SHRI LAL BAHADUR SHASTRI DEGREE COLLEGE, GONDA

DEPARTMENT OF AGRICULTURE

BSc. AGRICULTURE-PROGRAM AND COURSE OUTCOMES- 2021-2024

Programme Outcome:

PO.1: To impart firsthand knowledge on agriculture and allied sciences

PO.2: To impart in-depth practical knowledge in agriculture and allied sciences

PO.3: To provide extensive knowledge on agri-allied sectors like livestock, Poultry

PO.4: To disseminate different technologies through various extension activities

PO.5: To identify and overcome the problems encountered in day-to-day agriculture

PO.6: To provide knowledge on commercial agricultural production practices

PO.7: To make students competitive in pursuing higher studies

Course Outcome

SEMESTER I		
Course Code	**Course Name**	**Course Outcomes**
AG-101	**Fundamentals of Agronomy**	**CO.1:** In modern terminology however the word has come to mean and denote a branch of science dealing with all aspects of crop cultivation and production. **CO.2:** A study of agronomy often involves a summoning of resources from related disciplines such as Botany, Soil Science, Irrigation, and plant protection, Plant Genetics and Breeding, Agro-meteorology etc. **CO.3:** In a more fundamental sense it can be categorized as an applied Science, the object of which is crop cultivation and management for the purpose of producing food for humans, feed for animals as well as raw materials for the industry. **CO.4:** Knowledge about Indian Agriculture and importance, present status, scope and future prospect. **CO.5:** Cropping seasons of India. Soil formation, classification, physical, chemical properties. Identification of important crops and crop seeds.
AG-102	**Fundamentals of Genetics**	**CO.1:** Comprehensive, detailed understanding of the chemical basis of heredity especially in crop plants to improve and develop the new varieties of plants. **CO.2:** Understanding of how genetic concepts affect broad societal issues including health and disease, food and natural resources, environmental sustainability, etc. **CO.3:** The knowledge required to design, execute, and analyze the results of genetic experimentation in plant systems. **CO.4:** Insight into the mathematical, statistical, and computational basis of genetic analyses that use genome-scale data sets in systems biology settings. **CO.5:** Understanding the role of genetic technologies in industries related to biotechnology, pharmaceuticals, energy, and other fields.
AG-103	**Fundamentals of Soil Science**	**CO.1**: To be able about physical and chemical properties of soil and their effect on plant's health. **CO.2:** To aware the students about causes, effects and remedies to prevention and mitigation of soil pollution. **CO.3:** Knowledge about soil forming rocks and minerals, their weathering and soil forming processes and climatic factors affect them.
AG-104	**Fundamentals of Horticulture**	**CO.1:** Students will be able to identify plant vegetative structure **CO.2:** Students will understand basic principles, processes and plant propagation methods. **CO.3**: Students will understand how to propagate plant, manage and harvest a variety of plant. **CO.4**: students will learn how horticulture relates to the economy and environments, both currently and in the future.
AG-105	**Rural Sociology & Educational Psychology**	**CO.1:** Understand concept of rural sociology, its importance in agricultural extension, characteristics of Indian rural society. **CO.2:** Understand social groups, social stratification, culture, social values, social control and attitudes, leadership and training. **CO.3:** Understand concept of educational psychology, intelligence, personality, perceptions, emotions, frustration, motivation, teaching and learning **CO.4:** Acquaint with characteristics of rural society, village institutions and social organizations. Select lay leaders and train them. **CO.5:** Assess personality types, leadership types and emotions of human beings Create a training situation under village conditions.
AG-106	**Introduction to Forestry**	**CO.1:** Students will understand recognize various harvesting, transportation, and processing systems used in the management of forest resources and production of

