Program Outcome and Program Specific outcome of B.Sc. (Hons.) Agriculture Program

Program Outcome	This program enables the students to acquire comprehensive knowledge in the different aspects of agriculture and its allied fields. It makes the student self-reliant to carry out all agriculture practices on her own, also to initiate small startup in her field of choice and earn her livelihood.
Program Specific Outcome	The student during this program has many options to drive her career in her desired field. She has the options to sharp her skills in the field of Seed Technology, Commercial Horticulture, Food Processing, Apiculture, Bioagents and Biofertilizers, Organic Production Technology, Floriculture and Landscaping, Waste Management. The students learn about these modules in a very comprehensive manner and can play lead roles in the field of Agriculture or as an entrepreneur.
B.Sc. (Hons.) Agriculture	
Agronomy	In this aspect of agriculture, the student learns to practice different agronomical parameters of various crops such as seeds and sowing, tillage, crop density and geometry, nutrient use efficiency, irrigation and logging.
Genetics & Plant Breeding	In this area of agriculture study the various strategies about crop improvement. They also learn field exercises such as emasculation, pollination and bagging.
Soil Science & Agricultural Chemistry	In this the students learn various soil aspects such as soil genesis, soil profile, soil physical properties, soil taxonomy and soil reactions.
Entomology	This subject provides students detailed account of insects such as insect morphology, ecology, classification and integrated pest management.
Agricultural Economics	The student learns various economical aspects of agriculture. It learns meaning, scope and subject matter, definitions, activities, approaches to economic analysis; micro and macroeconomics.
Agricultural Engineering	In this subject the student learns about different engineering practices related to soil and water conservation, farm and power machinery & renewable and green technology.
Plant Pathology	In this aspect the student studies various plant pathogens such as bacteria/mollicutes, fungi, virus, nematodes, their life cycle along with their eradication strategies in agricultural and horticultural crops.
Horticulture	The students, in this aspect, learn about different productions technologies in fruit and plantation crops, vegetable & spices, ornamental, medicinal & aromatic plants (MAPs) and landscaping.
Food Science	In this aspect the student learns about food chemistry,

	composition, microbiology, processing, preservation, and nutrition and energy metabolism.
Agricultural Extension	This subject gives comprehensive knowledge regarding extension education such as community development, rural development, rural leadership, ICT application, models and barriers to communication.
NSS/NCC/Physical Education & Yoga Practices	These courses evoke social consciousness among students through various activities viz., working together, constructive and creative social work, to be skillful in executing democratic leadership, developing skill in programme development to be able for self-employment, reducing gap between educated and uneducated, increasing awareness and desire to help sections of society.
Rural Agriculture Work Experience (RAWE)	Rural Agriculture Work Experience also enables the students to gain rural experience giving them confidence and enhancing on-farm problem solving abilities in real life situations especially in contact with farmers, growers, and other stakeholders. In-plant Training for a short period of time in relevant industry helps gain the knowledge and experience of the work culture. In-plant Training by reputed organizations either MNCs or organized sectors provide an industrial exposure to the students as well as helps develop their career in high tech industrial requirements. Skill Development component includes use of Agriculture Systems & devices for enhancing functional skill. It is expected that basic infrastructure and Experiential Learning Unit available in universities may help in boosting livelihood-ensuring opportunities. Student Project is essential for students interested in higher education. Through this component, they will know how to identify research problem, create experimental set up and to write report.
Rural Entrepreneurship Awareness Development Yojana (READY)	Experiential Learning helps the student to develop competence, capability, capacity building, acquiring skills, expertise, and confidence to start their own enterprise and turn job creators instead of job seekers. This embraces the earning while learning concept. Experiential Learning is a major step forward for high quality professional competence, practical work experience in real life situation to graduates, production-oriented courses, production to consumption project working, facilitates producing job providers rather than job seekers and inculcates entrepreneurial orientation.
Course Outcomes	**Courses offered in Semester I**
Course code: Agron-101 **Course Title: Agricultural Heritage"**	**Outcomes**

