

Program Outcomes (POs)
Program Specific Outcomes (PSO)
Course Outcomes (COs)



DEPARTMENT OF AGRICULTURE

**DOON (P.G.) COLLEGE OF AGRICULTURE SCIENCE AND TECHNOLOGY
SELAQUI, DEHRADUN, UTTARAKHAND.**

M.Sc. (Agriculture) Agronomy

Programme Outcomes (POs)

Students of Post graduate with the M.Sc. (Ag.) Agronomy degree should be able to acquire.

PO-1:	In this program students gain knowledge about different kinds of principles of crop production practices and their management as well as their interrelation with allied branches of agriculture.
PO-2:	Detailed Knowledge on the subject to improve the farmers conditions by their contribution.
PO-3:	To gain appropriate scientific statistical methods and evaluations for decision making in various sector of agriculture production system.
PO-4:	The candidate can also pursue for Ph. D programme in ICAR and different state agriculture universities.
PO-5:	Students can work in government sector especially in teaching & research (ICAR and State agriculture University) Agriculture department, banking and private sectors like fertilizer companies, Herbicide companies, seed companies. etc.

PSO 1: Students are made enable to learn different systems of cropping in relation to oilseed, fibre, legumes and major cereals etc. along with farming system

PSO 2: Students are also enable to learn about fundamentals and advance aspects of agricultural crops and sustainable agriculture

PSO 3: Provide sound exposure to latest technological inclusions in Agriculture with global acceptance

I SEMESTER

SOA/AGRON/C-501: Statistical Methods and Experimental Designs 3 (2+1)

Course Outcomes:

CO1:	Effectively express themselves in statistical terms either in written or oral form.
CO2:	Demonstrate the ability to think critically and effectively by utilizing the concept of statistical probability and experimental design.
CO3:	Demonstrate ability to integrate knowledge and idea in a coherent and meaningful manner especially to measures of quality of estimators. In particular, they should be able to use various experimental design techniques.
CO4:	Locate and use information to set up statistically, choose a suitable method, and perform statistical analysis.

SOA/AGRON/C-502: Principles of Crop Production 3 (2+1)

Course Outcomes:

CO1:	It provides modern concept of crop production with specialization of cereals, pulses, oilseeds, tubers, medicinal, aromatic and underutilized crops.
CO2:	It provides knowledge about the Modern concept of crop production
CO3:	This course also providing knowledge about the tillage practices, resource conservation technologies and integrated farming system.
CO4:	By the study of this course students can also find out the economics of crop production
CO5:	They also know about the soil-plant relationships, yield potential of crops and cropping system in relation to soil fertility status of soil.

SOA/AGRON/C-503: Principles and practices of weed management 3 (2+1)

Course Outcomes:

CO1:	It enables the students to attain knowledge on basic principles and modern practices of weed management.
CO2:	They aware about the beneficial and harmful aspects of weeds.
CO3:	Students also well understood about the crop-weed interference, also about the viability, germination and dissemination of weeds.
CO4:	They also know about the Herbicides with their classification and mode of action in plants.

SOA/AGRON/C-504: Principles and Practices of Organic Farming 2 (1+1)

Course Outcomes:

CO1:	It provides a wide knowledge about different kind of organic manures and their efficient utilization in various cropping systems.
CO2:	Enhance the student skill for organic farming, socio-economic impact, export potential of organic farming, control of weeds, diseases and other pest in organic farming.
CO3:	Familiarize with preparation and use of organic manures and biofertilizers, commercial fertilizers, time and methods of manures and fertilizer application in respect to soil fertility and productivity
CO4:	Student can also able to become entrepreneur of vermicomposting, biofertilizer, and other organic manure and fertilizer for the plants.
CO5:	It can also help to know about the biological preventive and control measures of weeds.

SOA/AGRON/C-505: Agronomy of Cereals Crops 2 (1+1)

Course Outcomes:

CO1:	Students will be able to identify and describe the growth stages of major cereal crops, including factors influencing growth and development.
CO2:	Ability to explain and apply best practices for crop establishment, including seedbed preparation, sowing methods, and optimum planting dates.
CO3:	Knowledge of nutrient requirements of cereal crops, including fertilization schedules, nutrient deficiencies, and management strategies for optimizing nutrient uptake.
CO4:	Knowledge of nutrient requirements of cereal crops, including fertilization schedules, nutrient deficiencies, and management strategies for optimizing nutrient uptake.
CO5:	Awareness of environmental impacts associated with cereal crop production, and knowledge of sustainable practices to minimize environmental degradation.