		forest products **CO.2:** Students will understand develop and evaluate management plans with multiple objectives and constraints. **CO.3:** Students will learn how to develop and apply silvicultural prescriptions appropriate to management objectives.
AG-107	**Introductory Animal Husbandry**	**CO.1:** Animal management (nutrition, reproduction, health, behavior, housing) **CO.2:** Animal husbandry & veterinary practices and tools. **CO.3:** Characteristics of species/breeds of domestic animals. **CO.4:** Laws and regulations governing animal care and use. **CO.5:** Animal biotechnology.
AG-108	**Comprehensive and Communication Skills**	**CO.1:** Students will analyze basic communication skills. **CO.2:** Students will analyze intercultural communication skills. **CO.3:** Students will analyze interpersonal communication skills. **CO.4:** Students will analyze public speaking communication skills.
AG-109	**Agricultural Heritage**	**CO.1**: Ancient Agricultural Practices & Its relevant to modern agriculture practices. **CO.2:** Traditional Technical Knowledge. **CO.3:** Our Journey (Developments) in Agriculture and Vision for the Future.
AG-110	**Introductory Biology**	**CO.1:** The student will be able to read, understand, and critically interpret the primary biological literature in his/her area of interest. **CO.2**: The student will be able to design, conduct, analyze, and communicate (in writing and orally) biological research. **CO.3:** The student will recognize and be able to apply basic ethical principles to basic and applied biological/biomedical practice and will understand the role of biological/biomedical science, scientists, and practitioners in society. **CO.4**: The student will be able to explain the process of organic evolution and its underlying principles and mechanisms. **CO.5:** The student will be able to explain the fundamental biological processes of metabolism, homeostasis, reproduction, development, and genetics, and the relationships between form and function of biological structures at the molecular, cellular, population, and ecosystem levels of the biological hierarchy. **CO.6:** The student will be able to explain the importance of biodiversity at the genetic, community, and global scales.
AG-111	**Elementary Mathematics**	**CO.1:** Demonstrate competency in the areas that comprise the core of the mathematics major **CO.2**: Demonstrate the ability to understand and write mathematical proofs **CO.3**: Be able to use appropriate technologies to solve mathematical problems **CO.4**: Be able to construct appropriate mathematical models to solve a variety of practical problems **CO.5**: Obtain a full-time position in a related field or placement
AG-112	**NSS/NCC/ Physical Education and Yoga**	**CO.1:** Student will learn different yoga practices to get excellence in physical and mental health value. **CO.2**: Students will do social work to the society like "Swach bharat", "Blood donation", Clean India campaign. **CO.3:**.Student will play different games to maintain physical health.

SEMESTER II		
Course Code	**Course Name**	**Course Outcomes**
AG-201	**Fundamentals of Crop Physiology**	**CO.1:** Role of crop physiology in crop health. **CO.2:** Identification of deficiency symptoms of nutrients. **CO.3:** To understand the metabolic and synthetic pathway of biomolecules. **CO.4:** To know the difference between C3, C4 and CAM plant. **CO.5:** Importance of growth Harmon in Agriculture.
AG-202	**Fundamentals of Plant Biochemistry and Biotechnology**	**CO.1:** Role of cell organelles and their functions **CO.2:** Functions of biomolecules and their utility in cell **CO.3:** Identify the deficiency symptoms of biomolecules **CO.4:** Synthesis pathways of biomolecules and regulations **CO.5:** Identification of biomolecules in given sample **CO.6:** Application of plant tissue culture in crop improvement **CO.7:** Tackled the problems in convention breeding **CO.8:** Plant tissue culture is a area of entrepreneurship
AG-203	**Fundamentals of Entomology-I**	**CO .1:** To be able to identify morphological characteristics, feeding habit and habitat of agriculturally important insect-pest. **CO.2:** To be able to apply concepts and analytical approaches in evolutionary biology, genetics and other areas of insect biology of the student's choice. **CO .3:** To be able to categorize insects based on basic ecological, behavioural, morphological, physiological, or developmental attributes. **CO.4:** To be able to examine insects deeply within a biological level of analysis and make strategies for successful pest management strategy. **CO.5:** To be able to understand about different families and orders of class Insecta which cause economic losses for human beings
AG-204	**Fundamentals of Agricultural Economics**	**CO-1:** Identify elements of business success in agriculture and food-processing as well as elements that determine economic role of agriculture in national economy. **CO-2:** Propose methods of micro- and macroeconomic decision making in agriculture in different agro-ecological and agro-economic circumstances. **CO.3**: Describe and explain models of production, supply and demand of agricultural and food products on national and international markets **CO.4:** Understand the concepts of consumer choice and how it affect the farm / ranch level agriculture firm. **CO.5:** understand the macroeconomics aspects of the economy as they affect the agricultural sector. **CO.6:** apply economics principles to understand the conduct and performance of the agricultural industry.
AG-205	**Principles of Organic Farming**	**CO.1:** Initiative from Government for organic produce. **CO.2:** Role of NGOs in producing organic products. **CO.3:** Selection of crops and varieties for organic produce **CO.4:** Certification of organic produce.
AG-206	**Fundamentals of Plant Pathology**	**CO.1:** Student will acquaint about concepts of plant pathogens, major disease causing organisms and their aetiology **CO.2:** To provide specific knowledge about host pathogen interactions. **CO.3:** Recognition of plant disease is the first step in doing something about them. **CO.4:** To give specific knowledge about environment and disease development.
AG-207	**Production Technology for Vegetables and Spices**	**CO.1:** Students will understand practical knowledge on specialized production techniques of vegetables and spices. **CO.2:** Students understand will Importance of vegetables & spices in human nutrition improved and national economy.