CO1	Describe general Introduction of agriculture.
CO2	Give the history of agricultural development
CO3	Describe ancient India agriculture in civilization era
CO4	Describe assets and contrasting trends & agricultural growth
CO5	Identified liabilities: Soil factors, weather factors
CO6	Describe multifaceted roles and tasks of women in agriculture
CO7	Describe empowerment of women & group dynamics
CO8	Identified the nucleus of agricultural extension and training
Course code: Soil-101 Course Title: "Fundamentals of soil science"	**Outcomes**
CO1	Give the pedological and edaphological concepts
CO2	Classify Composition: rocks and minerals weathering
CO3	Identify Soil profile, soil physical properties, soil texture
CO4	Study soil compaction & soil color
CO5	Identify soil water, retention and potentials
CO6	Describe soil colloids, properties, nature, types and significance
CO7	Classify soil organic matter, composition, decomposability
Course code: Eng-101 Course Title: "Comprehension and communication skills in English"	**Outcomes**
CO1	Study the English Comprehension
CO2	Describe War minus shooting
CO3	Study A Dilemma: A layman looks at science Raymond B
CO4	Describe You and your English
CO5	Improve Written skills
CO6	Improve The style, importance of professional writing
Course code: BT-101 Course Title: "Fundamentals of Biochemistry and Biotechnology"	**Outcomes**
CO1	Study Scope and importance of biochemistry in agriculture
CO2	Identify Structure, properties and functions of amino acids
CO3	Write classification, structure and functions of Lipids
CO4	Write Classification, structure and functions of carbohydrates
CO5	Study Metabolism: basic concepts, glycolysis & citric acid cycle
CO6	Describe the central dogma of life; DNA replication
CO7	Study structure and biological functions of vitamins
Course code: Agron-102 Course Title: "Fundamentals of	**Outcomes**

Agronomy"	
CO1	Study meaning and scope of agronomy
CO2	Planting geometry and its effect on growth and yield
CO3	Study agricultural meteorology: weather and climate
CO4	Study earth's atmosphere, composition and structure
CO5	Identify atmospheric, temperature, factors affecting air pressure
CO6	Write wind: factors affecting, cyclones and anticyclones
CO7	Describe process of condensation, formation of dew & fog
Course code: Bot-101 Course Title: "Introductory Biology"	**Outcomes**
CO1	Classify and introduction to different groups of the plant kingdom
CO2	Study morphology: Structure of seeds of different plants
CO3	Identify roots: External characters and functions
CO4	Identify stem: External characters and functions
CO5	Identify leaf: Parts of a typical leaf and their functions
CO6	Identify inflorescence: Elementary knowledge of simple and special types
CO7	Identify pollination: Types of pollinations, agencies responsible for pollination
CO8	Study reproduction in plants: Vegetative, and sexual
Course code: Math-101 Course Title: "Elementary Mathematics"	**Outcomes**
CO1	Understand mensuration of rectangles
CO2	Study volumes of cubes and rectangular solids
CO3	Study algebra: Solution of quadratic equations
CO4	Study algebra: Series: nth terms sum to n terms of an AP and GP
CO5	Understand co-ordinate geometry
Course code: Edu-101 Course Title: "Human values & ethics"	**Outcomes**
CO1	Understand the need, basic guidelines of value education
CO2	Understand the human being as co-existence of self
CO3	Study basis for universal human values and ethical human conduct
CO4	Understand professional ethics, issues in professional ethics
CO5	Study the holistic criteria for evaluation, case studies of typical holistic technologies
Course Code: Forst-101 Course Title: Introduction to forestry	**Outcomes**
CO1	Write about the forestry- definition, scope and important terminology
CO2	Classify Status of forests in India and their role
CO3	Write down the National and International forestry organizations

CO4	Write down the Locality factors: climatic, edaphic, topographical and biotic
CO5	Describe choice of species w.r.t site/economic uses and constraints of tree growing
CO6	Identify the Forest management: growing stock, normal forest
CO7	Write down the Forest utilization major and minor forest products
Course Code: Ext-101 Course Title: Rural sociology and educational psychology	**Outcomes**
CO1	Describe extension education and agricultural extension: meaning, definition, scope and importance
CO2	Explain Indian rural society, important characteristics, differences and relationship between rural and urban societies
CO3	Describe Social Stratification: meaning, definition, functions, basis for stratification
CO4	Write down Social values and attitudes: Meaning, definition, types and role of social values and attitudes in agricultural extension
CO5	Describe Social Control: meaning, definition, need of social control and means of social control
CO6	Identify Leadership: meaning, definition, classification, roles of a leader, different methods of selection of professional and lay leaders
CO7	Write down psychology and educational psychology: meaning, definition,
	Scope and importance
CO8	Personality: meaning, definition, types, factors influencing the personality and role of personality in agricultural extension
Course code: HORT-101; Course Title: Fundamentals of Horticulture	**Outcomes**
CO1	Give different methods of plant propagation.
CO2	Give principles of orchard establishment.
CO3	What is unfruitfulness?
CO4	What is the importance of plant bio regulators?
	Enumerate different irrigation methods and fertilizers for horticulture crops?
Course Outcomes	**Courses offered in Semester II**
Course code: Econ102 Course Title: Fundamental of Agricultural Economics"	**Outcomes**

