses
CO3	learn about the influence of Genotype x Environment interaction on yield / performance
CO4	Learn about different biotic and abiotic stress tolerance mechanisms
CO5	Study about different methods of germplasms conservation

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 the origin, distribution and different breeding methods to be adopted for the development of varieties / hybrids in various field and horticultural crops	3	3	2	1	3	3		3				3
CO2	study about the plant genetic resources, centres of diversity and breeding for resistance to biotic and abiotic stresses	3	2	3	2	3	1		3				2
CO3	learn about the influence of Genotype x Environment interaction on yield / performance	3	2	3	1	3	2		3				3
CO4	Learn about different biotic and abiotic stress tolerance mechanisms	3	2	3	2	3	3		3				3
CO 5	Study about different methods of germplasms conservation	3	1	1	1	3	2		3				3
3: Strong contribution, 2: average contribution, 1: Low contribution													

Post-Harvest Management and Value Addition of Fruits and Vegetables

Course Code: HT321

Course objective:

1- To study the importance and scope of post -harvest technology in horticultural crops.
2- To impart knowledge about Pre harvest factors affecting quality on post -harvest shelf life of fruits and vegetables.
3- Familiar with the various methods of packing, packaging materials and transport.
4- To study about the various methods and principles of preservation of horticultural crops
5- Knowledge about the spoilage of canned products, biochemical, enzymatic and microbial spoilage.

Course Outcome

After completion of course, a student will be able to

COURSE OUTCOME (CO)	DESCRIPTION
CO1	Understand the various methods of post- harvest management and its role in providing better quality produce to the consumer.
CO2	Familiar with the maturity indices, harvesting and post -harvest handling of fruits and vegetables
CO3	Students are able to know different methods and materials used for packaging of horticultural crops
CO4	Learn about the process of canning and other method of preservation
CO5	Able to understand various lossescausedbydifferentmodeandtheircontrol management.

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 Program	PO8 Environment and sustainability	PO9 Ethics	PO10 Individual and team work	PO11 Communication	PO12 Lifelong learning
CO1	Understand the various methods of post- harvest management and its role in providing better quality produce to the consumer.	3	3	1	1	1	3	2	3				3
CO2	Familiar with the maturity indices, harvesting and post -harvest handling of fruits and vegetables	3	3		1	1	3	1	3				3
CO3	Students are able to know different methods and materials used for packaging of horticultural crops	3	3	1	3	1	3	2	3				3
CO4	Learn about the process of canning and other method of preservation	3	3	2	1			3	3				3
CO5	Able to understand various losses caused by different mode and their control management.	3	3	1	1		2		3				3
3: Strong contribution, 2: average contribution, 1: Low contribution													

Protected Cultivation and Post Harvest Technology

Course Code: AE323

Course Objective:

1. To gain basic knowledge of different types of green house and their application in agriculture.
2. To gain basic knowledge of heating and cooling system used in green house.
3. To know about the Winnowing of Grains.
4. To know about the different decorticators.
5. To know about the drying methods.

Course Outcome:

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

COURSE OUTCOME (CO)	DESCRIPTION
CO1	know the basic knowledge of different types of greenhouse and their application in the field of agriculture.
CO2	know the working principle, construction, care and maintenance of greenhouse.
CO3	know the winnowing operation and machinery used in this process.
CO4	have the knowledge about different decorticators with their working, care and maintenance.
CO5	have the basic knowledge of drying of grains and other agricultural produce.

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 different types of greenhouse and their application in the field of agriculture.	3	2	3	2	2	2		2		3		3
CO2	know the working principle, construction, care and maintenance of greenhouse.	2	1	2	3	3			1		3		3
CO3	know the winnowing operation and machinery used in this process.	3	2	3	3	3	3		1		2		3
CO4	have the knowledge about different decorticators with their working, care and maintenance.	3	1	2	2	2	3		1		2		3
CO5	have the basic knowledge of drying of grains and other agricultural produce.	2	1	2	2	2	2		2		2		3
3: Strong contribution, 2: average contribution, 1: Low contribution													

Entrepreneurship Development and Communication Skills

Course Code: BM339

Course Objective

1. To introduce the basic knowledge regarding entrepreneurship development.
2. To introduce the different types of entrepreneurship.
3. To make differentiation between intra-preneurship and entrepreneurship.
4. To focus on different types of agro based industries
5. To introduce the concepts of MSME.

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Course Outcome:

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

COURSE OUTCOME (CO)	DESCRIPTION
CO1	Students know the basic knowledge regarding entrepreneurship development.
CO2	Students have knowledge about different types of entrepreneurship.
CO3	Students can easily differentiation between intra-preneurship and entrepreneurship.
CO4	Students are able to figure out benefits of agro based industries for Indian economic system and society.
CO5	Students are familiar with different types of agro based industries.