		CO.3: Students will knowledge about quality requirement and production and techniques **CO.4:** Managing skill for solving field problems.
AG-208	**Fundamentals of Agricultural Extension Education**	**CO.1:** Education; Extension Programme planning Meaning, Process, Principles and Steps in Programme Development. **CO.2:** Extension systems in India: Extension efforts in Pre-independence era. **CO.3:** New trends in agriculture extension: privatization extension. **CO.4:** Monitoring and evaluation – concept and definition, monitoring, and evaluation of Extension programmes, Transfer of Technology- Concept and models.
AG-209	**Food processing and Safety issues**	**CO1**: Preservation of food and processing of fruits and vegetables which will enable students to start agro based processing units. **CO2:** Students will get to know about different processing techniques of agricultural products such as parboiling, oil extraction etc.
AG-210	**Human Value and Ethics**	**CO.1:** Understand the significance of value inputs in a classroom and start applying them in their life and profession. **CO.2:** Distinguish between values and skills, happiness and accumulation of physical facilities, the Self and the Body, Intention and Competence of an individual, etc. **CO.3:** Understand the value of harmonious relationship based on trust and respect in their life and profession. **CO.4:** Understand the role of a human being in ensuring harmony in society and nature. **CO.5:** Distinguish between ethical and unethical practices, and start working out the strategy to actualize a harmonious environment wherever they work.

SEMESTER III		
Course Code	**Course Name**	**Course Outcomes**
AG-301	**Crop Production Technology I (Kharif)**	**CO.1:** In the course study the students will be able to know about origin, geographical distribution, and economic importance of Kharif crops **CO2:** In the course study the students will be able to know about Soil and climatic requirements, varieties, cultural practices and yield of Kharif crops. **CO.3**: Analysis of comparative benefits of the different kharif crops **CO.4**: Constraints in production of oilseeds and pulses maybe identified through course content. **CO.5:** Production technology of kharif cereals and millets fulfill the need of human consumption and mulch cattle.
AG-302	**Practical Production I (Kharif)**	CO-1: Acquaint the knowledge on kharif season crops, its classification (cereal crops, oilseed crops, pulse crops, sugar crops, and fodder crops) and its importance in agriculture and national economy. CO-2: Discuss the production techniques of kharif crops and their origin, economic importance, geographical distribution and botanical description. CO-3: Implement the sowing methods of kharif crops in the field and their management. CO-4: Distinguish all kharif crops (rice, millet, soybean, mung, etc.) with their cultivation practices.
AG-303	**Fundamentals of Plant Breeding**	**CO-1:** Establish the commercial plant breeding company to developed new superior crops varieties. **CO-2**: Develop the insect and disease resistant varieties for environment friendly management of disease and insect. **CO-3**: Serve the quality food in the market by developing high nutritive varieties. **CO-4:** Increase the farm yield to get higher income on farm by developing higher yield crop varieties. **CO-5:** start a consultant company to guide & supply the better varieties to the farmers.
AG-304	**Agriculture Microbiology**	**CO1:** Student will understand the basic microbial structure, function and study the comparative characteristics of prokaryotes and eukaryotes. **CO2:** To know the various Physical and Chemical growth requirements of bacteria CO3: Impart knowledge about production of beneficial bacteria.
AG-305	**Agriculture Finance and Co-operation**	**CO-1:** Explain the broad feature of Indian financial institutions with instruments to control credit in the country. **CO-2**: Effectively narrate the kinds and components of money with its regulatory system .Be aware of the functions, objectives and limitations of commercial bank. **CO-3:** Identify the existence and development of non- banking financial institutions; know the important role of mutual fund.LIC investment companies etc. Utilize and effectively participate in the development process. **CO-4**: Understand the conditions of financial markets and its impact in the economy. **CO-5**: Understand the macroeconomics aspects of the economy as they affect the agricultural sector. **CO-6:** Apply economics principles to understand the conduct and performance of the agricultural industry
AG-306	**Farm machinery and Power**	**CO-1:** Students will be equipped with sufficient theoretical knowledge with practical skills on farm power sources like handling of tractor, power tillers and various implements used in land preparation, sowing, inter cultivation, plant protection and harvesting operations.
AG-307	**Principles of integrated pest and disease management**	**CO 1**: Educate concepts, tools and principles of integrated pest and disease management. **CO 2**: Develop understanding of the role of IPM in sustainable agriculture as the future of modern plant protection in pest and disease control strategy. **CO 3**: Development of skills about methods of detection and diagnosis of insect pest and diseases and application of different pest and disease control techniques.