CO1	Understand economics: meaning, definition, subject matter
CO2	Study wants: Meaning, characteristics, classifications of wants
CO3	Study consumer's surplus: Meaning, definition, importance
CO4	Understand elasticity of demand: Types of elasticity of demand
CO5	Study welfare economics: meaning, pareto's optimality
CO6	Study public finance: Meaning, principles
CO7	Understand classification of taxes: Cannons of taxation
Course code: PBG-102 Course Title: "Fundamentals of Genetics"	**Outcomes: Describe general principles of genetics**
CO1	Study Mendel's laws of inheritance and exceptions to the laws
CO2	Significance and differences between mitosis and meiosis
CO3	Describe crossing over and factors affecting crossing over
CO4	Describe characteristic features of cytoplasmic inheritance
CO5	Identify DNA and its structure, function, types
CO6	Write Gene expression and differential gene activation Co7 Evolution of different crop species like cotton, wheat
Course code: Bot-102 Course Title: Fundamentals of Crop physiology"	**Outcomes**
CO1	Give Introduction, importance in agriculture
CO2	Study Seed viability and vigor
CO3	Classify monocarpic and polycarpic species with example
CO4	Study transpiration in relation to crop productivity
CO5	Understand Photorespiration, factors affecting photosynthesis
CO6	Study Plant growth regulators
CO7	Understand Postharvest physiology, seed dormancy
Course code: Pl PATHt102 Course Title: Fundamentals of plant pathology"	**Outcomes**
CO1	Study important plant pathogenic organisms
CO2	Study classification of prokaryotes
CO3	Write definition and objectives of plant pathology
CO4	Identify plant disease epidemiology
CO5	Study cultural methods, rouging
CO6	Understand methods of application of fungicides
CO7	Study application of biotechnology in plant
Course code: En102 Course Title: Fundamentals of Entomologic"	**Outcomes**
CO1	Give History of entomology in India

CO2	Study Structure and functions of insect cuticle and moulting
CO3	Understand structure and modifications of insect antennae
CO4	Study structure and functions of digestive, circulatory system
CO5	Study Systematics: Taxonomy, importance, history and development and binomial nomenclature
Course code: Ex102 Course Title: Fundamentals of agricultural extension and education"	**Outcomes**
CO1	Give Extension education and agricultural extension
CO2	Identify Rural development; meaning, definition
CO3	Study Community development programme
CO4	Study Panchayat raj system, meaning of democratic
CO5	Study Agricultural development programmes with reference to year of start
CO6	Study social Justice and poverty alleviation programmes
CO7	Study Women development programmes
Course code: S OIL-102 Course Title: Soil and Water Conservation engineering	**Outcomes**
CO1	Identify Surveying: survey equipment, chain survey
CO2	Understand Levelling-levelling equipment, terminology
CO3	Study Irrigation, classification of projects
CO4	Understand water conveyance systems
CO5	Study drip and sprinkle irrigation systems
CO6	Study water source, water lifting devices
CO7	Study soil and water conservation
Course code: Micro-102 Course Title: "Principles of Microbiology"	**Outcomes**
CO1	Give the history of microbiology
CO2	Study metabolism in bacteria
CO3	Identify bacteriophages: structure and properties
CO4	Describe genetic recombination and bacterial genetics
CO5	Study soil microbiology & microbial groups in soil
CO6	Identify microbiology of water & microbiology of food
CO7	Classify beneficial microorganisms in agriculture
Course code: ENG-102 Course Title: Communication skills and personality development	**Outcomes**
CO1	What is verbal and non-verbal communication?
CO2	What is reading and comprehension of general and technical

