

Fifth Dean

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

FUNDAMENTALS OF HORTICULTURE

COURSE CODE: HT-113

COURSE OBJECTIVES:

1. Students will get basic knowledge about horticulture course and its scope
2. Students can get hands on training practical knowledge
3. Demonstrate the safe use of equipment, chemicals and tools used in the industry.
4. Identify and explain benefits of professional organizations in the horticulture industry.
5. To understand basic problems comes under horticulture production technology
6. To know the importance of market and industrial value of different horticultural crops

COURSE OUTCOMES (CO):

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

COURSE OUTCOME (CO)	DESCRIPTION
CO1	Demonstrate an understanding of the composition, fertility and biology of soil and how they relate to good plant growth
CO2	Identify and prescribe sustainable options in horticulture which benefit the environment while maintaining productivity and economic viability
CO3	Apply horticultural skills and knowledge to operate various business entities found in the horticultural industry.
CO4	Identify and practice safe use of tools, equipment and supplies used in horticulture careers.
CO5	Propagate, grow, and maintain plants in horticulture production systems.

CO		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
		Basic Agriculture knowledge	Problem Solving	Field Experimentations	Modern implements usages	Agricultural/Horticultural	Modern plant protection implements	Extension Programme	Environment and sustainability	Ethics	Individual and team work	Communication	Lifelong learning
CO1	Demonstrate an understanding of the composition, fertility and biology of soil and how they relate to good plant growth	3	3	2	1	3	3	2	3	1	1	1	3
CO2	Identify and prescribe sustainable options in horticulture which benefit the environment while maintaining productivity and economic viability	3	2	3	2	3	1	2	3	2	3	1	2
CO3	Apply horticultural skills and knowledge to operate various business entities found in the horticultural industry.	3	2	3	1	3	2	2	3	3	2	1	3
CO4	Identify and practice safe use of tools, equipment and supplies used in horticulture careers.	3	2	3	2	3	3	3	3	2	3	3	3
CO5	Propagate, grow, and maintain plants in horticulture production systems.	3	1	1	1	3	2	3	3	3	3	2	3
3: Strong contribution, 2: average contribution, 1: Low contribution													

Fundamentals of Plant Biochemistry and plant Biotechnology

Course Code: AG 115

Course Objective

1. To introduce the basic knowledge of plant biotechnology and plant biochemistry
2. To introduce the history of plant tissue culture, preparation of solution, various biochemical test
3. To introduce the recent advances in plant biotechnology
4. To familiar them tissue culture laboratory, basic techniques of biotechnology.

Course Outcome:

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

COURSE OUTCOME (CO)	DESCRIPTION
CO1	able to know what are the basic technologies involved in plant biochemistry and biotechnology as well as how these technologies are used for the production of useful products
CO2	Students can figure out the measures to prevent the various stresses of any crop, how to identify resistant sources
CO3	know how to isolate DNA form the leaf and how to identify biochemical given in a sample.
CO4	Know the role various role of biomolecules such as carbohydrate, protein, lipid etc in life
CO5	They can use their skills for the identification of resistant sources for various stresses

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	able to know what are the basic technologies involved in plant biochemistry and biotechnology as well as how these technologies are used for the production of useful products	3	3	1	1		1		3				3
CO2	Students can figure out the measures to prevent the various stresses of any crop, how to identify resistant sources	3	3	3	2		3		3				2
CO3	Know how to isolate DNA form the leaf and how to identify biochemical given in a sample.	3	2	3	3		3		3				3
CO4	Know the role various role of biomolecules such as carbohydrate, protein, lipid etc in life	3	2	1	1		3		3				3
CO5	can use their skills for the identification of resistant sources for various stresses	3	3	3	3		2		3				3
3: Strong contribution, 2: average contribution, 1: Low contribution													

Fundamentals of Soil Science

Course Code: AG116

Objectives:

- To gain basic knowledge of soil fertility and productivity
- To study Importance or Significance of soil macronutrient and micronutrients
- To Assess and develop importance of soil physical and chemical properties
- To study about soil pollution and mitigation process

Outcome:

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

COURSE OUTCOME (CO)	DESCRIPTION
CO1	To gain basic knowledge of soil fertility and productivity
CO2	To study Importance or Significance of soil macronutrient and micronutrients
CO3	To Assess and develop importance of soil physical and chemical properties
CO4	To study about soil pollution and mitigation process
CO5	To study about soil pollution and mitigation process

CO-PO MAPPING:

CO		PO1 Basic Agriculture knowledge	PO2 Problem Solving	PO3 Field Experimentations	PO4 Modern implement usage	Agriculture/Horticultural	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	To gain basic knowledge of soil fertility and productivity	3	1	2	1	1	3	3	3		3	1	3
CO2	To study Importance or Significance of soil macronutrient and micronutrients	3	3	3	1		3	3	3		3	3	2
CO3	To Assess and develop importance of soil physical and chemical properties	3	2	1	1		2	3	3	1	1	2	3
CO4	To study about soil pollution and mitigation process	3	2	2	2		3	3	3		2	3	3
CO5	To study about soil pollution and mitigation process	3	1	1	1	1	2	3	3		2	3	3
3: Strong contribution, 2: average contribution, 1: Low contribution													

INTRODUCTION TO FORESTRY

COURSE CODE: AG117

COURSE OBJECTIVES:

1. To impart detail theoretical as well as practical knowledge of forestry and various other related allied branches of forestry science.
2. To provide a basic understanding of emerging problems in the fields of forest by organizing visits to farm forest, industrial plantation, dense forest and open forest , nurseries and orchards.
3. To bestow knowledge regarding various modern techniques used in tree plantation for sustainable development in India.
4. To learn the applications of various fields of agriculture like horticulture, vegetable science, forestry, livestock production and others for raising the income of the marginal farmers.
5. To provide detailed knowledge on the subject to improve the farmer's condition by their contributions regarding basic and modern knowledge about organic farming.
6. Learn to follow scientific and economic approach along with environmental principles underpinning forestry production and effective use of land.
7. To provide knowledge on legal and ethical environmental issues which are impacting forestry organizations and exhibit an understanding and appreciation of the ethical implications of decisions.
8. To learn critical thinking and problem-solving skills which will ultimately help the students to achieve success in future.

COURSE OUTCOMES (CO):

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

COURSE OUTCOME (CO)	DESCRIPTION
CO1	Knowledge of role trees in almost all terrestrial ecosystems and provide a range of products and services to rural and urban people
CO2	The benefits that trees provide are best sustained by integrating trees into agriculturally productive landscapes.
CO3	To study the sustainable utilization of land through agroforestry.
CO4	Study of economically importance of tree and various purposes for growing of tree.
CO5	To study scientific management of trees such as creation, conservation and utilization of their resources.

CO		PO1 Basic Agriculture knowledge	PO2 Problem Solving	PO3 Field Experimentations	PO4 Modern implementation usage	PO5 Modern Horticultural implements	PO6 Modern protection implements	PO7 Extension Programme	PO8 Environment and sustainability	PO9 Ethics	PO10 Individual and team work	PO11 Communication	PO12 Lifelong learning
C01	Knowledge of role trees in almost all terrestrial ecosystems and provide a range of products and services to rural and urban people	3	3	2	1	3	3		3	1	2	1	3
C02	The benefits that trees provide are best sustained by integrating trees into agriculturally productive landscapes.	3	2	3	2	3	1		3	1	2	3	2
C03	To study the sustainable utilization of land through agroforestry.	3	2	3	1	3	2		3	3	3	1	3
C04	Study of economically importance of tree and various purposes for growing of tree.	3	2	3	2	3	3		3	2	2	2	3
C05	To study scientific management of trees such as creation, conservation and utilization of their resources.	3	1	1	1	3	2		3	3	3	3	3
3: Strong contribution, 2: average contribution, 1: Low contribution													

Comprehension & Communication Skills in English

COURSE CODE: LN107

COURSE OBJECTIVES:

- Knowledge of Professional, cultural and cross-cultural communication
- Basics concept of structural and functional grammar; meaning and process of communication, verbal and nonverbal communication
- Knowledge of reading and comprehension of general and technical articles, precise writing, summarizing, abstracting
- Basic concepts of group discussion, organizing seminars and conferences
- Time management: Personal organization, prioritizing and balancing; Cosmopolitan culture

COURSE OUTCOMES (CO):

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

COURSE OUTCOME (CO)	DESCRIPTION
CO1	Knowledge of professional, cultural and cross-cultural communication
CO2	Basic knowledge of structural and functional grammar; meaning and process of communication, verbal and nonverbal communication
CO3	Reading and comprehension of general and technical articles, precise writing, summarizing, abstracting
CO4	Basic concepts of group discussion, organizing seminars and conferences
CO5	Personal organization, prioritizing and balancing; Cosmopolitan culture, Group discussions