		CO 4: Analyze agricultural ecosystem, level of pest damage, Pest risk and timing of different pest control tactics to manage the pest population effectively. **CO 5:** Evaluate Economic Injury Level and Economic Threshold Level for timely application of control measures for pest management.
AG-308	**Environmental studies and disaster management**	**CO1:** Appreciate concepts and methods from ecological and physical sciences and their application in environmental problem solving. Interdisciplinary branches of environment and their scopes. **CO2:** Concepts of natural resources, Food resources, mineral resources, Concept of non Conventional energy resources, types and various applications of renewable resources and current potentials of energy resources. **CO3:** Ecosystem Links between environmental components and their role and types of ecosystems. **CO4:** Types of biodiversity, their values, depletion and conservation methods. **CO5:** Basic Structure of atmosphere and their functions Current problems related issues context in solving environmental issues such as environmental health, food and agriculture, energy, waste and pollution, climate change, management, Basic knowledge about water recourses, current problems related issues, water born diseases, technologies of water treatment. **CO6:** Composition of solid waste, sources of generation, collection and disposal methods of solid waste, recycling, reuse of wastes. **CO7:** Urban problems related to energy, Water conservation, rain water harvesting, and watershed management. Environmental ethics: Issues and possible solutions, climate change, global warming, acid rain, ozone layer depletion. **CO8:** Public awareness. Human Population and the Environment: population growth, variation among nations, population explosion, Family Welfare Programme. Environment and human health: Human Rights, Value Education, HIV/AIDS. Women and Child Welfare. Role of Information Technology in Environment and human health. CO9: Meaning and nature of natural disasters, their types and effects and management
AG-309	**Statistical Methods**	**CO1**: Acquaintance with some basic concepts in statistics. **CO2:** Making familiar with some elementary statistical methods of analysis of data viz. Measures of Central Tendency, Dispersion, Moments, Skewness, and Kurtosis and to interpret them. **CO3:** Analysis of data pertaining to attributes and to interpret the results.
AG-310	**Introductory Soil and Water Conservation Engineering**	**CO**: To gain knowledge and skills on soil and water engineering concepts like measurement of land, surveying and levelling, different irrigation methods, pumping of water, soil and water engineering concepts
AG-311	**Dairy Science**	**CO 1:** Gain knowledge of current and emerging research based information in animal biology and management sciences to support dairy production. **CO 2**. Gain intellectual, practical and attitudinal skills needed to identify and solve problems and challenges facing dairy producers and allied industries. **CO 3**. Gain in life-long learning skills to enable graduates to adapt to changing technological, economic and social circumstances throughout their professional career.
AG-312	**Fundamentals of Entomology II**	**CO-1:** Educate the basic concept of entomology, insect collection and preservation, dissection, and morphology of insects. **CO-2:** Develop the understanding of anatomy, physiology, the taxonomy of insects, and the effect of biotic and abiotic factors on insects. **CO-3:** Demonstrate the principles of Pest surveillance, Pest forecasting, recent and traditional methods of pest management including IPM **CO-4:** Evaluate the economic importance of insects and eco-friendly control measures for pest management to sustainable agriculture. **CO-5:** Formulate the application of Insecticides and mass production techniques of Bio-control agents.