	articles.
CO3	What do you understand by oral and writing skills?
CO4	What do you understand by footnotes and bibliography
Course Outcomes	**Courses offered in Semester III**
Course code: Agron-201 Course Title: Crop Production Technology -I Kharif)"	**Outcomes**
CO1	Give geographic distribution, economic importance of kharif crops
CO2	Study soil and climatic requirement, varieties, cultural practices
CO3	Study yield of kharif crops, oilseeds: groundnut, sesame
CO4	Study yield of kharif crops, fiber crops, cotton, jute
CO5	Identify forage crops, sorghum, maize, cowpea, cluster bean and napier grass
Course code: AGIS-201 Course Title: Agriniformatics"	**Outcomes**
CO1	Give Introduction to computers
CO2	Understand Operating system, DOS and WINDOWS
CO3	Study GUI, desktop and its elements
CO4	Understand applications, MSWORD
CO5	Use of in-built statistical and other functions
CO6	Study Concept of database, units of database
CO7	Write Principles of programming
Course code: Econ-201 Course Title: "Agricultural finance and co-operation"	**Outcomes**
CO1	Study agricultural finance: nature and scope
CO2	Identify agricultural credit: meaning, definition, need
CO3	Give History of financing agriculture in India
CO4	Understand Assessment of crop losses
CO5	Identify Higher financing agencies
CO6	Understand Agricultural cooperation: philosophy and principles
CO7	Reorganization of cooperative credit structure in Andhra Pradesh and single window system
Course code: Hort-201 Course Title: "Production technology of vegetables and spices"	**Outcomes**
CO1	Study ash gourd, snake gourd, bottle gourd, bitter gourd and melons
CO2	Study Bulb crops-onion and garlic

CO3	Identify Tuber crops, potato, sweet potato, tapioca
CO4	Identify Leafy vegetables, Amaranthus, Palak, Gogu
CO5	Write Importance of spices
CO6	Use of trees, shrubs, climbers, palms, houseplants
Course code: STAT-201 Course Title: "Statistal Methods"	**Outcomes**
CO1	Study definition of statistics and its use and limitations
CO2	Characteristics of ideal average, arithmetic mean
CO3	Study normal distribution and its properties
CO4	Study two samples and paired t test. F test
CO5	Understand correlation and identification through scatter diagram
CO6	Study Inter-relation between 'r' and the regression coefficients
CO7	layout and analysis with equal & unequal number of observations
Course Code: Env-201 Course Title: Environmental science and disaster management	**Outcomes**
CO1	Explain scope and importance of environmental studies. Natural resources
CO2	Describe the ecosystems: definition, concept, structure and functions.
CO3	Describe biodiversity: Definition, classification, threats to biodiversity and its conservation.
CO4	Write down environmental pollution: causes, effects and control of air, water, soil
CO5	Explain disaster management, floods, earthquakes, cyclones and landslides
CO6	Write down the environment protection act, the air act, the water act, the wildlife protection.
CO7	Write down the woman and child welfare, HIV/AIDS and role of information technology on environment and human health
Course Code: LPM-201, Course Title: Livestock production and management	**Outcomes**
CO1	Describe place of livestock in the national economy
CO2	Write down Important exotic and Indian breeds of cattle, buffalo, sheep, goat
CO3	Describe milking of animals and factors affecting milk yield and composition
CO4	Write down feeding and management of calves, growing heifers and milch animals
CO5	Describe Disease control measures, sanitation and care, breeding, feeding

CO6	Write down breed characteristics of poultry, their methods of rearing, breeding, feeding and management,
CO7	Explain Cost of production of milk, economical units of cattle, buffalo, sheep, goat
Course code: FPM-201 Course Title: "Farm power and machinery"	**Outcomes**
CO1	Study farm power in India: sources, I.C engines
CO2	Identify tractors: types, selection of tractor
CO3	Study tillage implements: primary and secondary tillage implements
CO4	Study implements for intercultural operations
CO5	Identify Plant protection equipment and harvesting equipment
CO6	Identify equipment for land development and soil conservation
	Credits 1 Theory period of one hour per week over a semester
Course code: PBG-102 Course Titl: Fundamentals of Plant Breeding	**Outcomes**
CO1	Classify plants, botanical description, floral biology
CO2	Understand aims and objectives of plant breeding
CO3	Study methods of breeding-introduction and acclimatization
CO4	Understand Hybridization & types of hybridization
CO5	Identify Incompatibility and male sterility
CO6	Study Population improvement programmes
	Credits 2 Theory period of one hour per week over a semester
Course Outcomes	**Courses offered in Semester IV**
Course code: Agron-202 Course Title: Crop Production Technology-II (Rabi)"	**Outcomes**
CO1	Study Origin, geographical distribution, economic importance of Rabi crops
CO2	Study yield of Cereals: wheat, barley; Pulses: chickpea, lentil, peas
CO3	Study yield of sugar crops: sugarcane and sugar beet
CO4	Study yield of medicinal and aromatic crops such as Mentha, lemon grass
CO5	Study yield of commercial crops: potato and tobacco; forage crops: berseem
Course code: HORT-203 Course Title: "Production technology of fruit and Plantation crops"	**Outcomes**