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 know the basic knowledge regarding entrepreneurship development.	1	3		1				3	3	2	3	3
CO2	Students have knowledge about different types of entrepreneurship.	3	3		3				3	2	2	3	2
CO3	Students can easily differentiation between intra-preneurship and entrepreneurship.	3	2		1				3	2	1	3	3
CO4	Students are able to figure out benefits of agro based industries for Indian economic system and society.	3	3		1				2	3	2	3	3
CO5	Students are familiar with different types of agro based industries.	2	2		2				3	2	2	3	3
3: Strong contribution, 2: average contribution, 1: Low contribution													

Production Economics and Farm Management

Course Code: AG 314

Course Objective

1. To introduction basic principles of economics and Meaning, Definition, Nature and Scope of Production Economics.
2. To make students aware of Economics Models
3. To be familiar about Agricultural Production Economics
4.To study about economic structure of India
5. To be familiar with micro and macro economics.

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Course Outcome:

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

COURSE OUTCOME (CO)	DESCRIPTION
CO1	Students are aware of basic principles of economics and Meaning, Definition, Nature and Scope of Production Economics.
CO2	Students know Economics Models.
CO3	Students understand Agricultural Production Economics and its practical usage.
CO4	Students are familiar with economic structure of India
CO5	Students may easily differentiate between micro and macro economics.

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 are aware of basic principles of economics and Meaning, Definition, Nature and Scope of Production Economics.	3	3					2	3	3	3	3	3
CO2	Students know Economics Models.	3	3					1	3	2	3	3	2
CO3	Students understand Agricultural Production Economics and its practical usage.	3	2					2	3	2	1	3	3
CO4	Students are familiar with economic structure of India	3	3					1	3	2	2	3	3
CO5	Students may easily differentiate between micro and macro economics.	3	3					2	2	2	3	3	3
3: Strong contribution, 2: average contribution, 1: Low contribution													

Fundamentals of soil, water and conservation engineering

Course Code: AE324

Course Objective:

1. To introduce the basic concept of Soil, water, and conservation.
2. To introduce the basic concept of surveying and levelling in the field of agriculture.
3. To introduce basic knowledge of different type of levelling.
4. To know about different practices of soil, water and conservation.
5. To know the basic concept of irrigation and drainage engineering.

Course Outcome:

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

COURSE OUTCOME (CO)	DESCRIPTION
CO1	know the basic knowledge of soil, water and conservation in agriculture.
CO2	have the ability to apply practical knowledge of surveying and levelling on the farm.
CO3	Know the practical application of different type of levelling to level the agricultural land.
CO4	have the ability to perform the different practices of soil, water and conservation.
CO5	have the basic knowledge of drainage and irrigation of agricultural land.

CO-PO MAPPING:

	CO	**PO1** Basic Agriculture knowledge	**PO2** Problem Solving	**PO3** Field Experimentations	**PO4** Modern implements usage	**PO5** Modern Agricultural / 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	know the basic knowledge of soil, water and conservation in agriculture.	2	2	3	2	2	2				3		3
CO2	have the ability to apply practical knowledge of surveying and levelling on the farm.	3	3	2	3	3					3		2
CO3	Know the practical application of different type of levelling to level the agricultural land.	3	2	3	3	3	3				2		3
CO4	have the ability to perform the different practices of soil, water and conservation.	2	1	2	2	2	3				3		3
CO5	have the basic knowledge of drainage and irrigation of agricultural land.	2	2	2	3	2	2				2		2
3: Strong contribution, 2: average contribution, 1: Low contribution													

Insect Ecology and Integrated Pest Management Including Beneficial Insects

Course code : AG 315

Course Objective

1. To gain knowledge of role of biotic and abiotic factors responsible in pest occurrence and spread.
2. To learn about the concept and types of Integrated Pest Management
3. To study about the Host Plant Resistance
4. To familiarize the students about the different groups and toxicity of insecticides
5. To aware the students about different group of insects and their control.

Course Outcome:

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

COURSE OUTCOME (CO)	DESCRIPTION
CO1	Students learned about the role of biotic and abiotic factors responsible in pest growth and development.
CO2	Learned the concept and different methods of control employed in Integrated Pest Management.
CO3	Students learned about the different type of resistance in plants and the genetics involved in it
CO4	Knows about the group and toxicity of insecticides and can calculate the formulation of insecticides
CO5	Familiarized about the different groups of insects, types of damages caused by them and their control

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 role of biotic and abiotic factors responsible in pest growth and development	3	1	3	1	1	3		3		3		3
CO2	Learned the concept and different methods of control employed in Integrated Pest Management.	3	2	3	3	1	3		3		3		3
CO3	Students learned about the different type of resistance in plants and the genetics involved in it.	3	1	3	1	1	3		3		1		3
CO4	Knows about the group and toxicity of insecticides and can calculate the formulation of insecticides	3	2	3	2	1	3		3		2		3
CO5	Familiarized about the different groups of insects, types of damages caused by them and their control.	3	1	3	2	1	3		3		3		3
3: Strong contribution, 2: average contribution, 1: Low contribution													