SEMESTER IV		
Course Code	**Course Name**	**Course Outcomes**
AG-401	**Crop Production Technology II (Rabi)**	**CO-1**: Acquaint the knowledge on the rabi season crops, its classification (cereal crops, oilseed crops, pulse crops, sugar crops, fodder crops) and its importance in agriculture and national economy. **CO-2:** Discuss the production techniques of rabi crops and their origin, economic importance, geographical distribution and botanical description. **CO-3:** Implement the sowing methods of rabi crops in the field and their management. **CO-4:** Distinguish all rabi crops (wheat, barley, pea, chickpea, mustard, sugarcane etc.) with their cultivation practices.
AG-402	**Practical Production II (Rabi)**	**CO 1**. Acquaint knowledge on Rabi season crops, tools uses in crop production, weed and irrigation management. **CO 2.** Develop the understanding on the production techniques of major Rabi season crops according to resources available in the field. **CO 3.** Develop the skills about the production techniques of Rabi crops in the practical crop production field. **CO 4.** Examine the production of sown crops in the practical crop production field.
AG-403	**Principles of Seed Technology**	**CO.1**. Acquaint with scope and importance of seed technology in agriculture and the role of officials and legislation, seed act and seed order in quality seed production **CO.2.** Develop an understanding of various seed production techniques for different field crops, the importance of maintenance of purity of crop varieties, and factors causing deterioration of variety. **CO.3**. Execution of various phases of seed certification, field inspection, and seed purity testing **CO.4**. Analyze the factors related to genetic and physical purity of seed and its health status of seeds of a variety during seed processing.
AG-404	**Problematic Soil and Their Management**	**CO-1**: The students will be able to identify problematic soils, set up a plan for their reclamation, and post-reclamation management in a manner that is sustainable. **CO-2**: Improve soil fertility and productivity by application of soil test based judicious use of fertilizers and application of macro & micronutrients. **CO-3**: Provide basic knowledge to identify Multipurpose tree species, bio remediation through MPTs of soils **CO-4**: Application of remote sensing and GIS for judicious use of fertilizers and application of macro & micronutrients and lowering down the soil problem.
AG-405	**Renewable energy and Green Technology**	**CO1**: Educate the importance of renewable energy and its resources, utilization of wastes and protection of the environment. **CO2:** Understanding of benefit from utilization the biomass, solar and wind energy. **CO3**: Develop the skill in utilization of renewable energy recourses/ gadgets. **CO4**: Ability to apply renewable energy in the agricultural sector.
AG-406	**Production Technology for Ornamental Crops, MAPs and Landscaping**	**CO-1:** Define concepts of ornamental crop production, medicinal and aromatic plants and landscaping, Importance of medicinal and aromatic plants in national economy, etc. **CO-2:** Discuss various principles of landscaping, uses of landscape trees, shrubs and climbers, production technology of important ornamental crops, etc. **CO-3**: Demonstrate various Package of practices for loose flowers and their transportation, storage house and required condition for cut and loose flower, etc. **CO-4:** Investigate the various problems with the production technology of medicinal and aromatic plants, etc.
AG-407	**Entrepreneurship Development Business**	**CO 1**. Acquaint knowledge on the concept of Business, Enterprise, Entrepreneurs and Entrepreneurship Development. **CO 2**. Develop the understanding on different government policies and