CO1	Give Definition and importance of horticulture
CO2	Identify Climatic zones of horticulture crops
CO3	Selection of site, fencing, and wind break, planting systems
CO4	Study propagation methods and use of rootstocks
CO5	Study methods of training and pruning
CO6	Understand package of practices for the cultivation of major fruit
CO7	Understand package of practices for the cultivation of minor fruits
Course Code: RE-202 Course Title: Renewable Energy & Green Technology	**Outcomes**
CO1	Explain energy sources, introduction, classification, energy from biomass
CO2	Classify Principles of combustion, pyrolysis and gasification
CO3	Describe briquettes, types of briquetting machines, uses of briquettes, shredders
CO4	Write down the solar energy, solar flat plate and focusing plate collectors, solar air heaters
CO5	Describe solar refrigeration system, solar ponds, solar photo voltaic systems, solar lantern, solar street lights
CO6	Identify wind energy, types of wind mills, constructional details
CO7	Write down the liquid bio fuels, bio diesel and ethanol from agricultural produce
Course code: Hort-203 Course Title: " Production technology of Ornamental crops, MAP and Landscaping	**Outcomes**
	Medicinal and Plantation Crops"
CO1	What do you understand by Ornamental crops?
CO2	Study importance and cultivation technology of aromatic crops?
CO3	What is Landscaping?
CO4	Study importance and cultivation technology of medicinal plants:
CO5	Identify Importance and cultivation technology of medicinal plants: nuxvomica, solanum khasiamum,
Course Code: Soil-202 Course Title: Problematic Soil and their management	**Outcomes**
CO1	Explain Soil a water reservoir, role in water cycle
CO2	Describe Forces of water retention. Soil water potential
CO3	Describe the Soil, plant, atmosphere continuum, indices of plant water status
CO4	Write down the Soil moisture characteristics, evaporation in the presence and absence of water table

CO5	Describe Soil erosion by water - types, effects, mechanics
CO6	Identify Rain erosivity and soil erodibility. Runoff
CO7	Write down the Soil conservation measures
Course code: PBG-202 Course Title: "Principles of seed technology"	**Outcomes**
CO1	Give Introduction to seed production
CO2	Study seed production, foundation and certified seed production in maize
CO3	Identify foundation and certified seed production of tomato and brinjal
CO4	Study seed Act and Seed Act enforcement
CO5	Study seed drying: forced air seed drying
CO6	Identify establishment of seed processing plant
CO7	Study general principles of seed storage
Course Code: Agron-203 Course Title: Farming systems and sustainable agriculture	**Outcomes**
CO1	Describe sustainable agriculture, its goal and prospective
CO2	Identify land degradation and conservators of natural resources
CO3	Describe irrigation problems, waste lands and their development
CO4	Write down organic farming definition, principles and components
CO5	Describe Farming systems: definition, principles and components
CO6	Write down IFS models for wetland, irrigated dryland and dryland situations
Course Code: Econ-202 Course Title: Agricultural marketing, trade and prices	**Outcomes**
CO1	Describe agricultural marketing: concepts and definition, scope and subject matter, market and marketing
CO2	Explain producer's surplus: meaning, types of producer’s surplus, marketable surplus
CO3	Write down market integration, meaning, definition, types of market integration. marketing efficiency
CO4	Write down Theories of international trade: Domestic trade, free trade, international trade
CO5	Identify market access, domestic support, export subsidies, Exim-policy and ministerial conferences
CO6	Identify advantages of food corporation of India: Objectives and functions. quality control
CO7	Write down meaning, need for agricultural price policy. Risk in marketing, meaning and importance

