Department of Agriculture Sciences

Program Learning Outcomes (PLOs)

Agriculture Graduates will be

PLO1: Able to evaluate critical and intricate agricultural related issues by using quantitative and qualitative research techniques and evolve effective solutions.

PLO2: Able to formulate solutions to field and scientific problems in crop production and cropping systems.

PLO3: Demonstrate ability for self-directed learning, time management and dedication to serve the community by working effectively individually as well as in teams. Display initiative, honesty, integrity and diligence by empathizing with farmers.

PLO4: Evaluate impact of globalization and liberalization on the agriculture sector and farmers in particular. Ability to understand technological advancements and implications and applying them for developing adaptability and managing diversity in global complex situations.

PLO5: Analyze the role and impact of agriculture in society and the international community Learn to appreciate diversity and equality, demonstrate ethical and professional behaviours in all situations.

PLO6: Relate the value of linkages and networks with their importance in self-reliance and research. Linking learning to real world problems to stimulate professionalism in research.

SEMESTER-I

Fundamentals of Horticulture	
Course Code: 24AGBS101	Theory: Continuous Evaluation: 50 Marks
Credits: 2	Theory: End Semester Examination: 50 Marks
L T P: 1 0 1	Lab: Continuous Evaluation: 50 Marks
Prerequisite: Nil	Lab End Semester Examination: 50 Marks

Objective: Provide insights on basic theory, concepts and practices involved in production practices of horticultural crops.

Course outcome: Upon completion of the course students will be able to;

- Explain the several practices involved in cultivation and management of various horticultural crops.
- Identify various horticultural crops like fruits, vegetable, flower seeds, plant types in their natural existence.
- Categorize crops grown in different agro-climatic conditions with their classification according to various physiological and morphological features.
- Practice techniques involved in management of different horticultural crops.

Fundamentals of Plant Biochemistry and Biotechnology	
Course Code: 24AGBS102	Theory: Continuous Evaluation: 50 Marks
Credits: 3	Theory: End Semester Examination: 50 Marks
L T P: 2 0 1	Lab: Continuous Evaluation: 50 Marks
Prerequisite: Nil	Lab End Semester Examination: 50 Marks

Objectives: Provide insights on basic theory, principles, certain biochemical process and technology used for development of transgenic variety**.**

Course outcome: Upon completion of the course students will be able to;

- Acquainted with chemistry of biological phenomenon.
- Know the r-DNA technology for development of transgenic variety.
- Acquire knowledge about how the principles of totipotency useful for plant development.
- Understand the development of complete plant through tissue culture.

Fundamentals of Soil Science	
Course Code: 24AGBS103	Theory: Continuous Evaluation: 50 Marks
Credits: 3	Theory: End Semester Examination: 50 Marks
L T P: 2 0 1	Lab: Continuous Evaluation: 50 Marks
Prerequisite: Nil	Lab End Semester Examination: 50 Marks

Objective: To acquaint with soil forming process, its properties- physical, chemical and biological, as a plant growth medium.

Course outcome: Upon completion of the course students will be able to;

- Explain the soil forming process to relate to the soil forming factors in various climatic conditions.
- List the physical properties and chemical properties that affect both plant growth and biological activity
- Explain soil as medium of plant growth, soil quality and soil health in relation to plant growth

Introduction to Forestry	
Course Code: 24AGBS104	Theory: Continuous Evaluation: 50 Marks
Credits: 2	Theory: End Semester Examination: 50 Marks
L T P: 1 0 1	Lab: Continuous Evaluation: 50 Marks
Prerequisite: Nil	Lab End Semester Examination: 50 Marks

Objective: To acquire some basic knowledge on silviculture and their management.

Course outcome: Upon completion of the course students will be able to;

- Able to know about basic components of silviculture.
- Analytical skills on forest mensuration and tending operations.
- Know about the basics of agroforestry.

Fundamentals of Agronomy	
Course Code: 24AGBS105	Theory: Continuous Evaluation: 50 Marks
Credits: 4	Theory: End Semester Examination: 50 Marks
L T P: 3 0 1	Lab: Continuous Evaluation: 50 Marks
Prerequisite: Nil	Lab End Semester Examination: 50 Marks

Objective: This course helps in developing the understanding of basic theory, concepts and practices involved in crop cultivation.

Learning outcome:
Upon completion of the course students will be able to

- Explain the several practices involved in field scale crop cultivation and management practices.
- Identify various crop seeds, plant types in their natural existence.
- Able to categorize crops grown in different agro-climatic conditions.
- Practice techniques involved in crop management.

Agricultural Heritage	
Course Code: 24AGBS106	Theory: Continuous Evaluation: 50 Marks
Credits: 1	Theory: End Semester Examination: 50 Marks
L T P: 1 0 0	Lab: Continuous Evaluation: 50 Marks
Prerequisite: Nil	Lab End Semester Examination: 50 Marks

Objective: To provide insights on ancient and traditional methods of farming activities

Course outcome: Upon completion of the course students will be able to;

- Gained the knowledge on how agriculture was practiced in the ancient times.

- Classify the types of crop management practices- cultivation, traditional varieties, diseases, soil and water management.
- List types traditional fertilizers and their importance in crop production.
- Explain the timeline of process of migration and introduction of HYV vis-à-vis traditional varieties.