	Communication	programmes in entrepreneurship development. **CO.3**. Evaluate the principles of Business Leadership Skills, Problem Solving Skills, Managerial Skills, Problem Solving Skills and Project Planning. **CO.4.** Develop ability to analyze SWOT analysis and formulation of project, implement planning, formulation and preparation to set-up their own business.
AG-408	**Introductory Agro-Metrology and Climate Change**	**CO-1**: Impart the knowledge of earth atmosphere, its composition, extent, structure, atmospheric weather variables, monsoon and importance in Indian agriculture. **CO-2:** Educate about Climate change, climatic variability, global warming, causes of climate change and its impact on regional and national Agriculture. **CO-3**: Develop the understanding of the relationship between weather variables and agriculture, factors affecting the particular weather-variables, common weather hazards, methods of weather forecasting, methods of mitigation of climate change and global warming, etc. **CO-4:** Develop the skills in utilization of climatic normal of a crops, identification of weather variables which may affect development of crops and livestock production, modification of micro and macro climate for best crop yields, minimization of losses by using weather forecasting, etc. **CO-5:** Develop the skills in uses and safety measures of instruments installed in agro-meteorological observatory. **CO-6**: Ability to analyze the observations of different weather variables by instruments installed in agro-meteorological observatory and to prepare suitable conditions for field crops.
AG-409	**Agri-Informatics**	**CO 1.** Acquaint with basic terms of software and hardware, input/output devices, database, World Wide Web, DBMS in Agriculture, ICT in Agriculture, etc. **CO 2.** Develop the understanding of application software, Smartphone apps, programming languages, geospatial technology for generating valuable agri-information, decision support systems, etc. **CO 3**. Develop the skills in selection of input and output devices, software utilization, appropriate ICT tools, preparation of crop-planning using IT tools, etc. **CO 4**. Apply computer models for understanding plant processes, IT application for computation of water and nutrient requirement of crops, computer controlled devices (automated systems) for agri-input management and smart phone apps in agriculture for farm advises, market price, postharvest management, etc.
AG-410	**Livestock and Poultry Management**	**CO-1:** Give knowledge of indigenous and exotic breeds of cattle, buffalo, sheep, goat and poultry birds (poultry, duck, fowl). **CO-2:** Develop the understanding of principles, planning, and technical approach for reproduction management in different farm animals. And introduce the diseases of livestock and poultry and its prevention (including vaccination schedule) and control of important diseases of livestock and poultry. **CO-3:** Develop ability to select types of houses suited in specific climatic conditions for best management of calves, growing heifers and mulch animals. **CO-4:** Develop the understanding digestion system of livestock and poultry, classification of feedstuffs, nutrients and their functions, feed supplements, feed additives and feeding of livestock and poultry and develop ability to calculate daily ration of cattle. **CO-5:** Visit of the IDF and IPF to study breeds of livestock and poultry and daily routine farm operations and farm records.

SEMESTER V		
Course Code	**Course Name**	**Course Outcomes**
AG-501	**Rainfed Agriculture and Watershed Management**	**CO 1**: Acquaint rainfed agriculture, rainfall distribution and collection of rainwater. **CO 2**: Develop ability to classify the crops and their growing regions according to the rainfall. CO 3: Execute the production techniques of crops and rainwater harvesting in rainfed areas. **CO 4**: Examine the seasonal rainfall and different types of watershed and its components.
AG-502	**Crop Improvement I (Kharif)**	**CO -1**. Remember the evolutionary history of important field crops along with their centre of origin, its wild species and wild relatives that can be utilized in crop improvement **CO -2.** Develop the understanding of germplasm conservation, utilization, and genetics of qualitative and quantitative characters, and their inheritance. **CO -3.** Analyze breeding procedures and methods breeding objectives in different crop important for the development of improved varieties
AG-503	**Pests of Crops and Stored Grain and their Management**	**CO 1**: Memorise the Identification, taxonomy, host range, biology and bionomics, nature of the damage and preventive and curative control measures of crop and stored grain pests. **CO 2:** Develop the understanding of operating various pesticide appliances as a knap-sack sprayer, foot sprayer, aerosol, fumigators, etc, for pesticide application. **CO 3:** Develop the ability to examine insect infestation, loss assessment, pesticide doses, and preparation of solution to spray for pest management. **CO 4:** Formulate crop-wise IPM modules for sustainable agriculture and Storage structure and methods of grain storage to minimize the risk of food security**.**
AG-504	**Agricultural Marketing Tread and Prices**	**CO-1:** Remember the concept of agricultural marketing, market structure, marketing mix, marketing segmentation, demand and supply, producer surplus etc. **CO-2**: Identify the product life cycle and its different aspects, product, price, place, promotion, advertising, personal selling, sales promotion and publicity etc. **CO-3**: Apply the different marketing functions, exchange functions, physical functions, processing functions, etc. **CO-4:** Analyze the marketing channels for different farm products, Integration, efficiency, costs and price spread etc. **CO-5**: Evaluate the role of Government in agricultural marketing, Public sector institutions- CWC, SWC, FCI, CACP & DMI etc
AG-505	**Protected Cultivation and Secondary Agriculture**	**CO.1.** Study the fundamental principles of crop cultivation under controlled conditions. **CO-2.** This course will help the students to know the design criteria and material for construction of greenhouse. **CO-3.** Students able to perform the various research investigations under greenhouse. **CO-4.** Students can easily interact with the farmers to give knowledge about the protected cultivation.
AG-506	**Disease of Field and Horticultural crops and their Management-I**	**CO 1.** After completing this course students will study the symptoms, involved pathogens, disease cycle, best possible management practices available and able to resolve the problem of yield reduction in crops. **CO 2.** In this course students are able for isolation of culture, techniques, identification and biology of pathogens in the laboratory. **CO 3.** Students demonstrate crop fields and suggest best possible management practices available and able to resolve the problem of yield reduction in crops. **CO 4**. In this course students apply different fungicides and antibiotics (mode of action and formulations) on the basis of Nature of pathogen, manage crops disease corresponding to involved pathogen and examine loss in quality and yield.
AG-507	**Production Technology for**	**CO-1.** Define importance and scope of fruit and plantation crop industry in India, concepts of production for fruit and plantation crops, new planting system and