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	Knowledge of professional, cultural and cross-cultural communication	1	2	1	1	1	1	2	3	3	1	3	3
CO2	Basic knowledge of structural and functional grammar; meaning and process of communication, verbal and nonverbal communication	1	2	1	1	1	1	2	3	2	2	3	1
CO3	Reading and comprehension of general and technical articles, precise writing, summarizing, abstracting	1	2	1	1	1	1	2	3	1	2	3	3
CO4	Basic concepts of group discussion, organizing seminars and conferences	1	2	1	1	1	1	2	3	2	1	3	3
CO5	Personal organization, prioritizing and balancing; Cosmopolitan culture, Group discussions	1	2	1	1	1	1	2	2	3	1		3
3: Strong contribution, 2: average contribution, 1: Low contribution													

FUNDAMENTALS OF AGRONOMY**COURSE CODE: AG118****COURSE OBJECTIVES:**

1. To provide a basic understanding of emerging problems in the fields of agriculture by organizing visits to agricultural fields, nurseries and orchards.
2. To bestow knowledge regarding various modern techniques used in farming for sustainable agriculture in India.
3. To provide a basic understanding of the market and post-harvest handling of agricultural produce.
4. To provide detailed knowledge on the subject to improve the farmer's condition by their contributions regarding basic and modern knowledge about organic farming.
5. Learn to follow scientific and economic approach along with agricultural production and effective use of land.

COURSE OUTCOMES (CO):*After completion of the course, a student will be able to*

COURSE OUTCOME (CO)	DESCRIPTION
CO1	Exploits the knowledge developed by basic and allied sciences for higher crop production.
CO2	Aims at obtaining maximum production at minimum cost.
CO3	The advancement of knowledge and better understanding of plant and environment, agricultural practices are modified or new practices developed for high productivity.
CO4	To study the application of basic agronomic methodology for healthy environment.
CO5	Study for optimum growth, management and improvement of field crop with the objective of increasing food, fiber, oil seed and other agriculture products.

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	Exploits the knowledge developed by basic and allied sciences for higher crop production.	3	3	2	1	3	3		3	1	1	1	3
CO2	Aims at obtaining maximum production at minimum cost.	3	2	3	2	3	1		3	2	3	1	2
CO3	The advancement of knowledge and better understanding of plant and environment, agricultural practices are modified or new practices developed for high productivity.	3	2	3	1	3	2		3	2	3	3	3
CO4	To study the application of basic agronomic methodology for healthy environment.	3	2	3	2	3	3		3	1	2	3	3
CO5	Study for optimum growth, management and improvement of field crop with the objective of increasing food, fiber, oil seed and other agriculture products.	3	1	1	1	3	2		3	2	3	1	3
3: Strong contribution, 2: average contribution, 1: Low contribution													

Introductory biology

COURSE CODE:AG119

COURSE OBJECTIVES:

1. Basic concepts of diversity, characteristics and origin of living world
2. Knowledge of evolution and eugenics
3. Knowledge of flowering plants, seed and seed germination
4. Significance of crop and animals and its classifications
5. Basic concepts of Binomial nomenclature and classification Cell and cell division.

COURSE OUTCOMES (CO):

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

COURSE OUTCOME (CO)	DESCRIPTION
CO1	Origin of living world- Basic concepts of diversity, characteristics
CO2	Evolution and eugenics- Basic concepts and knowledge
CO3	Significance of flowering plants, seed and seed germination
CO4	Basic concepts of Binomial nomenclature
CO5	Basic concepts of classification Cell and cell division

CO-PO MAPPING:

CO		PO1.Basic Agriculture knowledge	PO2.Problem Solving	PO3. Field Experimentations	PO4.Modern implementation usage	PO5 .Modern Horticultural implements	PO.6 Modern Plant Protection implements	PO.7 Extension Program	PO8 Environment and sustainability	PO9 Ethics	PO10 10.Individual and team work	PO11 11.Communication Finance	PO12 Lifelong learning
C01	Origin of living world- Basic concepts of diversity, characteristics	2	2	3	2	3	2	2	2	2	3	1	2
C02	Evolution and eugenics- Basic concepts and knowledge	3	1	3	3	3	2	2	3	2	3	2	3
C03	Significance of flowering plants, seed and seed germination	3	2	3	3	3	1	1	3	2	3	2	3
C04	Basic concepts of Binomial nomenclature	3	1	3	3	3	1	2	2	1	1	2	2
C05	Basic concepts of classification Cell and cell division	3	2	3	3	3	1	2	3	1	2	2	2
3: Strong contribution, 2: average contribution, 1: Low contribution													

