

B.Sc. (Hons.) Agriculture
Curriculum Design and Development

Vision of the University

-To be known globally for value-based education, research, creativity and innovation"

Mission of the University

- Establish state-of-the-art facilities for world class education and research.
- Collaborate with industry and society to align the curriculum,
- Involve in societal outreach programs to identify concerns and provide sustainable ethical solutions.
- Encourage life-long learning and team-based problem solving through an enabling environment.

Vision of SoAg

To be recognized globally for value based, socially driven learning through innovation and research in the field of agricultural sciences.

Mission of SoAg

Mission 1: To establish state of the art facilities for education and research using advanced technologies.

Mission 2: The efficient delivery of high quality content by experienced faculties who ensure the concept of lifelong learning.

Mission 3: To develop unique academic curriculum designed throughout the interaction with the major stakeholders like industry and professional societies.

PEOs of SoAg

PEO1: Graduates of agriculture shall lead in the agriculture and allied industries during the services and entrepreneurship.



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PEO2: Graduates of agriculture shall effectively identify and design sustainable solution to address responsibilities and Global opportunities.

PEO3: Graduates of agriculture shall be successful professional careers in agro industries, government organization, educational and research Institutions.

PSOs of SoAg

PSO1: To Develop the ability to know farming practices and their scope to improve the rural development through technology based approaches.

PSO2: Embellish the students with specialization in smart agricultural systems through integrated farming system, skill based program should be added. vertical farming, hydroponics, multi-layer farming, aeroponics, use of information and communication technologies, agriculture automation, robotics, Weather forecasting systems, remote sensing and GIS techniques etc.

POs of SoAg

PO 1: Understand and apply the fundamental principles, concepts and methods in key areas of agriculture science and multidisciplinary fields.

PO 2: Understand the importance and judicious use of agricultural technologies and resources for the sustainable growth of human beings in synergy with nature.

PO 3: Understand the professional, ethical and social responsibilities.

PO 4: Enhance the research culture and uphold the scientific integrity and objectivity.

PO 5: Engage in continuous lifelong learning in the context of technological and scientific advancements.

PO 6: Develop the critical thinking with scientific temper weather friendly and entrepreneurial .

PO 7: Communicate the subject effectively to reached out the agriculture sector. Should be update.



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Course Objective: To educate the students about soil and soil properties with a view to develop their skills to take suitable decisions for selecting and growing the pertinent crops in the soils concerned.

Module-I**Contact Hours: 7**

Introduction to soil science. Pedological and edaphological concepts of soil; Soil genesis: soil forming rocks and minerals; weathering, processes and factors of soil formation. Elementary knowledge of soil, classification of Indian soil. Soil physical properties: Soil-texture, structure, density, porosity and colour.

Contact Hours: 7**Module-II**

Soil organic matter: composition, properties and its influence on soil properties; humic substances - nature and properties; soil organisms: macro and micro organisms, their beneficial and harmful effects.

Contact Hours: 6**Module-III**

Soil water retention, movement and availability; soil air, composition, gaseous exchange, problem and plant growth; source, amount and flow of heat in soil; soil temperature and plant growth; Soil reaction-pH, soil acidity and alkalinity, effect of pH on nutrient availability.

Contact Hours: 5**Module-IV**

Soil colloids - inorganic and organic; silicate clays: constitution and properties; sources of charge ion exchange.

Contact Hours: 5**Module-V**

Soil pollution - behavior of pesticides and inorganic contaminants, prevention and mitigation of soil pollution.

Practical:

1. Study of soil sampling tools.
2. Collection of representative soil sample, its processing and storage.
3. Study of soil profile in field.
4. Determination of soil density, moisture content and porosity.
5. Determination of soil texture by feel method.
6. Studies of capillary rise phenomenon of water in soil.
7. Determination of soil pH and electrical conductivity.
8. Determination of soil colour.
9. Demonstration of heat transfer in soil.
10. Estimation of organic matter content of soil.

Course Outcome:

The students will reproduce their acquired knowledge from the instructors to select the crops as per soil types to grow successfully.



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- CO 1. Soil forming rocks and minerals; weathering, processes and factors of soil formation etc.
- CO 2. Soil water retention, movement and availability.
- CO 3. Inorganic and organic matters.
- CO 4. Soil pollution chemical pesticides etc.
- CO 5. Macro and micro organisms, their beneficial and harmful effects.

Reference Books:

1. Indian Society of Soil Science. 2012. *Fundamentals of Soil Science*, IARI, New Delhi.
2. Das, D. K. 2015. *Introductory Soil Science*, 4th Edition, Kalyani Publishers, New Delhi.
3. Sehgal, J. 2015. *A Text Book of Pedology - Concepts and Applications*, Kalyani Publishers, New Delhi.