Course code: Agron-204 Course Title: "Introductory Agro-meteorology and climate change	**Outcomes**
CO1	Study meaning and scope of agronomy
CO2	Planting geometry and its effect on growth and yield
CO3	Study agricultural meteorology: weather and climate
CO4	Study earth's atmosphere, composition and structure
CO5	Identify atmospheric, temperature, factors affecting air pressure
CO6	Write wind: factors affecting, cyclones and anticyclones
CO7	Describe process of condensation, formation of dew & fog
Course Outcomes	**Courses offered in Semester V**
Course Code: Ent-301 Course Title: Insect pests of crop and stored grains and their management	**Outcomes**
CO1	Classify stored grain pests: Coleopteran and lepidopteran pests, their biology
CO2	Write down distribution, biology, nature and symptoms of damage, and management strategies of insect and non-insect pests of crop plants
CO3	Write down distribution, biology, nature and symptoms of damage, and management strategies of insect and non-insect pests of cereals
CO4	Write down Distribution, biology, nature and symptoms of damage, and management strategies of insect and non-insect pests' vegetable
CO5	Write down distribution, biology, nature and symptoms of damage, and management strategies of insect and non-insect pests of fruit trees
CO6	Write down distribution, biology, nature and symptoms of damage, and management strategies of insect and non-insect pests of spices
Course Code: Agron-302 Course Title: Practical crop production I (Kharif crops)	**Outcomes**
CO1	Write crop planning, raising field crops in multiple cropping systems
CO2	Practical Field preparation, seed treatment, nursery raising, sowing, nutrient management
CO3	Practical of weed management and management of insect pests and diseases of crops

CO4	Preparation of balance sheet including cost of cultivation, net returns
Course Code: Pl. Path-302 Course Title: Disease of field & horticultural crops and their management-I	**Outcomes**
CO1	Write down economic importance, symptoms, cause, disease cycle and integrated management of diseases of fruits
CO2	Write down economic importance, symptoms, cause, disease cycle and integrated management of diseases of vegetable.
CO3	Write down economic Importance, symptoms, cause, disease cycle and integrated management of diseases of cucurbits
CO4	Study integrated management of diseases of maize, wheat
CO5	Study management of diseases of sugarcane, turmeric, tobacco
CO6	Study epidemiology and disease cycle of diseases of linseed, sesamum, sunflower
Course code: Ent-202 Course Title" Principles of integrated pest and disease management"	**Outcomes**
CO1	Study IPM; Introduction, importance, concepts principles
CO2	Identify biological methods of control (parasites, predators
CO3	Study of important insecticides
CO4	Study recent methods of pest control, repellents
CO5	Identify beneficial insects: parasites and predators used in pest control
Course code: Soil-301 Course Title: "Manures, fertilizers and Soil fertility Management"	**Outcomes**
CO1	Give Introduction, raw materials, manures
CO2	Study composts, different methods, mechanical compost plants
CO3	Understand fertilizers, classifications, manufacturing processes and properties of major nitrogenous
CO4	Study bio fertilizers and their advantage
CO5	Identify organic chemistry as prelude to agro chemicals
CO6	Study Herbicides, major classes, properties and uses of 2,4-D, atrazine
CO7	Study fungicides, major classes, properties and uses of carbendazim
Course Code: Ext-301 Course Title: Entrepreneurship development and Business Communication	**Outcomes**
CO1	Describe entrepreneurship development: assessing overall

	business environment in the Indian economy
CO2	Explain globalization and the emerging business/entrepreneurial environment.
CO3	Describe SWOT analysis, generation, incubation and commercialization of ideas and innovations
CO4	Write down export and import policies relevant to agriculture sector. Venture capital
CO5	Describe communication skills: structural and functional grammar; meaning and process of communication
CO6	Identify listening and note taking, writing skills, oral presentation skills; field diary and lab record
CO7	Write down individual and group presentations, impromptu presentation, public speaking
Course Code: Agron-302 Course Title: Practical crop production I (Kharif crops)	**Outcomes**
CO1	Write crop planning, raising field crops in multiple cropping systems
CO2	Practical Field preparation, seed treatment, nursery raising, sowing, nutrient management
CO3	Practical of weed management and management of insect pests and diseases of crops
CO4	Preparation of balance sheet including cost of cultivation, net returns
Course Code: IPR-301 Course Title: Intellectual Property Rights	**Outcomes**
CO1	What do you understand by IPR?
CO2	What is Patent?
CO3	Give different Patent systems in India.
CO4	What are the rights of TK holders?
Course Code: AGRON-301 Course Title: Geoinformatics and Nano-Technology and Precision Farming	**Outcomes**
CO1	What do you understand by precision farming?
CO2	What is crop discrimination and yield monitoring?
CO3	What is global positioning system?
CO4	What is the STCR approach for precision Agriculture?
CO5	What are the different applications of Nanotechnology in seed, water, fertilizer and plant protection?
Course Code: PBG-301 Course Title: Crop Improvement I (Kharif)	**Outcomes**