Elementary Mathematics

COURSE CODE: MT132

COURSE OBJECTIVES:

- Basic concepts of mathematics, distance formula, section formula (internal and external division)
- Knowledge of Equation of co-ordinate axes, Equation of lines parallel to axes
- Knowledge of Parallel lines, Perpendicular lines, Angle of bisectors between two lines, Area of triangle and quadrilateral
- General equation of a circle, Equation of circle passing through three given points
- Basics of Differential Calculus Definition of function, limit and continuity, Simple problems on limit

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 distance formula, section formula (internal and external division)
CO2	Knowledge of Parallel lines, Perpendicular lines, Angle of bisectors between two lines, Area of triangle and quadrilateral
CO3	Basics of Circle: Equation of circle whose centre and radius is known, General equation of a circle, Equation of circle passing through three given points
CO4	Differentiation of x^n , e^x , $\sin x$ & $\cos x$ from first principle, Derivatives of sum, difference, product and quotient of two functions
CO5	Logarithmic differentiation (Simple problem based on it)

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
C01	Basic knowledge of distance formula, section formula (internal and external division)	2	2	2	2	1	1	1	1	2	1	1	2
C02	Knowledge of Parallel lines, Perpendicular lines, Angle of bisectors between two lines, Area of triangle and quadrilateral	2	3	2	2	1	1	1	1	2	3	1	2
C03	Basics of Circle: Equation of circle whose centre and radius is known, General equation of a circle, Equation of circle passing through three given points	2	2	2	3	1	1	1	1	2	3	1	2
C04	Differentiation of x^n , e^x , $\sin x$ & $\cos x$ from first principle, Derivatives of sum, difference, product and quotient of two functions	2	2	3	3	1	1	1	1	2	3	1	2
C05	Logarithmic differentiation (Simple problem based on it)	2	2	3	3	1	1	1	1	2	3	1	2
3: Strong contribution, 2: average contribution, 1: Low contribution													

Agricultural Heritage

COURSE CODE:AG120

COURSE OBJECTIVES:

1. Basic knowledge of Agriculture and heritage
2. Status of agriculture and farmers in society, indigenous traditional knowledge of farmers
3. Knowledge to increase the production and productivity of Agriculture
4. Significance of Crop and its classifications
5. Current scenario of Indian agriculture; Indian agricultural concerns and future prospects.

COURSE OUTCOMES (CO):

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

COURSE OUTCOME (CO)	DESCRIPTION
CO1	Agriculture and heritage-basic knowledge and concepts
CO2	Basics and concepts of indigenous traditional knowledge and status of farmers
CO3	Importance of agriculture and agricultural resources available in India
CO4	classifications of crop and its significance to farmers
CO5	Indian agriculture Current scenario and future prospects

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	PO.7 Extension Program	PO8 Environment and sustainability	PO9 Ethics	PO10.Individual and team work	PO11.Communication Finance	PO12 Lifelong learning
C01	Agriculture and heritage-basic knowledge and concepts	3	1	1	3	2	3	2	2	2	3	2	2
C02	Basics and concepts of indigenous traditional knowledge and status of farmers	3	1	1	3	2	3	2	3	2	3	2	1
C03	Importance of agriculture and agricultural resources available in India	3	2	1	3	2	3	1	3	2	3	1	1
C04	classifications of crop and its significance to farmers	3	1	1	3	2	3	2	2	1	1	1	2
C05	Indian agriculture Current scenario and future prospects	3	2	1	3	1	3	2	3	1	2	2	2
3: Strong contribution, 2: average contribution, 1: Low contribution													

Rural Sociology & Educational Psychology**COURSE CODE: ED101****COURSE OBJECTIVES:**

- Basics of Sociology and Rural sociology
- In depth knowledge of study of Social Groups, Social Stratification, Culture concept
- Knowledge of Functional literacy, non-formal education of rural youth
- Basics to eradicate social evils, awareness programmes, consumer awareness
- Educational psychology: Meaning & its importance in agriculture extension.
- Basic knowledge of Personality, Learning, Motivation, Theories of Motivation

COURSE OUTCOMES (CO):*After completion of the course, a student will be able to*

COURSE OUTCOME (CO)	DESCRIPTION
CO1	Students will have knowledge of Sociology and Rural sociology
CO2	Knowledge of Functional literacy, non-formal education of rural youth
CO3	Knowledge of Functional literacy, non-formal education of rural youth
CO4	Students will have knowledge of Educational psychology: Meaning & its importance in agriculture extension
CO5	Basic knowledge of Personality, Learning, Motivation, Theories of Motivation