	Fruits and Plantation Crops	methods, soil and climatic requirement of different fruit and plantation crops, etc. **CO-2**. Discuss various concepts of high density planting, new techniques of high density planting, plant propagation, seed propagation, etc. **CO-3**. Demonstrate preparation and application of plant growth regulators to the crops, etc. Investigate the various problems with the production technology of fruit and plantation crops such as disorder, diseases and pests, etc. **CO-4.** Distinguish different fruits and plantation crops, symptoms of disorders, diseases, insects and pests, etc.
AG-508	**Communication Skills and Personality Development**	**CO-1** Acquaint the knowledge on Listening, Speaking, Reading and Writing Skills along with classification; General & Technical Article and writing principles of these articles; comparison between Individual & Group presentation; organization of seminars & conferences and formats of Public Speaking. **CO-2** Develop the understanding on usage of different classified skills according to situations, reading and writing of general & technical articles and the preparation and planning before organizing seminars and conferences. **CO-3** Develop the skill of students towards general & technical writing, principles of reading and writing of general & technical articles and implication. **CO-4** Develop evaluative thinking on variations between General & Technical Articles with the way of writing, how to prepare for public speaking and the principles to be followed and significance of Field Diary & Lab Record for an agriculture student.
AG-509	**Intellectual Property Rights**	**CO-1:** Acquaint with the meaning of intellectual property and differentiate it from tangible property **CO-2:** Develop the understanding about the history of IPR development with various treaties and conventions, laws of IPR, various forms of IPR property, and their importance in research. **CO-3:** Apply intellectual property law principles (including copyright, patents, designs, and trademarks) to real problems and analyze the social impact of intellectual property law and policy **CO-4:** Make able to differentiate various forms of intellectual properties and eligibility for their protection **CO-5:** Evaluate ethical and professional issues which arise in the intellectual property law arising in intellectual property such as, designs, music, copyright, trademarks, designs, information technology and thesis or theory written by the students during their project work.
AG-510	**Principles of Food Science and Nutrition**	**CO 1.**The students will be able to design storage structures for freshly harvested agricultural products in the field. **CO.2** To gain knowledge on various management technologies on pre harvest and post harvest of fruits and vegetables. Students are also expected to gain knowledge on conventional and modern packaging methods. **CO.3**.After completion of this course the students will be able to design and develop various equipment for preserving (use of heat, low temperature, radiation, drying etc) related to food processing. **CO. 4** The students will acquire knowledge of nutritional disorders, energy metabolism and novel technologies (HPP, foam mat drying, HPLC, infrared drying) related to food science.
AG-511	**Geo Informatics, Nano Technology and Precision Farming**	**CO.1**. Acquaint the concept of simulation and modelling in agriculture. **CO.2**. Make aware of issues and concern of precision farming in context of Indian agriculture. **CO 3** Understand of the basic concept of geo-informatics, its tool and techniques (GPS, GIS, Remote sensing, STCR, etc.) and application in precision farming. **CO 4** Understand the concept of nanotechnology, its tools and techniques, its application and future prospects in agriculture.