Rural Sociology & Educational Psychology	
Course Code:24AGBS107	Theory: Continuous Evaluation: 50 Marks
Credits: 2	Theory: End Semester Examination: 50 Marks
L T P: 2 0 0	Lab: Continuous Evaluation: 50 Marks
Prerequisite: Nil	Lab End Semester Examination: 50 Marks

Objective: Provide insights on basic theory, concept of rural society and different types of social groups, socialinstitutions, social change and development.

Course outcome: Upon completion of the course students will be able to;

- Understand the rural society and its significance.
- Analytical ability to examine various social institutions and its role.
- Understand the personality development traits.

Human Value and Ethics	
Course Code: 24AGBS108	Theory: Continuous Evaluation: 50 Marks
Credits: 1	Theory: End Semester Examination: 50 Marks
L T P: 1 0 0	Lab: Continuous Evaluation: 50 Marks
Prerequisite: Nil	Lab End Semester Examination: 50 Marks

Objective: To inculcate the principles and moral values of human existence and philosophy.

Course outcome: Upon completion of the course students will be able to;

- Practice ethical approach to life.
- Treat people with compassion and selflessly offer service.
- Be self-aware of spiritualism and its importance in mindfulness.
- Carry balanced mind and positive attitude.

Comprehension and Communication Skills in English	
Course Code: 24AGBS109	Theory: Continuous Evaluation: 50 Marks
Credits: 2	Theory: End Semester Examination: 50 Marks
L T P: 1 0 1	Lab: Continuous Evaluation: 50 Marks
Prerequisite: Nil	Lab End Semester Examination: 50 Marks

Objective: Train in use of English as communication language and writing technical content.

Course outcome: Upon completion of the course students will be able to;

- Effectively speak and use English in conversation in an academic environment.
- Reliably demonstrated the ability to use the conventions of grammar when creating paragraphs.
- Effective in comprehension of a technical writing, develop manuscripts and reports.

Introductory Biology	
Course Code: 24AGBS110	Theory: Continuous Evaluation: 50 Marks
Credits: 2	Theory: End Semester Examination: 50 Marks
L T P: 1 0 1	Lab: Continuous Evaluation: 50 Marks
Prerequisite: Nil	Lab End Semester Examination: 50 Marks

Objective: To sensitize students about the basics of biology in special reference to botany.

Course outcome: Upon completion of the course students will be able to;

- Know about the various parts of an angiospermic plant.
- Know about the evolutionary process and binomial classification.
- Explain 3 important families such as, Brassicaceae, Fabaceae and Poaceae.

OR

Elementary Mathematics	
Course Code: 24AGBS110	Theory: Continuous Evaluation: 50 Marks
Credits: 2	Theory: End Semester Examination: 50 Marks
L T P: 2 0 0	Lab: Continuous Evaluation: 50 Marks
Prerequisite: Nil	Lab End Semester Examination: 50 Marks

Objective: To introduce basic mathematical theories useful to understand the mathematical approaches used inagriculture.

Course outcome: Upon completion of the course students will be able to;

- Explain the mathematical functions.
- Apply general form of equations in calculations.

SEMESTER-II

Fundamentals of Genetics	
Course Code: 24AGBS201	Theory: Continuous Evaluation: 50 Marks
Credits: 3	Theory: End Semester Examination: 50 Marks
L T P: 2 0 1	Lab: Continuous Evaluation: 50 Marks
Prerequisite: Nil	Lab End Semester Examination: 50 Marks

Objective: To provide the concept of fundamental biology principles occurring inside the cell and its influence on character expression.

Course Outcome: Upon completion of the course students will be able to;

- Explain inheritance and expression of characters.
- Explain how variation occurs within living organisms.
- Acquainted with genetic terminology and its application.
- Gained the knowledge on the genetic principles behind the development of variety

Agricultural Microbiology	
Course Code: 24AGBS202	Theory: Continuous Evaluation: 50 Marks
Credits: 2	Theory: End Semester Examination: 50 Marks
L T P: 1 0 1	Lab: Continuous Evaluation: 50 Marks
Prerequisite: Nil	Lab End Semester Examination: 50 Marks

Objective: Provide insights on basic theory on microorganisms: Beneficial and harmful to crop plants.

Course outcome: Upon completion of the course students will be able to;

- Understand the milestones in the history of microbiology leading to discovery of microorganisms.
- Know about different artificial methods of culturing the microorganisms and different sterilization methods.
- Gained knowledge on different plant growth promoting microorganisms.
- Knowledge on mushrooms and their cultivation.

Introductory Soil and Water Conservation Engineering	
Course Code: 24AGBS203	Theory: Continuous Evaluation: 50 Marks
Credits: 2	Theory: End Semester Examination: 50 Marks
L T P: 1 0 1	Lab: Continuous Evaluation: 50 Marks
Prerequisite: Nil	Lab End Semester Examination: 50 Marks

Objective: To provide insights on theory and concepts of engineering employed on soils and water conservation.

Course outcome: Upon completion of the course students will be able to;

- Visualize the importance of soil and water conservation.

- Explain the types of erosion and their impact on agricultural landscapes.
- Categorize the methods employed to control the erosion caused by various agents.