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 national problems	1	1	1	2	1	1	3	3	3	3	3	3
CO2	In depth knowledge of philosophy of NSS, fundamentals rights, directive principles of state policy	1	1	1	2	1	1	3	3	3	2	3	3
CO3	Knowledge of Functional literacy, non-formal education of rural youth	1	1	1	2	1	1	3	3	3	2	3	3
CO4	Students will have knowledge of Socio-economic structure of Indian society, population problems	1	1	1	2	1	1	3	3	3	2	3	3
CO5	Basic knowledge of environment enrichment and conservation, health, family welfare and nutrition	1	1	1	2	1	1	3	3	3	2	3	3
3: Strong contribution, 2: average contribution, 1: Low contribution													

Human Value and Ethics in Agriculture Code: BM 125

Course Objectives

1. To understand value and ethics, goal and mission of life
2. To solve case study of ethical lives
3. To understand basic knowledge of decision making and motivation

Course Outcome:

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

COURSE OUTCOME (CO)	DESCRIPTION
CO1	Understand value and ethics of life
CO2	Acquaint principals and philosophy in life
CO3	Understand importance of motivation
CO4	Understand mission and vision of life
CO5	Understand Case on ethical lives and spirituality

CO-PO MAPPING:

	CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
		Basic Agriculture knowledge	Problem Solving	Field Experimentations	Modern implementation usage	Modern Horticultural implements	Modern plant protection implements	Extension Programme	Environment and sustainability	Ethics	Individual and team work	Communication	Lifelong learning
CO1	Understand value and ethics of life		2							3		2	3
CO2	Acquaint principals and philosophy in life		2							3		1	2
CO3	Understand importance of motivation		2							3		1	3
CO4	Understand mission and vision of life		2							3		1	2
CO5	Understand Case on ethical lives and spirituality		2							3		1	3
3: Strong contribution, 2: average contribution, 1: Low contribution													

COURSE: NSS

COURSE CODE: AG121

COURSE OBJECTIVES:

- Orientation of students in national problems
- In depth knowledge of study of philosophy of NSS, fundamentals rights, directive principles of state policy
- Knowledge of Functional literacy, non-formal education of rural youth
- Basics to eradicate social evils, awareness programmes, consumer awareness
- Socio-economic structure of Indian society, population problems
- Basic knowledge of environment enrichment and conservation, health, family welfare and nutrition

COURSE OUTCOMES (CO):

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

COURSE OUTCOME (CO)	DESCRIPTION
CO1	Students will have knowledge of national problems
CO2	In depth knowledge of philosophy of NSS, fundamentals rights, directive principles of state policy
CO3	Knowledge of Functional literacy, non-formal education of rural youth
CO4	Students will have knowledge of Socio-economic structure of Indian society, population problems
CO5	Basic knowledge of environment enrichment and conservation, health, family welfare and nutrition

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 national problems	1	1	1	2	1	1	3	3	3	3	3	3
CO2	In depth knowledge of philosophy of NSS, fundamentals rights, directive principles of state policy	1	1	1	2	1	1	3	3	3	2	3	3
CO3	Knowledge of Functional literacy, non-formal education of rural youth	1	1	1	2	1	1	3	3	3	2	3	3
CO4	Students will have knowledge of Socio-economic structure of Indian society, population problems	1	1	1	2	1	1	3	3	3	2	3	3
CO5	Basic knowledge of environment enrichment and conservation, health, family welfare and nutrition	1	1	1	2	1	1	3	3	3	2	3	3
3: Strong contribution, 2: average contribution, 1: Low contribution													

B.Sc (Hons.) Agriculture First Year/ Second Semester (I/II)

Fundamentals of Genetics

Course Code: AG 131

Course Objective

1. Basic knowledge of concept and history of genetics.
2. To learn about the Mendelian Genetics
3. To impart the knowledge of the structure and functions of different cell organelles
4. To familiarize the students about the basics of gene interactions and genetic variance
5. To study the replication, transcription and translation in prokaryotes and eukaryotes.

Course Outcome:

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

COURSE OUTCOME (CO)	DESCRIPTION
CO1	Students learned about the definition, history and concept of genetics
CO2	Know the experiments performed by Mendel and also the Mendel's Law
CO3	Students familiarize with the different cell organelles, structure and functions.
CO4	Gained the knowledge of the various gene interactions, cytoplasmic genes and the genetic variance
CO5	Studied the mechanism of replication, transcription and translation in both prokaryotes and eukaryotes.