II SEMESTER

SOA/AGRON/C-507: Crop Ecology and Agro-meteorology 2 (1+1)

Course Outcomes:

CO1:	Students will comprehend the interactions between crops and their environment, including factors such as temperature, light, humidity, and soil characteristics, and how these factors influence crop growth and development.
CO2:	Ability to analyse and explain how different crop species and varieties adapt to various ecological niches, including factors like climate, soil type, and topography.
CO3:	Knowledge of meteorological factors affecting crop production, including rainfall patterns, temperature regimes, solar radiation, and their spatial and temporal variability.
CO4:	Familiarity with crop simulation models and their application in predicting crop growth, yield, and responses to environmental factors under different scenarios.
CO5:	Ability to communicate effectively about crop ecology and agro-meteorology concepts, research findings, and recommendations to stakeholders, including farmers, policymakers, and researchers.

SOA/AGRON/C-508: Cropping System and Sustainable Agriculture 2 (1+1)

Course Outcomes:

CO1:	Students will be able to describe and analyze different cropping systems, including monoculture, polyculture, intercropping, and agroforestry, and their implications for soil health, biodiversity, and productivity.
CO2:	Knowledge of the benefits of crop rotation and diversification in enhancing soil fertility, pest and disease management, and resilience to climate variability.
CO3:	Understanding the principles and benefits of integrating livestock and crops in sustainable agriculture systems, including nutrient cycling, soil fertility management, and economic diversification.
CO4:	Ability to assess and implement practices that promote soil health, including conservation tillage, cover cropping, organic matter management, and soil erosion control measures.
CO5:	Understanding the economic aspects of sustainable cropping systems, including cost-benefit analysis, market access, value chain development, and farm profitability.

SOA/AGRON/C-509: Advances in Soil fertility and Nutrient Management 3 (2+1)

Course Outcomes:

CO1:	Students will be able to describe and analyse different cropping systems, including monoculture, polyculture, intercropping, and agroforestry, and their implications for soil health, biodiversity, and productivity.
CO2:	Knowledge of the benefits of crop rotation and diversification in enhancing soil fertility, pest and disease management, and resilience to climate variability.
CO3:	Familiarity with agroecological principles such as biodiversity conservation, natural resource management, and ecosystem services in the context of sustainable cropping systems.
CO4:	Knowledge of balanced nutrient management practices, including fertilizer use efficiency, nutrient cycling, and the role of organic amendments in sustainable crop production.
CO5:	Ability to assess and implement practices that promote soil health, including conservation tillage, cover cropping, organic matter management, and soil erosion control measures.

SOA/AGRON/C-510: Agronomy of Pulses and oil Seed Crops 3 (2+1)

Course Outcomes:

CO1:	Ability to critically evaluate research findings and apply innovative agronomic practices and technologies to enhance productivity, quality, and profitability of pulse and oilseed crops.
CO2:	Students will be able to describe the growth stages and development processes of pulses and oilseed crops, including factors influencing growth patterns and yield formation.
CO3:	Knowledge of selecting appropriate varieties of pulse and oilseed crops based on agro-climatic conditions, market demand, and seed quality parameters.
CO4:	Understanding and applying best practices for seedbed preparation, seed treatment, and sowing methods suitable for pulse and oilseed crops.
CO5:	Knowledge of water requirements at different growth stages of pulse and oilseed crops, irrigation scheduling techniques, and strategies for water conservation and efficiency.

SOA/AGRON/C-511: Agronomy of Medicinal and Aromatic Crops 3 (2+1)

Course Outcomes:

CO1:	Students will be able to identify and classify medicinal and aromatic plants based on their botanical characteristics and taxonomical classification.
CO2:	Understanding the growth stages, phenology, and physiological processes of medicinal and aromatic crops, including factors influencing their growth and yield.
CO3:	Ability to assess and manage soil fertility, pH, drainage, and other environmental factors critical for the growth and development of medicinal and aromatic crops.
CO4:	Understanding methods of processing medicinal and aromatic crops to extract or preserve active ingredients, and knowledge of value-added products and market opportunities.
CO5:	Knowledge of optimal harvesting times, techniques for harvesting medicinal and aromatic plants to preserve active compounds, and post-harvest handling practices to maintain quality.

Semester III

SOA/AGRON/C-513: Principles and Practices of Water Management 4 (2+2)

Course Outcomes:

CO1:	Students will be able to assess water availability, quality, and demand in agricultural and environmental settings using appropriate methods and tools.
CO2:	Understanding fundamental hydrological processes, including precipitation, evapotranspiration, infiltration, runoff, and groundwater recharge, and their relevance to water management.
CO3:	Knowledge of techniques and practices to improve water use efficiency in agriculture, including irrigation scheduling, precision irrigation technologies, and soil water management.
CO4:	Understanding methods for managing and improving water quality in agricultural and environmental systems, including strategies for minimizing nutrient leaching and contamination.
CO5:	Ability to design and evaluate irrigation systems appropriate for different crops and soil types, including surface irrigation, sprinkler irrigation, and drip irrigation systems.