Fundamentals of Crop Physiology	
Course Code: 24AGBS204	Theory: Continuous Evaluation: 50 Marks
Credits: 2	Theory: End Semester Examination: 50 Marks
L T P: 1 0 1	Lab: Continuous Evaluation: 50 Marks
Prerequisite: Nil	Lab End Semester Examination: 50 Marks

Objective: Provide insights on basic theory and concept related to plant biochemistry

Course outcome: Upon completion of the course students will be able to;

- Understand different process involved in different physiological process found in plants responsible for its growth
- Accumulate knowledge on different metabolisms found in plants.
- Knowledge about different growth regulators and different aspects of growth and development of major crops.

Fundamentals of Agricultural Economics	
Course Code: 24AGBS205	Theory: Continuous Evaluation: 50 Marks
Credits: 2	Theory: End Semester Examination: 50 Marks
L T P: 2 0 0	Lab: Continuous Evaluation: 50 Marks
Prerequisite: Nil	Lab End Semester Examination: 50 Marks

Objective: Expose students to basic principles of economics applicable in agricultural sector.

Course outcome: Upon completion of the course students will be able to:

- Develop ideas of the basic characteristics of Indian economy, its potential on natural resources, understanding agriculture as the foundation of economic growth and development.
- Understand factor of marketing, various types of investment analysis.
- Compute and assess real situation of economy and income pattern.
- Understand relationship between investment and savings.

Fundamentals of Plant Pathology	
Course Code: 24AGBS206	Theory: Continuous Evaluation: 50 Marks
Credits: 4	Theory: End Semester Examination: 50 Marks
L T P: 3 0 1	Lab: Continuous Evaluation: 50 Marks
Prerequisite: Nil	Lab End Semester Examination: 50 Marks

Objective: Provide insights on basic theory, concepts and practices involved in crop protection against plant diseases.

Course outcome: Upon completion of the course students will be able to;

- Explain basic principles and concepts of plant pathology and familiarize students with basic vocabulary of plant disease management.
- List major groups of organisms that cause plant diseases and phenology of diseased plants.
- Explain the different infection, reproduction, survival mechanism and spread of different pathogens.
- Categorize different biotic and abiotic causes of diseases and different diseases caused due to them.
- Practice techniques involved in integrated disease management.

Fundamentals of Entomology	
Course Code: 24AGBS207	Theory: Continuous Evaluation: 50 Marks
Credits: 4	Theory: End Semester Examination: 50 Marks
L T P: 3 0 1	Lab: Continuous Evaluation: 50 Marks
Prerequisite: Nil	Lab End Semester Examination: 50 Marks

Objective: To provide basic knowledge on insect's morphology, taxonomy and pest control principles.

Course outcome: Upon completion of the course students will be able to;

- Know the morphology and physiology of a typical inset body.
- Acquaint with the basic principles of insect pest control.
- Gained insights on the insect taxonomy and classification of insects as economically beneficial and pests.

Fundamentals of Agricultural Extension Education	
Course Code: 24AGBS208	Theory: Continuous Evaluation: 50 Marks
Credits: 3	Theory: End Semester Examination: 50 Marks
L T P: 2 0 1	Lab: Continuous Evaluation: 50 Marks
Prerequisite: Nil	Lab End Semester Examination: 50 Marks

Objective: This course is intended to orient students with the concepts of extension education and its importance in agriculture development and also to expose the students with various rural development program aimed at poverty alleviation and analysis. Besides the students will be learning about new innovations and transfer through agricultural extension in India.

Course outcome: Upon completion of the course students will be able to;

- Explain the concepts of extension.
- Define community development program.
- List the extension system of SAUs and ICAR.
- Understand the market-led-extension.
- Gained knowledge on cyber extension, farming situation based extension.

- Acquired skills to examine the rural leadership and PRA survey.

Communication Skills and Personality Development	
Course Code: 24AGBS209	**Theory: Continuous Evaluation: 50 Marks**
Credits: 2	**Theory: End Semester Examination: 50 Marks**
L T P: 1 0 1	**Lab: Continuous Evaluation: 50 Marks**
Prerequisite: Nil	**Lab End Semester Examination: 50 Marks**

Objective: In this course students will learn about the concept, meaning and process of communication and various methods. Students will also learn various communication skills and about personality development.

Course outcome: Upon completion of the course students will be able to;

- Explain carious communication methods and communication skills.
- Acquired competency to write the technical articles.
- Understand various personality traits.
- Gained the competency to organize seminars and conferences.

SEMESTER-III

Crop Production Technology-I (Kharif Crops)	
Course Code: 24AGBS301	Theory: Continuous Evaluation: 50 Marks
Credits: 2	Theory: End Semester Examination: 50 Marks
L T P: 2 0 1	Lab: Continuous Evaluation: 50 Marks
Prerequisite: Nil	Lab End Semester Examination: 50 Marks

Objective: Provide basic knowledge about production of kharif crops.

Course outcome: Upon completion of the course students will be able to.