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
C01	Students learned about the definition, history and concept of genetics.	2	1	1	1	1	1		1		2		3
C02	Know the experiments performed by Mendel and also the Mendel's Law.	2	2	2	1	1	1		1		2		3
C03	Students familiarize with the different cell organelles, structure and functions.	2	1	1	1	1	1		1		2		3
C04	Gained the knowledge of the various gene interactions, cytoplasmic genes and the genetic variance.	2	1	1	1	1	1		2		3		3
C05	Studied the mechanism of replication, transcription and translation in both prokaryotes and eukaryotes.	2		1	1	1	1		1		2		3
3: Strong contribution, 2: average contribution, 1: Low contribution													

Agricultural Microbiology

Course Code: AG 132

Course objective

1. To know about microbes structure
2. Familiar with different types of useful microbes in agriculture.
3. Knowledge of microbiology in silage production, biofertilizers, biopesticides, biofuel production and biodegradation of agro-waste
4. Knowledge of different microbes, their mode of reproduction, genetics

Course Outcome:

After completion of course, a student will be able to

COURSE OUTCOME (CO)	DESCRIPTION
CO1	Student is able to know regarding microbial world, cell structure, Prokaryotic and eukaryotic microbes
CO2	Learn about Bacterial genetics, Role of microbes in soil fertility and crop production
CO3	Students are able to know about sowing time of different varieties according to temperature
CO4	Regarding atmospheric biological nitrogen fixation, Rhizosphere and phyllosphere.
CO5	By the end of course students will be able to understand the role of microbes in human welfare.

Soil and Water Conservation Engineering

Course Code: AE141

Course Objective

6. To introduce the concept of soil and water conservation.
7. To learn about the meaning, definition and agents of soil erosion.
8. To study about the soil estimation and soil loss measurement techniques.
4. To familiarize the students about the concept of contouring.
5. To aware the students about the water harvesting and its techniques.

Course Outcome:

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

COURSE OUTCOME (CO)	DESCRIPTION
CO1	Students learned about the meaning, definition and concept of soil and water conservation.
CO2	Learned about the meaning, definition and agents of soil erosion
CO3	Students learned about the soil estimation and soil loss measurement techniques.
CO4	Students knew about the concept of contouring.
CO5	Familiarized about the water harvesting and its techniques

CO		PO1 Basic Agriculture knowledge	PO2 Problem Solving	PO3 Field Experimentations	PO4 Modern implementation usage	PO5 Modern Horticultural implements	PO6 Modernplamt protection implements	PO7 ExtensionProgramme	PO8 Environment and sustainability	PO9 Ethics	PO10 Individual and team work	PO11 Communication	PO12 Lifelong learning
C01	Students learned about the meaning, definition and concept of soil and water conservation.	3	1	2	2	1	1		3		2		3
C02	Learned about the meaning, definition and agents of soil erosion	3	1	2	2	1	1		3		3		3
C03	Students learned about the soil estimation and soil loss measurement techniques.	3	1	2	2	1	1		3		2		3
C04	Students knew about the concept of contouring.	3	1	2	1	1	1		3		3		3
C05	Familiarized about the water harvesting and its techniques	3	1	2	2	1	1		3		2		3
3: Strong contribution, 2: average contribution, 1: Low contribution													

Fundamentals of Crop Physiology

Course Code: AG 133

Course Objective

1. To introduce the basic knowledge of crop physiology.
2. To introduce the history of crop physiology
3. To introduce the recent advances in crop physiology
4. To familiar students different practical aspects of crop physiology.

Course Outcome:

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

COURSE OUTCOME (CO)	DESCRIPTION
CO1	able to know what are the basic technologies involved in physiology and how they are used in crop improvement.
CO2	can use the basic knowledge regarding plant physiology in crop improvement.
CO3	impart knowledge to the students on different plant metabolic processes and their functions in plants
CO4	By the end of course the students will be able to study the growth and development of plants
CO5	study of nutrients and plant growth regulator and their applications in agriculture