SEMESTER VI		
Course Code	**Course Name**	**Course Outcomes**
AG-601	**Farming System, Precision Fanning & Sustainable Agriculture**	**CO.1.** Acquaint the knowledge on farming systems and sustainable agriculture, its importance and its scope. CO.2. Classify the different farming systems according to agro-climatic zones in India. **CO.3.**Implement the integrated farming system and sustainable method of agriculture. **CO.4.**Differentiate between modern and sustainable agriculture and different farming systems
AG-602	**Crop Improvement-II (Rabi)**	**CO-1:** Remember the evolutionary history of important field crops along with their centre of origin, its wild species and wild relatives that can be utilized in crop improvement **CO-2:** Develop the understanding of germplasm conservation, utilization, and centre of origin of various rabi field crops, genetics of qualitative and quantitative characters, and their inheritance. **CO-3:** Apply breeding procedures and objectives in different crop mportant for the development of improved varieties **CO-4:** Make able to differentiate seed production technology in different classes of rabi field crop.
AG-603	**Manures, Fertilizers And Soil Fertility Management**	**CO 1.** Develop basic knowledge about organic manures & fertilizers and preparation of manures. **CO 2.** Students learn about the chemical fertilizers, their composition and classification. **CO 3**. Develop the skills for making recommended fertilizer doses in the crop field and method of their application to the crops. **CO 4.** Analyze nutrients available in soil and in plants and Learns the application of remote sensing and GIS for diagnosis and management of problem soils.
AG-604	**Farm Management, Production & Resource Economics**	**CO.1**. Educates the concept of farm management, different terms, principles and laws of farm management, different types of farm, etc. **CO.2.** Develop understanding of various types of production function, decision making, cost, farm planning and budgeting, farm inventory, balance sheet, profit and loss accounts, etc. **CO.3**. Apply the different law and principles of farm management, relationship between factor and product, etc. **CO.4**. Evaluate the important issues in farm management etc.
AG-605	**Diseases of Field And Horticultural Crops And Their Management-II**	**CO-1:** Educate basic knowledge of the causal organisms and systematic positions involved in causing pathogens in crops are studied **CO-2:** Develop the understanding about isolation of culture, techniques, identification and biology of pathogens in the laboratory. **CO-3:** Demonstrate the field of horticultural, medicinal crops and cash crops; disease symptoms include pathogen, disease cycle, and best possible management practices and propose the solution of problems causing yield reduction in crops. **CO-4:** Apply fungicides and antibiotics (mode of action and formulations) on the basis of nature of pathogen, manage crops disease corresponding to involved pathogen and examine loss in quality and yield. **CO-5:** Develop the skills about detection and diagnosis of plant diseases and application of pesticides.
AG-606	**Post-Harvest Management And Value Addition Of Fruits And Vegetables**	**CO 1** Define the fundamentals application of post and pre harvest technologies in agricultural commodities and post harvest management and novel packaging techniques. **CO 2** Identify various problems (storage, shelf life of food product spoilage etc.) faced by the farmers. **CO 3** Design and development of various products related to food processing or prevent the food from microorganism or enzymatic spoilage, i.e. self

		decomposition of the food by naturally occurring enzymes within it. **CO 4** Design and development of various products related to food processing.
AG-607	**Watershed And Wasteland Management**	**CO 1:** To discuss different aspects of water resource development and management on watershed basis and reflect on certain technical aspects which need to be looked at from river basin point of view. **CO 2:** To develop skills to analyse various complex problems of watershed using typing watershed modelling techniques for rainfall runoff and soil erosion. **CO 3:** To understand sustainable watershed app
AG-608	**Management Of Beneficial Insects**	**CO-1** This course will help the students to remember the knowledge of Importance of beneficial Insects, Beekeeping, sericulture and lac culture etc. **CO-2** The students will understand about commercial methods of rearing honey bees, silkworm lac insects and pollinators, and their enemies. **CO- 3** This course will help students in applying the modern techniques and equipment for healthy production in apiculture and sericulture. **CO-4** After completing this course, the students will be able to evaluate specific major parasitoids and predators commonly being used in biological control.
AG-609	**Educational Tour**	**CO 1.** Explore new terrains and cultural heritage. **CO 2**. Develop understanding of social life through participating interaction with people in society. **CO 3.** Develop real-world experiences of the theoretical part of course curriculum in fields/ specified places. **CO 4.** Encouraging social responsibility as a good citizen.