Teaching and Evaluation Scheme

Total Program Credit

B.Sc. Agriculture Hons.

(Based on ICAR Sixth Dean Committee)

Duration: 4 Years

SYLLABUS

(2024-25)

SHOBHIT INSTITUTE OF ENGINEERING AND TECHNOLOGY, MEERUT (A NAAC Accredited Deemed to be University)

School of Agricultural and Environmental Sciences

Faculty of Engineering, Applied Science and Technology (FEAST)

B.Sc. Agriculture (Hons.)

4 Year Full Time Programme

Vision

The School of Agricultural and Environmental Sciences aims to be a leading center of excellence for providing problem-oriented education to students, building capacity of farming communities through training and extension programs, and offering consultancy services to Agro-industries.

Mission

The Mission of School of Agricultural and Environmental Sciences is:

- To provide sound theoretical and practical knowledge in the field of agriculture.
- To develop problem-solving skills of students, farmers, industry professionals, and other stakeholders.
- To conduct cutting-edge research on emerging issues of agriculture and allied sectors.
- To strengthen international and national collaborations with like-minded institutions.

Program Overview

B.Sc. Hons Agriculture course focuses on agricultural sciences and the application of modern scientific technology and tools in agriculture. BSc Agriculture primarily focuses on agricultural science research and practice, including disciplines such as Genetics and Plant Breeding, Agricultural Microbiology, Soil Science, Plant Pathology, and others.

Restructuring of the Undergraduate program of Agriculture has been carried out as per National Education Policy 2020 guidelines to build among students, a strong foundation of knowledge and increased practical exposure to instill competence and confidence for application of the professional knowledge coupled with hard and soft

skills. New scientific advancements in the field of agriculture have been also given due emphasis with the inclusion of courses with contents from such areas.

More emphasis has been given on Skill enhancement courses, industry attachments, flexibility in the choice of courses via electives offered in the fourth year, and also through online courses along with the provision of project work and internship. The provision of a B.Sc. (Hons) Agriculture degree with an internship with the amalgamation of multiple exit and entry options as per NEP 2020 is an important change in the course curriculum.

Program Educational Objectives (PEOs)

PEO1: To educate students about scientific, economic, and environmental principles supporting agricultural production and land use.

PEO2: To develop a sense of awareness among the students so that they can understand the problems of farmers and rural people.

PEO3: To train students about the most modern methods used in crop improvement like traditional breeding and modern biotechnology methods.

PEO4: To develop skills of post-harvest management and marketing of agriculture products.

Program Outcome Objectives (POOs)

PO1: Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization for the solution of complex engineering problems.

PO2: Problem analysis: Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using the first principles of mathematics, natural sciences and engineering sciences.

PO3: Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for public health and safety, and cultural, societal, and environmental considerations.

PO4: Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5: Modern tool usages: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools, including prediction and modeling to complex engineering activities, with an understanding of the limitations.

PO6: The engineer and society: Apply reasoning informed by the contextual knowledge to assess Societal, health, safety, legal, and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7: Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

PO8: Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice

PO9: Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO10: Communication: Communicate effectively on complex engineering activities with the engineering community and with the society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

PO11: Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12: Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Types of the courses and learning outcomes for the restructured undergraduate programs for the HAEIs

Year	Types of courses	Learning outcome	Exit option
YEAR 1 NHEQF Level 4. 5	Foundation courses, introductory courses and skills enhancement training/ training in the chosen area, ability enhancement courses	The student will acquire the basic knowledge in respective disciplines and adequate skill in some selected areas, to enable him for employment	The student must complete 10 weeks of internship (10 credits) after 1st year if exit with UG- A certificate is opted.
YEAR-2 NHEQF Level 5	Basic core courses and additional skill enhancement in chosen areas/ courses	The student will acquire a higher level of knowledge in respective disciplines and adequate skill in some selected areas, to enable him for employment at the middle level/ supervisory level or for entrepreneurship	The student must complete 10 weeks of internship (10 credits) after 2nd year if exit with UG Diploma is opted.
YEAR-3	Advanced core subjects and their practical applications	The student will have a deeper understanding of the subjects and their major application areas	No exit after 3rd year
YEAR-4 NHEQF Level 6	Specialization/Elective courses and advanced skill enhancement through project and internship	The student will acquire advanced knowledge and skills in different areas so as to meet the higher-order requirements of society and industry as well as other prospective employers. It will also enable the graduates to become job provider rather than being a job seeker through the establishment of enterprises in concerned fields.	UG degree in the concerned discipline

ABSTRACT	
Core courses	**Credit**
i) Core (Major)	80
ii) Discipline Specific Elective (Minor)	32
Skill Enhancement courses	12
Common courses	19
Emerging trends in Agriculture	2
NCC/NSS/ Physical Education and Yoga Practices	2
Non-gradial	3
Student READY/Internship	20
***MOOC courses (compulsory non-gradial)**	10
Grand Total	**180**
*Online course/ MOOC	