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	able to know what are the basic technologies involved in physiology and how they are used in crop improvement.	3	3	2	1	1	3		3				3
CO2	can use the basic knowledge regarding plant physiology in crop improvement.	3	3	3	2	1	1		3				2
CO3	impart knowledge to the students on different plant metabolic processes and their functions in plants	3	2	1	1	2	2		3				3
CO4	By the end of course the students will be able to study the growth and development of plants	3	2	2	2	3	3		3				2
CO5	study of nutrients and plant growth regulator and their applications in agriculture	3	1	1	1	1	2		3				2
3: Strong contribution, 2: average contribution, 1: Low contribution													

Fundamentals of Agricultural Economics

BM161

Course objectives:

- To understand scope and nature of economics
- To understand basic concepts of desire, demand and supply
- To understand consumer's equilibrium, price determination and how to run industry
- To understand money barter system, inflation, deflation
- To understand role of banking in modern economy and elements of economics

Course Outcome:

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

COURSE OUTCOME (CO)	DESCRIPTION
CO1	Students will learn scope and nature of economics
CO2	Students will learn basic concepts of desire, demand and supply
CO3	Students will understand consumer's equilibrium, price determination and how to run industry
CO4	They will understand how money barter system, inflation, deflation
CO5	They will understand role of banking in modern economy and elements of economics

CO-PO MAPPING:

	CO	PO1 Basic Agriculture knowledge	PO2 Problem Solving	PO3 Field Experimentations	usage	PO5 modern Horticultural implements	PO6 Modern protection implements	PO7 Extension Programme	PO8 Environment and sustainability	PO9 Ethics	PO10 Individual and team work	PO11 Communication	PO12 Lifelong learning
CO1	Students will learn scope and nature of economics	3	3	2	1	1	3		3				3
CO2	Students will learn basic concepts of desire, demand and supply	3	3	3	2	1	1		3				2
CO3	Students will understand consumer's equilibrium, price determination and how to run industry	3	2	1	1	2	2		3				3
CO4	They will understand how money barter system, inflation, deflation	3	2	2	2	3	3		3				2
CO5	They will understand role of banking in modern economy and elements of economics	3	1	1	1	1	2		3				2
3: Strong contribution, 2: average contribution, 1: Low contribution													

Agri-Informatics

COURSE CODE:AG134

COURSE OBJECTIVES:

1. Understand analogy of computer and MS Office.
2. basic knowledge of Internet And WWW.
3. Knowledge and concept Agri-Informatics.
4. Use of IT application and different IT tools in Agriculture
5. Knowledge and concept e-Agriculture.

COURSE OUTCOMES (CO):

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

COURSE OUTCOME (CO)	DESCRIPTION
CO1	Knowledge and anatomy of computer including Operating Systems and Applications of MS Office .
CO2	Knowledge of World Wide Web (www) and internet their Concepts and components
CO3	Agriculture Expert System, Soil Information Systems for supporting Farm decisions.
CO4	Preparation of contingent crop-planning using IT tools. Smartphone Apps in Agriculture for farm advises, market price, postharvest management.
CO5	Use of Information and Communication Technology in Agriculture

CO-PO MAPPING:

CO		PO											
		PO1. Basic Agriculture knowledge	PO2. Problem Solving	PO3. Field Experimentations	PO4. Modern implementation	PO5. Modern Horticultural implements	PO6. Modern Plant Protection implements	PO7. Extension Program	PO8. Environment and sustainability	PO9. Ethics	PO10. Individual and team work	PO11. Communication Finance	PO12. Lifelong learning
C01	Knowledge and anatomy of computer including Operating Systems and Applications of MS Office .	2	3	2	1	2	1	3	2	2	3	3	2
C02	Knowledge of World Wide Web (www) and internet their Concepts and components	2	3	1	2	1	1	3	2	2	2	3	2
C03	Agriculture Expert System, Soil Information Systems for supporting Farm decisions.	3	3	1	1	1	1	3	2	1	3	3	2
C04	Preparation of contingent crop-planning using IT tools. Smartphone Apps in Agriculture for farm advises, market price.	3	3	2	1	1	1	3	1	1	2	3	2
C05	Use of Information and Communication Technology in Agriculture	2	3	2	1	1	1	3	2	2	3	3	2
3: Strong contribution, 2: average contribution, 1: Low contribution													

Fundamentals of Entomology

COURSE CODE: AG135

COURSE OBJECTIVES:

- Basics knowledge of Entomology including systematic, history and classification
- Knowledge of external morphology of insects, their systems of body and sensory organs
- Knowledge of diapauses and metamorphosis in life of insects
- Type of insect larvae and pupa
- Orders of class insects and classification upto family
- Taxonomic study – history, importance and development and binomial nomenclature

COURSE OUTCOMES (CO):