CO1	What do you understand by wild relatives of different cereals?
CO2	What is different plant genetic resources and their utilization?
CO3	Give the importance of different self and cross-pollinated cereal crops.
CO4	What are major breeding objectives and procedures?
Course Outcomes	**Courses offered in Semester VI**
Course Code: Econ-302 Course Title: Farm Management, Production & Resource Economics	**Outcomes**
CO1	Describe Production economics: Meaning, definition, nature and scope
CO2	Explain concepts of production. Production functions, meaning, definition
CO3	Describe Laws of returns: Increasing, constant and decreasing
CO4	Write down the determination of optimum input and output
CO5	Describe returns to scale: Meaning, definition, importance
CO6	Identify types and systems of farming. Farm planning and budgeting
CO7	Write down the linear programming: Assumptions, advantages and limitations
	Credits 1 Theory period of one hour per week over a semester
Course Code: Agron-304 Course Title: Practical crop production II (Rabi crops)	**Outcomes**
CO1	Write crop planning, raising field crops in multiple cropping systems
CO2	Practical Field preparation, seed treatment, nursery raising, sowing, nutrient management
CO3	Practical of weed management and management of insect pests and diseases of crops
CO4	Preparation of balance sheet including cost of cultivation, net returns
Course Code: Agron-304 Course Title: Crop residue management	**Outcomes**
CO1	Write down Significance of crop residue management
CO2	Explain challenges for diversified use of crop residue in high cropping intensity areas
CO3	Describe Crop residue in relation to agricultural ecosystems and conservation agriculture.
CO4	Write down on-site and off-site management of crop residues and soil health indicators

CO5	Describe beneficial effects of crop residue on soil health, crop yields
CO6	Write down recent technologies for conservation agriculture
CO7	Write down the Policy options for efficient residue management in Himachal
Course Code: Agron-305 Course Title: Principles of Organic farming	**Outcomes**
CO1	Describe concept and relevance of organic farming
CO2	Explain biological intensive nutrient management-organic manures
CO3	Describe Vermicomposting, green manuring, recycling of organic residues
CO4	Write down the soil improvement and amendments
CO5	Describe Integrated diseases and pest management
CO6	Explain Weed management; Quality considerations, certification,
Course Code: PBG-302 Course Title: Crop Improvement I (Rabi)	**Outcomes**
CO1	What do you understand by wild relatives of different cereals?
CO2	What is different plant genetic resources and their utilization?
CO3	Give the importance of different self- and cross-pollinated cereal crops.
CO4	What are major breeding objectives and procedures?
Course Code: FSN-302 Course Title: Principles of Food Science and Nutrition	**Outcomes**
CO1	What do you understand by pH, surface tension, colloidal systems?
CO2	Describe food composition and chemistry
CO3	What are the different methods of food preservation and processing?
CO4	What do you understand by malnutrition?
CO5	What are different new trends in food science and nutrition?
Course code: Agron-303; Course Title: Rainfed Agriculture and Watershed Management	**Outcomes**
CO1	Study Irrigation: definition and objectives
CO2	Understand Soil plant water relationships
CO3	Identify Methods of soil moisture estimation
CO4	Identify effective rainfall, scheduling of irrigation
CO5	Understand Methods of irrigation
CO6	Study Irrigation efficiency and water use efficiency

CO7	Identify water management of different crops
Course code: HORT-302; Course Title: Post-Harvest management and value addition of fruits and vegetables	**Outcomes**
CO1	Write down importance of Postharvest technology in horticultural crops.
CO2	Explain pre-harvest factors affecting quality on postharvest shelf life of fruits and vegetables
CO3	Write down methods of storage: precooling, pre-storage treatments, low temperature storage
CO4	Describe various methods of packing, packaging materials and transport. Packing technology for export
CO5	Write down importance and scope of fruit and vegetable preservation in India
CO6	Write down preparation of jams, jellies, marmalades, candies, crystallized and glazed fruits
CO7	Write down spoilage of canned products, biochemical, enzymatic and microbial spoilage
Course Code: Pl. Path-301 Course Title: Disease of field & horticultural crops and their management-II	**Outcomes**
CO1	Write down economic importance, symptoms, cause, disease cycle and integrated management of diseases of fruits
CO2	Write down economic importance, symptoms, cause, disease cycle and integrated management of diseases of vegetable.
CO3	Write down economic Importance, symptoms, cause, disease cycle and integrated management of diseases of cucurbits
CO4	Study integrated management of diseases of maize, wheat
CO5	Study management of diseases of sugarcane, turmeric, tobacco
Course Code: PCS-302 Course Title: Protected cultivation and Secondary Agriculture	**Outcomes**
CO1	Describe greenhouse technology, introduction, types of greenhouses
CO2	Write greenhouse equipment, materials of construction for traditional and low-cost green houses
CO3	Describe cost estimation and economic analysis. Choice of crops for cultivation under greenhouses
CO4	Write Growing media, soil culture, type of soil required, drainage, flooding and leaching
CO5	Describe Threshing, threshers for different crops, parts, terminology, care and maintenance