- List the Kharif crops and know about the morphological characters of various kharif crops.
- Explain about soil and climatic requirements of different kharif crops.
- Describe the cultural practices associated with various kharif crops.
- Identify the yield contributing characters and calculation of yield

Fundamentals of Plant Breeding	
Course Code: 24AGBS302	Theory: Continuous Evaluation: 50 Marks
Credits: 3	Theory: End Semester Examination: 50 Marks
L T P: 2 0 1	Lab: Continuous Evaluation: 50 Marks
Prerequisite: Nil	Lab End Semester Examination: 50 Marks

Objective: Provide insights on basic theory, genetic principles and methods applied for development of variety.

Outcome: Upon completion of the course students will be able to;

- Acquainted with floral biology of crop.
- Explain about basic principles of variety development.
- Know different methods applied in different crop for development of variety.

Agricultural Finance and Co-Operation	
Course Code: 24AGBS303	Theory: Continuous Evaluation: 50 Marks
Credits: 3	Theory: End Semester Examination: 50 Marks
L T P: 2 0 1	Lab: Continuous Evaluation: 50 Marks
Prerequisite: Nil	Lab End Semester Examination: 50 Marks

Objective: To have general knowledge on various financial and marketing institutions.

Course outcome: Upon completion of the course students will be able to;

- Understand agriculture as the foundation of economic growth and development.
- Understands source of finance, both public and private.
- Demonstrate role of government to correct market failures and possible advantages of public financing.

- Understand conditions of financial markets and its impact in the economy.
- Understand role and significance of non-banking financial institutions, foreign exchange rate with its impact on various sector.

Agri-Informatics	
Course Code: 24AGBS304	Theory: Continuous Evaluation: 50 Marks
Credits: 2	Theory: End Semester Examination: 50 Marks
L T P: 1 0 1	Lab: Continuous Evaluation: 50 Marks
Prerequisite: Nil	Lab End Semester Examination: 50 Marks

Objective: To provide exposure to the computer-based MIS and data relevant to agriculture and interactive software's.

Course outcome: Upon completion of the course students will be able to;

- Explain importance of ICT in agriculture.
- Use of agriculture related database to develop analytics.
- Develop interactive apps. to provide services.
- Develop decision making process to support agricultural activities.
- Develop database of all aspects of agriculture.

Farm Machinery and Power	
Course Code: 24AGBS305	Theory: Continuous Evaluation: 50 Marks
Credits: 2	Theory: End Semester Examination: 50 Marks
L T P: 1 0 1	Lab: Continuous Evaluation: 50 Marks
Prerequisite: Nil	Lab End Semester Examination: 50 Marks

Objective: Discussed detailed knowledge on various farm machineries and their functioning principles.

Course outcome: Upon completion of the course students will be able to;

- List types of farm machineries and their working principles.
- Repair and troubleshooting of machineries
- Identify suitable tillage equipment's to be used with power operated machines.
- Gained analytical skills to analyze the cost of power usage in land preparation.

Production Technology for Vegetables and Spices	
Course Code: 24AGBS306	Theory: Continuous Evaluation: 50 Marks
Credits: 2	Theory: End Semester Examination: 50 Marks
L T P: 1 0 1	Lab: Continuous Evaluation: 50 Marks
Prerequisite: Nil	Lab End Semester Examination: 50 Marks

Objective: Provide insights on basic theory, concepts and practices involved in production practices of vegetable and spice crops.

Course outcome: Upon completion of the course students will be able to

- Explain the several practices involved in cultivation and management of different vegetable and spice crops.
- Identify different seeds of vegetable and spice crops with their plant types in their natural existence.
- Classify different vegetable and spice crops according to their agro-climatic requirement, physiological and morphological features.
- Practice techniques involved in management of different vegetable and spice crops.

Environmental Studies and Disaster Management	
Course Code: 24AGBS307	Theory: Continuous Evaluation: 50 Marks
Credits: 3	Theory: End Semester Examination: 50 Marks
L T P: 2 0 1	Lab: Continuous Evaluation: 50 Marks
Prerequisite: Nil	Lab End Semester Examination: 50 Marks

Objective: To get an insight into various environmental components including ecosystem, ecological succession anddisaster management.

Course outcome: Upon completion of the course students will be able to;

- List various types of energy sources (renewable and non-renewable).
- Describe various components of an ecosystem.
- Explain various types of pollution sources and their management.
- Gained knowledge on various kinds of disasters and their management.

Statistical Methods	
Course Code: 24AGBS308	Theory: Continuous Evaluation: 50 Marks
Credits: 2	Theory: End Semester Examination: 50 Marks
L T P: 1 0 1	Lab: Continuous Evaluation: 50 Marks
Prerequisite: Nil	Lab End Semester Examination: 50 Marks

Objective: To understand the types of data, basic methods used in data analysis and computer-based software's used in data collection, management and interpretation of data.

Course outcome: Upon completion of the course students will be able to;

- Explain the data and data classification.
- Organize data in excel sheet for analysis and interpretation using various statistical methods.
- Perform sampling, data collection and analysis to apply test of significance.
- Develop field scale testing design and collect the primary empirical data.
- Use of computer based statistical software to analyze a set of data.