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

COURSE OUTCOME (CO)	DESCRIPTION
CO1	Know about the concept of systematic, history and classification of insects
CO2	External morphology of insects
CO3	Basics of all the body system (digestive, circulatory, excretory, respiratory, nervous, secretory (Endocrine) and reproductive system of insects)
CO4	Orders of class insects and classification upto family
CO5	Knowledge of biology and characteristics of insect pests of different orders

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
C01	Know about the concept of systematic, history and classification of insects	2	1	1	2	2	3	2	3	1	2	1	3
C02	External morphology of insects	3	2	2	2	1	3	2	3	1	2	1	3
C03	Basics of all the body system (digestive, circulatory, excretory, respiratory, nervous, secretory (Endocrine) and reproductive system of insects)	2	1	3	1	1	3	1	2	1	2	1	2
C04	Orders of class insects and classification upto family	2	1	3	1	1	3	1	2	1	1	1	3
C05	Knowledge of biology and characteristics of insect pests of different orders	1	1	2	1	1	3	1	2	1	1	1	3
3: Strong contribution, 2: average contribution, 1: Low contribution													

Fundamentals of crop physiology

Fundamental of Agricultural Extension Education (AG-136)

Objectives:

- Learn about the various definitions of extension education
- Understand the difference between formal and extension education
- Appreciate the objective and principle of extension education
- Role of K.V.K, ATMA, SAUs, NGO and ATIC.

Outcome:

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

COURSE OUTCOME (CO)	DESCRIPTION
CO1	Students gain knowledge regarding the K.V.K, ATMA, SAUs and ATIC.
CO2	They understand the rural constraints and salutations.
CO3	They gain knowledge regarding methods of Demonstrations.
CO4	They gain knowledge about all the systems of surveying method in rural areas.
CO5	Students understand Central and Decentralized extension delivery system.

CO-PO MAPPING:

CO		CO											
		PO1 Basic Agriculture knowledge	PO2 Problem Solving	PO3 Field Experimentations	PO4 Modern implement 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	Students gain knowledge regarding the K.V.K, ATMA, SAUs and ATIC.	3	1	2	1	1	3	3	3		3	1	3
CO2	They understand the rural constraints and salutations.	3	3	3	1	1	3	3	3		3	3	2
CO3	They gain knowledge regarding methods of Demonstrations.	3	2	1	1	2	2	3	3	1	1	2	3
CO4	They gain knowledge about all the systems of surveying method in rural areas.	3	2	2	2	1	3	3	3		2	3	3
CO5	Students understand Central and Decentralized extension delivery system.	3	1	1	1	1	2	3	3		2	3	3
3: Strong contribution, 2: average contribution, 1: Low contribution													

Communication Skills and Personality Development

COURSE CODE: LN111

COURSE OBJECTIVES:

- Knowledge of Professional, cultural and cross-cultural communication
- Basics concept of structural and functional grammar; meaning and process of communication, verbal and nonverbal communication
- Knowledge of reading and comprehension of general and technical articles, precise writing, summarizing, abstracting
- Basic concepts of group discussion, organizing seminars and conferences
- Time management: Personal organization, prioritizing and balancing; Cosmopolitan culture

COURSE OUTCOMES (CO):

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

COURSE OUTCOME (CO)	DESCRIPTION
CO1	Knowledge of professional, cultural and cross-cultural communication
CO2	Basic knowledge of structural and functional grammar; meaning and process of communication, verbal and nonverbal communication
CO3	Reading and comprehension of general and technical articles, precise writing, summarizing, abstracting
CO4	Basic concepts of group discussion, organizing seminars and conferences
CO5	Personal organization, prioritizing and balancing; Cosmopolitan culture, Group discussions

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	Knowledge of professional, cultural and cross-cultural communication	1	2	1	1	1	1	2	3	3	1	3	3
CO2	Basic knowledge of structural and functional grammar; meaning and process of communication, verbal and nonverbal communication	1	2	1	1	1	1	2	3	2	2	3	1
CO3	Reading and comprehension of general and technical articles, precise writing, summarizing, abstracting	1	2	1	1	1	1	2	3	1	2	3	3
CO4	Basic concepts of group discussion, organizing seminars and conferences	1	2	1	1	1	1	2	3	2	1	3	3
CO5	Personal organization, prioritizing and balancing; Cosmopolitan culture, Group discussions	1	2	1	1	1	1	2	2	3	1		3
3: Strong contribution, 2: average contribution, 1: Low contribution													