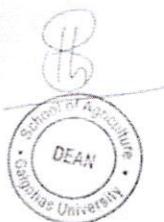
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Description about the course:

The Indian Council of Agricultural Research (ICAR), an autonomous organization under the Department of Agricultural Research and Education (DARE), Ministry of Agriculture and Farmers Welfare, Government of India. School of Agriculture, Galgotias University has following all rules and guidelines of curricula and syllabus for B.Sc (Hons.) Agriculture program.

Quality assurance in higher agricultural education in the country has been pursued through policy support, accreditation, framing of minimum standards for higher agricultural education, academic regulation, personnel policies, review of course curricula and delivery systems, development support for creating/strengthening infrastructure and facilities, improvement of faculty competence and admission of students through All India competitions. As foremost step for quality improvement in education, the ICAR has periodically been appointing Deans' Committees for revision of course curricula. In the series, Fifth Deans Committee was constituted and given terms of reference (TORs) considering contemporary challenges for employability of passing out graduates and to adopt a holistic approach for quality assurance and effective governance in agricultural education.

A comprehensive consultation process adopting a bottom up approach was undertaken for curricula development to ensure nation-wide acceptance of the Committee's Report and its ownership by all stakeholders. Inputs from different stakeholders of agricultural education were obtained at different levels. The Committee first deliberated on the skills which graduates must possess and then worked out backward to design course curricula. The Committee identified Conveners/Co-conveners and gave them the responsibility to have inputs from all the Deans of all the colleges of their disciplines based on the suggestions received from their faculty after holding meetings at University/College level. The suggestions received for all the disciplines were reviewed by the Committee. The Committee has endeavored to make sure that the Report represents a national consensus in respect of its terms of reference and various issues that were flagged to it. In particular, the course curricula have been restructured to underpin relevant



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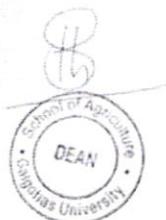
practical skills, entrepreneurial aptitude, self employment, leadership qualities and confidence among graduates, attracting and retaining youth in agriculture, which among other things, will be helpful in implementing the new initiatives of the government, viz., Make-in-India, Start-up-India, Skill India etc. During this “Decade of Innovations in India”, importance of cost effective, location specific and affordable innovations along the value chain and of new extension systems have been highlighted in the revised curricula. Further, the Committee has also considered the international dimension of agricultural education in context of technological, socio-economic, environmental, and livelihood security, and sought to achieve global level academic excellence and relevance. The updated curricula thus provide academic legitimacy to the new and emerging issues of food and agricultural system, and contextualize the new pursuits.

Common Courses In view of the increasing importance of climate change, market competitiveness, information technology, entrepreneurship, and graduates employability, it was a general consensus that students of all disciplines need to be taught courses on the following concerned topics:

1. Environmental Studies and Disaster Management
2. Communication Skills and Personality Development
3. Information and Communication Technology
4. Entrepreneurship Development and Business Management
5. Agricultural Informatics 6. Economics and Marketing.

Holistic Distribution of Courses: The Committee has attempted to distribute the courses in the following form to inculcate the Basics, Principles and Skills in a systematic way. I year – Basic and fundamental courses (Traditional) II Year – Principles (Technology) III Year – Production system (For improving Talent) IV Year – Skill and entrepreneurship development (For federating Trading).

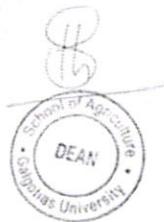
Increasing Role of Basic Sciences in Agriculture Over the years, the visibility of basic sciences in agricultural curricula has decreased, On the other hand, globally, greater emphasis is being placed on life sciences - biochemistry, microbiology, genetics, molecular biology, biotechnology, bio - remediation, bioenergy, biosecurity and computational biology. Agriculture graduates and scientists should increasingly seek employment and research opportunities in these frontier areas. Accordingly, agriculture curricula should put Agriculture in the middle of Science,



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Technology, Engineering and Mathematics (“STEM”) to make it “STEAM”, where A means Agriculture. While vocational education and RAWE and HOT will remain extremely important in the Indian context, the science-based hands on learning experience should be duly promoted. The revised curricula should increasingly be internalizing the “STEAM” concept.

Global Interdependence and International Agriculture India, accounting for 17% of world's population and over 30% of world's smallholder farmers, and hardly 2.5% of the world's land and 4% of world's water resources, greatly impacts and gets impacted by the state of global food, agriculture and natural resource system. Thus, the major global initiatives and foresight must be kept in mind while developing leadership in agricultural sciences to ensure global competitiveness, equitable knowledge sharing, and environmental sustainability. Accordingly, the system should move from the Land-Grant to a “World Grant” pattern. The new curricula, courses and contents have been designed to duly inform the students of the new global initiatives, such as Global Green Economy; Knowledge Economy; Global Zero Hunger Challenge; UN International Year themes viz. International Years for Pulses, Family Farmers and Smallholder Farmers, Soil and Water; Sustainable Development Goals, 2030; and International Agriculture and Development Challenge, 2050.



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