Livestock & Poultry Management	
Course Code: 24AGBS309	Theory: Continuous Evaluation: 50 Marks

Credits: 4	Theory: End Semester Examination: 50 Marks
L T P: 3 0 2	Lab: Continuous Evaluation: 50 Marks
Prerequisite: Nil	Lab End Semester Examination: 50 Marks

Objective: To understand the different components of the animal husbandry practices in relation to agriculture

Course outcome: Upon completion of the course students will be able to;

- Explain what animal husbandry and its components.
- Gained knowledge on types of farm animals, fodder types and animal improvement.
- How to organize the poultry production on farm?
- Gained knowledge on animal health management and medication to protect animals from diseases.

SEMESTER-IV

Crop Production Technology-II (Rabi crops)	
Course Code: 24AGBS401	Theory: Continuous Evaluation: 50 Marks
Credits: 2	Theory: End Semester Examination: 50 Marks
L T P: 1 0 1	Lab: Continuous Evaluation: 50 Marks
Prerequisite: Nil	Lab End Semester Examination: 50 Marks

Objective: Provide basic knowledge about production of rabi crops.

Course outcome: Upon completion of the course students will be able to;

- Know about the morphological characters of various rabi crops.
- Explain about soil and climatic requirements of different rabi crops.
- Describe the cultural practices associated with various rabi crops
- Identify the yield contributing characters and calculation of yield.

Production Technology for Ornamental Crops, MAPs and Landscaping	
Course Code: 24AGBS402	Theory: Continuous Evaluation: 50 Marks
Credits: 2	Theory: End Semester Examination: 50 Marks
L T P: 1 0 1	Lab: Continuous Evaluation: 50 Marks
Prerequisite: Nil	Lab End Semester Examination: 50 Marks

Objective: Provide insights on basic theory, concepts and practices involved in production practices of Ornamental crops, Medicinal and aromatic plants with different style and features of landscape designing**.**

Course outcome: Upon completion of the course students will be able to;

- Explain the several practices involved in cultivation and management of different ornamental crops, medicinal and aromatic plants.
- Identify different ornamental crops, medicinal and aromatic plants seed with their plant types in their natural existence.
- Classify different ornamental crops, medicinal and aromatic plants according to their agro-climatic requirement, physiological and morphological features.
- Practice techniques involved in management of different ornamental crops, medicinal and aromatic plants
- Go through different styles and features of landscaping with computer aided designing of landscape (CAD) and turf management.

Renewable Energy and Green Technology	
Course Code: 24AGBS403	Theory: Continuous Evaluation: 50 Marks
Credits: 2	Theory: End Semester Examination: 50 Marks
L T P: 1 0 1	Lab: Continuous Evaluation: 50 Marks
Prerequisite: Nil	Lab End Semester Examination: 50 Marks

Objective: Comprehensively describe the non-renewable and renewable energy sources and their relevance in agriculture.

Course outcome: Upon completion of the course students will be able to;

- List energy sources relevant to agricultural needs.
- Understand the production of renewable energy sources and usage at various levels in agriculture.
- Technologies available for large scale production of renewable energy.
- Source the gadgets relevant to produce renewable energy.

Problematic Soils and their Management	
Course Code: 24AGBS404	Theory: Continuous Evaluation: 50 Marks
Credits: 2	Theory: End Semester Examination: 50 Marks
L T P: 2 0 0	Lab: Continuous Evaluation: 50 Marks
Prerequisite: Nil	Lab End Semester Examination: 50 Marks

Objective: To provide exposure to problematic soils and their distribution in relation their suitability for crop production.

Course outcome: Upon completion of the course students will be able to;

- Establish the natural distribution of problematic soils in the country and extent in an agro-climatic zones.
- Classify the problematic soils on the basis of their physical, chemical and biological properties that are notsuitable for crop cultivation.
- Suggest suitable management practices to reclaim the problematic soils.

Production Technology for Fruit and Plantation Crops	
Course Code: 24AGBS405	Theory: Continuous Evaluation: 50 Marks
Credits: 2	Theory: End Semester Examination: 50 Marks
L T P: 1 0 1	Lab: Continuous Evaluation: 50 Marks
Prerequisite: Nil	Lab End Semester Examination: 50 Marks

Objective: Provide insights on basic theory, concepts and practices involved in production practices of fruit and plantation crops.

Course outcome: Upon completion of the course students will be able to;

- Explain the several practices involved in cultivation and management of different fruit

and plantation crops.

- Identify different seeds of fruit and plantation crop with their plant types in their natural existence.
- Classify different fruit and plantation crops according to their agro-climatic requirement, physiological andmorphological features.
- Practice techniques involved in management of different fruit and plantation crops.

Principles of Seed Technology	
Course Code: 24AGBS406	Theory: Continuous Evaluation: 50 Marks
Credits: 3	Theory: End Semester Examination: 50 Marks
L T P: 1 0 2	Lab: Continuous Evaluation: 50 Marks
Prerequisite: Nil	Lab End Semester Examination: 50 Marks

Objective: Provide insights on basic theory, practices and technology involved in seed production of different crop.

Outcome: Upon completion of the course students will be able to;

- Explain about basic principles behind seed production.
- Know how different classes of seed are produced.
- Know how certified seed is produced by farmer.
- Acquired knowledge on different practices and processes for quality seed production.