CO6	Identify drying, grain drying, types of drying, types of dryers. Storage
CO7	Write Grading, methods of grading, equipment for grading of fruits and vegetables
Course code: Ent-302; Course title: Management of Beneficial Insects	**Outcomes**
CO1	Study Insect ecology: Introduction, environment and its components
CO2	Understand concepts of balance of life in nature
CO3	Study IPM; Introduction, importance, concepts principles
CO4	Identify biological methods of control (parasites, predators
CO5	Study of important insecticides
CO6	Study recent methods of pest control, repellents
CO7	Identify beneficial insects: parasites and predators used in pest control
Course Outcomes	**Courses offered in Semester VII**
	Rural Agricultural Work Experience (RAWE)
Course Title: Village attachment	**Outcomes**
CO1	Work with villagers
CO2	Solve the problem of villagers
CO3	Soil testing of farmer field
CO4	Identification of disease and insect pest on farmer field
CO5	Suggestions to the farmer about human health
CO6	Suggestions to the farmer about child education and development
Course Title: Experiential learning	**Outcomes**
CO1	Practical on seed production at farm
CO2	Practical of food processing
CO3	Practical on disease identification and management
CO4	Practical on insect identification and management
CO5	Practical on mushroom cultivation
CO6	Practical on Post harvest technology
CO7	Practical on biofertilizer and biopesticides
Course Title: Industry attachment/KVK/Research Station	**Outcomes**
CO1	Visit to nearby industry/KVK/Research station
CO2	Learning the work culture of industry/KVK/Research station
CO3	Discussion with the workers
CO4	Identification the procedure of production.
	0 Tutorial period of one hour per week over a semester
	4 Practical period of four hour per week over a semester

Course Code: ----------, Course Title Project report preparation and examination	**Outcomes**
CO1	Daily dairy preparation
CO2	Compilation of all programmes during semester
CO3	Presentation of the report
CO4	Submission of the report
Course Outcomes	**Courses offered in Semester VIII**
	Rural Entrepreneurship Awareness development Yojana (READY)
Course Code: READY-401 Course Title: Production Technology for Bioagents and Biofertilizers	**Outcomes**
CO1	Hands on practice and knowledge about different bioagents and biofertilizers and their applications in agriculture
Course Code: READY-402 Course Title: Seed Production and Technology	**Outcomes**
CO1	Hands on practice and knowledge about different seed production stratifies and quality improvement of seeds for crop improvement.
Course Code: READY-403 Course Title: Mushroom cultivation and Technology	**Outcomes**
CO1	Hands on practice and knowledge about mushroom cultivation and the technology to improve the quality.
Course Code: READY-404 Course Title: Soil, Plant, Water and Seed Testing	**Outcomes**
CO1	Hands on practice and knowledge about different protocols for testing water, seed and Soil of different types.
Course Code: READY-405 Course Title: Commercial Beekeeping	**Outcomes**
CO1	Hands on practice and knowledge about different aspects of Beekeeping
Course Code: READY-406 Course Title: Poultry Production Technology	**Outcomes**
CO1	Hands on practice and knowledge about different aspects Poultry production
Course Code: READY-407	**Outcomes**

Course Title: Commercial Horticulture	
CO1	Hands on practice and knowledge horticultural tools and techniques for different horticultural crops.
Course Code: READY-408 Course Title: Floriculture and Landscaping	**Outcomes**
CO1	Hands on practice and knowledge about different floricultural methods and landscaping architecture.
Course Code: READY-409 Course Title: Food Processing	**Outcomes**
CO1	Hands on practice and knowledge about different methods of food processing, tools and techniques.
Course Code: READY-410 Course Title: Agriculture Waste Management	**Outcomes**
CO1	Hands on practice and knowledge about eradication and utilization of agriculture waste and its management.
Course Code: READY-411 Course Title: Organic Production Technology	**Outcomes**
CO1	Hands on practice and knowledge about different aspects of organic farming
Course Code: READY-412 Course Title: Commercial Sericulture	**Outcomes**
CO1	COI Hands on practice and knowledge about different aspects rearing silk worm and production of silk