SOA/AGRON/C-514: Agronomy of Commercial Crops 3 (2+1)

Course Outcomes:

CO1:	Students will be able to describe and understand the growth stages, physiological processes, and factors influencing the growth and development of commercial crops.
CO2:	Knowledge of selecting appropriate varieties or cultivars of commercial crops based on agro-climatic conditions, market demand, and quality parameters.
CO3:	Understanding nutrient requirements, fertilizer application methods, micronutrient management, and strategies for optimizing nutrient use efficiency in commercial crop production.
CO4:	Identification of common weeds, pests, and diseases affecting commercial crops, and implementation of integrated pest management (IPM) strategies to minimize crop losses.
CO5:	Understanding optimal harvesting times, techniques for harvesting commercial crops to maximize yield and quality, and post-harvest handling practices to preserve crop quality and market value.

SOA/AGRON/C-515: Dry land Farming 2 (1+1)

Course Outcomes:

CO1:	Understand concepts and characteristics of dryland farming and rainfed farming with the dimension of dryland farming in Indian Agriculture.
CO2:	Understand dryland farming and rainfed farming with reference to soil and climatic parameters including rainfall characteristics.
CO3:	Comprehend stress physiology, resistance and adaptation of crop plants to drought and drought management strategies and preparation of appropriate crop plans for dryland areas.
CO4:	Comprehend watershed management, techniques and practices of soil moisture conservation and concept of conservation tillage.

SOA/AGRON/C-516: Management of Problem Soils 1 (1+1)

Course Outcomes:

CO1:	The students have knowledge with different types of problematic soils.
CO2:	To make them aware of different factors responsible for their formation and properties associated with these soils.
CO3:	Knowledge of various reclamation and management practices for the improvement of problematic soils.

SOA/AGRON/C-517: Farming Systems 2 (1+1)**Course Outcomes:**

CO1:	To prepare cropping schemes and design and evaluate cropping system and workout input requirements for crops.
CO2:	To understand interaction between different farm enterprises.
CO3:	To prepare integrated farming system models for different eco systems and resource recycling among different farm enterprises.
CO4:	To gain knowledge about drought mitigation strategies

SOA/AGRON/SS-01 3 (2+1)**Course Outcomes:**

CO1:	To enable the students for application of postharvest technologies in their career through practical knowledge.
CO2:	To provide skill on post-harvest loss reduction through processing of agricultural crops.
CO3:	To facilitate the students with knowledge and activities of food processing industries and drive towards entrepreneurship.
CO4:	To provide skill for problems occurring in harvesting, threshing, transport, drying, milling and marketing.

Semester-IV

SOA/GPB/C-520: Thesis

08 (0+8)

Course Outcomes:

CO1:	An independent and sustained critical investigation and evaluation of a chosen research topic relevant to environment and society
CO2:	Engage in systematic discovery and critical review of appropriate and relevant information sources
CO3:	Appropriately apply qualitative and/or quantitative evaluation processes to original data
CO4:	Students able to communicate research concepts and contexts clearly and effectively both in writing and orally

SOA/GPB/C-521: Project

08 (0+8)

Course Outcomes:

CO1:	To gain knowledge on bio-technology in agriculture, eco-restoration.
CO2:	To understand advanced concepts of crop growth and productivity in relation to climate change.
CO3:	To acquire knowledge on modern concepts in tillage and farm mechanization.

SOA/GPB/C-522: Seminar

1 (0+1)

Course Outcomes:

CO1:	To develop teaching and communication skills
CO2:	Develops confidence in the students for delivering technical presentation
CO3:	Skill to prepare presentation

SOA/AGRONE/E -523: Seed Production Technology of Field Crops 2 (1+1)

Course Outcomes:

CO1:	Acquire knowledge about the complete seed production technology, extraction and post-extraction processing of Field Crops
CO2:	Adoption of seed production of Field Crops as entrepreneur
CO3:	Appreciate the scope and scenario of seed production of Field Crops in India

SOA/AGRON/E -524: Soil Conservation and watershed Management 2 (1+1)

Course Outcomes:

CO1:	To understand the major areas of soil degradation in India and application of agro-techniques in conserving the soil.
CO2:	To develop afforestation and other biological measures to conserve soil and water holding capacity.
CO3:	To understand the mechanical measures and other measures of soil conservation.

SOA/AGRON/E -525: Agronomy of Fodder and Pasture crops 2 (1+1)

Course Outcomes:

CO1:	To get the knowledge about cultivation practices of fodder crops.
CO2:	To understand the concept of fodder preservation techniques.
CO3:	Acquire knowledge about the value addition of poor-quality fodder.