Farming System and Sustainable Agriculture	
Course Code: 24AGBS407	Theory: Continuous Evaluation: 50 Marks
Credits: 1	Theory: End Semester Examination: 50 Marks
L T P: 1 0 0	Lab: Continuous Evaluation: 50 Marks
Prerequisite: Nil	Lab End Semester Examination: 50 Marks

Objective: Provide knowledge about integrated farming and other new concepts related to farming.

Course outcome: Upon completion of the course students will be able to;

- Explain farming systems suitable for various agro-climatic regions.
- Identify the tools required for determining the efficiency of various cropping and farming systems.
- Complementary use of on farm residues for improving resource use efficiency.
- Learn new concepts and types of farming.

Agricultural Marketing, Trade and Prices	
Course Code: 24AGBS408	Theory: Continuous Evaluation: 50 Marks
Credits: 3	Theory: End Semester Examination: 50 Marks
L T P: 2 0 1	Lab: Continuous Evaluation: 50 Marks
Prerequisite: Nil	Lab End Semester Examination: 50 Marks

Objective: To have basic knowledge on agricultural marketing, trade and prices.

Course outcome: Upon completion of the course students will be able to;

- Identify basic difference between inter regional and international trade.
- Demonstrate role of government to correct market failures and possible advantages of public financing.
- Understand conditions of financial markets and its impact in the economy
- Understand role and significance of non-banking financial institutions, foreign exchange rate with its impact on rural economy.

Introductory Agro-meteorology and Climate Change	
Course Code: 24AGBS409	Theory: Continuous Evaluation: 50 Marks
Credits: 2	Theory: End Semester Examination: 50 Marks
L T P: 1 0 1	Lab: Continuous Evaluation: 50 Marks
Prerequisite: Nil	Lab End Semester Examination: 50 Marks

Objective: Provide basic knowledge about atmospheric phenomenon and their relation with crop production.

Course outcome: Upon completion of the course students will be able to;

- Understand about various atmospheric weather variables and their measurement.
- Explain how weather variables effect crop production.
- Explain climate change and their impact on agriculture.
- Emphasize the importance of weather forecasting in crop production.

SEMESTER-V

Principles of Integrated Pest and Disease Management	
Course Code: 24AGBS501	Theory: Continuous Evaluation: 50 Marks
Credits: 3	Theory: End Semester Examination: 50 Marks
L T P: 2 0 1	Lab: Continuous Evaluation: 50 Marks
Prerequisite: Nil	Lab End Semester Examination: 50 Marks

Objective: Provide insights on basic principles and procedure of integrated pest and disease management.

Course outcome: Upon completion of the course students will be able to;

- Explain the various concepts, principles and tools of IPM.
- Explain the methods for detection and diagnosis of insect pest and diseases and to calculate the dynamics of economic injury level.
- Gained competency to survey and forecast different insect pest and diseases.
- Gained skills to develop and validate different modules of IPM

Manures, Fertilizers and Soil Fertility Management	
Course Code: 24AGBS502	Theory: Continuous Evaluation: 50 Marks
Credits: 3	Theory :End Semester Examination: 50 Marks
L T P: 2 0 1	Lab : Continuous Evaluation: 50 Marks
Prerequisite: Nil	Lab End Semester Examination: 50 Marks

Objective: To provide detailed information on types of fertilizers of different chemical properties and their essentialnutrient content and forms.

Course outcome: Upon completion of the course students will be able to;

- Explain the criteria of essentiality and available forms of nutrients in soils.
- List types of fertilizers and classify them in terms of nutrient source.
- Explain the factors affecting their transformation in soils and availability
- Use methods soil analysis for nutrient contents and fertilizer recommendations.
- Identify suitable fertilizer application methods and nutrient use efficiency.

Pests of Crops and Stored Grains and their Management	
Course Code: 24AGBS503	Theory: Continuous Evaluation: 50 Marks
Credits: 3	Theory: End Semester Examination: 50 Marks
L T P: 2 0 1	Lab: Continuous Evaluation: 50 Marks
Prerequisite: Nil	Lab End Semester Examination: 50 Marks

Objective: To gain knowledge about the insect pests of the cultivated crops and stored food products and theirmanagement practices.

Course outcome: Upon completion of the course students will be able to;

- Know about important insect and non-insect pests of field and horticultural crops and

stored food materials and their management.
- Know integrated pest management tactics for important cultivated crops.

Diseases of Field & Horticultural Crops & their Management-I	
Course Code: 24AGBS504	Theory: Continuous Evaluation: 50 Marks
Credits: 3	Theory: End Semester Examination: 50 Marks
L T P: 2 0 1	Lab: Continuous Evaluation: 50 Marks
Prerequisite: Nil	Lab End Semester Examination: 50 Marks

Objective: Provide insights on basic theory, symptoms and practices involved diseases of field and horticultural cropsand their management.

Course outcome: Upon completion of the course students will be able to;
- Differentiate different diseases of field and horticultural crops.
- Identify the diseases and diagnose its management.
- Explain the different symptoms, pathogens, disease cycle and management of different diseases of field and horticultural crops.

Crop Improvement – I (Kharif))	
Course Code: 24AGBS505	Theory: Continuous Evaluation: 50 Marks
Credits: 2	Theory: End Semester Examination: 50 Marks
L T P: 1 0 1	Lab: Continuous Evaluation: 50 Marks
Prerequisite: Nil	Lab End Semester Examination: 50 Marks

Objective: Provide insights on basic theory, practices and methods applied for improvement of field crop.

Outcome: Upon completion of the course students will be able to;
- Know about floral biology of different crops.
- Acquiring knowledge how different breeding method will be applied depending on nature of crop.
- Know commercial importance of field crop.

Entrepreneurship Development and Business Communication	
Course Code: 24AGBS506	Theory: Continuous Evaluation: 50 Marks
Credits: 2	Theory: End Semester Examination: 50 Marks
L T P: 1 0 1	Lab: Continuous Evaluation: 50 Marks
Prerequisite: Nil	Lab End Semester Examination: 50 Marks

Objective: The first part of the course is intended to provide overall picture of planning and development of enterprisesfor extending sustainable livelihoods for rural people. The second part of the course is structured to help the students togain knowledge and skills in different concepts and techniques of communication and management in extensionorganizations.

Course outcome: Upon completion of the course students will be able to;

- Explain concepts of Entrepreneurship, Entrepreneur and Enterprises
- List opportunities of Agri-enterprises
- Gained managerial skills and business communication skills

Geo-informatics, Nano-technology and Precision Farmin	
Course Code: 24AGBS507	Theory: Continuous Evaluation: 50 Marks
Credits: 2	Theory: End Semester Examination: 50 Marks
L T P: 1 0 1	Lab: Continuous Evaluation: 50 Marks
Prerequisite: Nil	Lab End Semester Examination: 50 Marks

Objective: To learn about new technologies and how they are useful in farming.

Course outcome: Upon completion of the course students will be able to;

- Manage the fields according to site specific issues related to various aspects of crop production.
- Examine the utility of simulation Models for optimization of Agricultural Inputs.
- Gained knowledge on nanotechnology and their use in agriculture.

Practical Crop Production-I (Kharif Crops)	
Course Code: 24AGBS508	Theory: Continuous Evaluation: 50 Marks
Credits: 2	Theory: End Semester Examination: 50 Marks
L T P: 0 0 2	Lab: Continuous Evaluation: 50 Marks
Prerequisite: Nil	Lab End Semester Examination: 50 Marks

Objective: Practical aspects of kharif crop production under field condition.

Course outcome: Upon completion of the course students will be able to;

- Calculate seed rate and learn about methods of sowing.
- Learn about various agrochemicals used in different kharif crops and their rate of application.
- Select irrigation practices and methods of harvesting of various kharif crops**.**

Intellectual Property Rights	
Course Code: 24AGBS509	Theory: Continuous Evaluation: 50 Marks
Credits: 1	Theory: End Semester Examination: 50 Marks
L T P: 1 0	Lab: Continuous Evaluation: 50 Marks
Prerequisite: Nil	Lab End Semester Examination: 50 Marks

Objective: To provide insights on importance of IPR and governing institutions

Course outcome: Upon completion of the course students will be able to;

- Explain the importance of IPR in agriculture.
- Categorize types of IPR and licensing procedure.
- Gained expertise on process of application for IPR for an agricultural produce.
- Explain the importance of biodiversity and obtaining the IPR.

SEMESTER-VI

Rainfed Agriculture and Watershed Management	
Course Code: 24AGBS601	Theory: Continuous Evaluation: 50 Marks
Credits: 2	Theory: End Semester Examination: 50 Marks
L T P: 1 0 1	Lab: Continuous Evaluation: 50 Marks
Prerequisite: Nil	Lab End Semester Examination: 50 Marks

Objective: To learn about management of crops in rainfed areas.
Course outcome: Upon completion of the course students will be able to;

- Categorize the extent of rainfed area in India and their soil and climatic condition.
- Manage extreme weather conditions by contingent planning.
- Gained the skills to manage watersheds and various water harvesting techniques.
- Gained the knowledge suitable crop raising techniques for rainfed areas.

Protected Cultivation and Secondary Agriculture	
Course Code: 24AGBS602	Theory: Continuous Evaluation: 50 Marks
Credits: 2	Theory: End Semester Examination: 50 Marks
L T P: 1 0 1	Lab: Continuous Evaluation: 50 Marks
Prerequisite: Nil	Lab End Semester Examination: 50 Marks

Objective: To provide insights on the protected cultivation and its importance in agriculture.

Course outcome: Upon completion of the course students will be able to;

- Explain the importance of protected cultivation in current scenario of agriculture.
- Explain the principle involved in protected cultivation.
- Identify the technologies available for protected cultivation.
- Identify crops suitable for cultivation using protected cultivation technologies.
- Understand the precision farming under protected cultivation.
- Gained knowledge on technology cost estimation and economic analysis.
- List the gadgets useful for remote monitoring of climate of protected cultivation technologies

Diseases of Field & Horticultural Crops & their Management-II	
Course Code: 24AGBS603	Theory: Continuous Evaluation: 50 Marks
Credits: 3	Theory: End Semester Examination: 50 Marks
L T P: 2 0 1	Lab: Continuous Evaluation: 50 Marks
Prerequisite: Nil	Lab End Semester Examination: 50 Marks

Objective: Provide insights on basic theory, symptoms and practices involved diseases of field and horticultural cropsand their management.

Course outcome: Upon completion of the course students will be able to;

- Differentiate different diseases of field and horticultural crops.

- Identify the diseases and diagnose its management.
- Explain the different symptoms, pathogens, disease cycle and management of different diseases of field andhorticultural crops.

Post-harvest Management and Value Addition of Fruits and Vegetables	
Course Code: 24AGBS604	Theory: Continuous Evaluation: 50 Marks
Credits: 2	Theory: End Semester Examination: 50 Marks
L T P: 1 0 1	Lab: Continuous Evaluation: 50 Marks
Prerequisite: Nil	Lab End Semester Examination: 50 Marks

Objective: Provide insights on basic theory, concepts and practices involved in Post-Harvest Management and Value Addition of Fruits and Vegetables.

Course outcome: Upon completion of the course students will be able to;

- Explain the several practices involved in Post-Harvest Management and Value Addition of Fruits and Vegetables.
- Practice techniques involved in Post-Harvest Management and Value Addition of Fruits and Vegetables
- Prepare different processed product of fruit and vegetable.
- Know about different standards and guideline, specification for preparation of different processed product from fruits and vegetables.

Management of Beneficial Insects	
Course Code: 24AGBS605	Theory: Continuous Evaluation: 50 Marks
Credits: 2	Theory: End Semester Examination: 50 Marks
L T P: 1 0 1	Lab: Continuous Evaluation: 50 Marks
Prerequisite: Nil	Lab End Semester Examination: 50 Marks

Objective: To gain knowledge about rearing and management of beneficial insects.

Course outcome: Upon completion of the course students will be able to;

- Know the rearing of honeybees and developing an apiary.
- Know about the cultivation of lac culture and sericulture.
- Gained entrepreneurial abilities regarding apiculture, lac culture and sericulture.

Crop Improvement – II (Rabi)	
Course Code: 24AGBS606	Theory: Continuous Evaluation: 50 Marks
Credits: 2	Theory: End Semester Examination: 50 Marks
L T P: 1 0 1	Lab: Continuous Evaluation: 50 Marks
Prerequisite: Nil	Lab End Semester Examination: 50 Marks

Objective: Provide insights on basic theory, practices and methods applied for development stress resistance variety.

Outcome: Upon completion of the course students will be able to;

- Able to know Plant Genetic Resources of different crops.
- Acquired knowledge on how fundamental mechanisms behind resistance and how this resistance transferred from wild to cultivated variety.

Practical Crop Production-II (Rabi Crops) 2	
Course Code: 24AGBS607	Theory: Continuous Evaluation: 50 Marks
Credits: 2	Theory: End Semester Examination: 50 Marks
L T P: 0 0 2	Lab: Continuous Evaluation: 50 Marks
Prerequisite: Nil	Lab End Semester Examination: 50 Marks

Objective: Practical aspects of rabi crop production under field condition

Course outcome: Upon completion of the course students will be able to;

- Calculate seed rate and learn about methods of sowing.
- Learn about various agrochemicals used in different rabi crops and their rate of application.
- Select irrigation practices and methods of harvesting of various rabi crops.

Principles of Organic Farming	
Course Code: 24AGBS608	Theory: Continuous Evaluation: 50 Marks
Credits: 2	Theory: End Semester Examination: 50 Marks
L T P: 1 0 1	Lab: Continuous Evaluation: 50 Marks
Prerequisite: Nil	Lab End Semester Examination: 50 Marks

Objective: To learn about principles and practices of organic farming.

Course outcome: Upon completion of the course students will be able to;

- Understand the fundamentals of nutrient use, insect, pest, disease and weed management under organic mode Of production.
- Familiarize with organic certification process and standards of organic products set by various agencies.
- Identify agencies related with organic production practices in India.
- Understand the socio-economic status of farmers and environmental quality due to adoption of organic production practices.

Farm Management, Production and Resource Economics	
Course Code: 24AGBS609	Theory: Continuous Evaluation: 50 Marks
Credits: 2	Theory: End Semester Examination: 50 Marks
L T P: 1 0 1	Lab: Continuous Evaluation: 50 Marks
Prerequisite: Nil	Lab End Semester Examination: 50 Marks

Objective: This course designed to provide students with economic concepts that can be applied to management decisions using farm and ranch situations and to develop skills in planning, budgeting, financial analysis and investment analysis.

Course outcome: Upon completion of the course students will be able to;

- Implement decisions, rules to determine conditions that maximize profit.
- Use budgeting concepts to develop whole farm plants from enterprise budget
- Identify alternative business organization.

Principles of Food Science and Nutrition	
Course Code: 24AGBS6010	Theory: Continuous Evaluation: 50 Marks
Credits: 2	Theory: End Semester Examination: 50 Marks
L T P: 2 0 0	Lab: Continuous Evaluation: 50 Marks
Prerequisite: Nil	Lab End Semester Examination: 50 Marks

Objective: Provide insights on the science of food and nutrition

Course outcome: Upon completion of the course students will be able to;

- Understand the nutritional value of food items.
- Gained knowledge on food spoilage and microorganisms involved in food spoilage.
- Gained knowledge on food processing and preservation methods.
- Explain malnutrition due to imbalanced food habits.