SUMMARY OF SEMESTER CREDITS

Semester	Core Major	Discipline Specific Elective (DSE)	Multi-Disciplinary Course (MDC)	Value Added Course (VAC)	Ability Enhancement Course (AEC)	Skill Enhancement Course (SEC)	Internship/ Project/ Student READY	Total Credits	Non gradial	Internship (Exit option)	Online course/ MOOC
I	11		3(2)		1(3) +2(4)	4		21	1(1)	----	10(13)
II	11		---	3(5)	1(3) +2(6)	4		21		10(12)	
III	14		3(7)	---	2(8)	2		21		---	
IV	16		---	3(9)	---	2		21		10(12)	
V	13	6	3(10)	---	---	---		22	2(11)	---	
VI	15	6	---	---	---	---		21		---	
VII		20	---	---	---	---		20		---	
VIII			---	---	---	---	20	20		---	
Total	**80**	**32**	**9**	**6**	**8**	**12**	**20**	**167**	**3**	**20**	**10**

(1) Remedial Course: Mathematics/Biology
(2) Farming based Livelihood systems
(3) NCC/NSS/ Physical Education & Yoga Practices
(4) Communication Skills
(5) Environmental Studies and Disaster management
(6) Personality development
(7) Marketing of Agri Products
(8) Emerging trends in Agriculture
(9) Agri informatics
(10) Entrepreneurship
(11) Educational Tour (10-14 days)
(12) Only for those opting for an exit with UG Certificate and Only for those opting for an exit with a UG Diploma
(13) Online course: student will make his own planning and execution of online courses with intimation to the Dean

TEACHING SCHEME

SEMESTER I				
Course Type	**Course Code**	**Course Title**	**L-T-P**	**Credit**
SEC	T04BSAG01..	SEC-I	0-0-2	2
SEC	T04BSAG01..	SEC-II	0-0-2	2
AEC	T05ASEN0151	Professional Communication	1-0-1	2
Core	T04BSAG0101	Fundamentals of Agronomy	2-0-1	3
Core	T04BSAG0102	Fundamentals of Soil Science	2-0-1	3
Core	T04BSAG0103	Fundamentals of Horticulture	2-0-1	3
MDC	T04BSAG0140	Farming-based livelihood systems	2-0-1	3
Core	T04BSAG0104	Rural Sociology and Educational Psychology	1-0-1	2
AEC	T04BSAG0150/T04BSAG0151/T04BSAG0152	Physical Education & Yoga Practices/NCC-I/ NSS-I	0-0-2	1
Core (Non gradial)	T05ASMA0103/T04BSAG0105	Introductory Mathematics/ Introductory Biology	1-0-0	1
Total			**11-0-12**	**21 + 1***
***Need-based non gradial remedial course. Students have to choose either one based on need.**				

SEMESTER II				
Course Type	**Course Code**	**Course Title**	**L-T-P**	**Credit Units**
SEC	T04BSAG02..	SEC-III	0-0-2	2
SEC	T04BSAG02..	SEC-IV	0-0-2	2
AEC	BC2BCCM0250	Personality Development	1-0-1	2
Core	T04BSAG0201	Soil Fertility Management	2-0-1	3
Core	T04BSAG0202	Fundamentals of Entomology	2-0-1	3
Core	T04BSAG0203	Livestock and Poultry Management	1-0-1	2
Core	T04BSAG0204	Fundamentals of Plant Pathology	2-0-1	3
VAC	T04BSAG0280	Environmental Studies and Disaster Management	2-0-1	3
AEC	T04BSAG0250/T04BSAG0251/T04BSAG0252	Physical Education & Yoga Practices/NCC-II/ NSS-II	0-0-2	1
Total			**10-0-12**	**21**

SEMESTER III				
Course Type	**Course Code**	**Course Title**	**L-T-P**	**Credit Units**
SEC	T04BSAG03..	SEC-V	0-0-2	2
MDC	B01MBBM0331	Marketing of Agri Products	2-0-1	3
AEC	T04BSAG0350	Emerging trends in Agriculture	0-0-2	2
Core	T04BSAG0301	Principles of Genetics	2-0-1	3
Core	T04BSAG0302	Crop Production Technology-I (Kharif crops)	2-0-1	3
Core	T04BSAG0303	Production Technology of Fruit and Plantation Crops	1-0-1	2
Core	T04BSAG0304	Fundamentals of Extension Education	1-0-1	2
Core	T04BSAG0305	Fundamentals of Nematology	1-0-1	2
Core	T04BSAG0306	Principles and Practices of Natural Farming	1-0-1	2
Total			**10-0-11**	**21**

SEMESTER IV				
Course Type	**Course Code**	**Course Title**	**L-T-P**	**Credit Units**
SEC	T04BSAG04..	SEC-IV	0-0-2	2
VAC	T04BSAG0480	Agri informatics	2-0-1	3
Core	T04BSAG0401	Production Technology of Vegetables and Spices	1-0-1	2
Core	T04BSAG0402	Principles of Agricultural Economics and Farm Management	1-0-1	2
Core	T04BSAG0403	Crop Production Technology-II (Rabi Crops)	2-0-1	3
Core	T04BSAG0404	Farm Machinery and Power	1-0-1	2
Core	T04BSAG0405	Water Management	1-0-1	2
Core	T04BSAG0406	Problematic Soils and their management	1-0-1	2
Core	T04BSAG0407	Basics of Plant Breeding	2-0-1	3
Total			**11-0-10**	**21**

SEMESTER V				
Course Type	**Course Code**	**Course Title**	**L-T-P**	**Credit Units**
MDC	B01BBBM0503	Entrepreneurship	2-0-1	3
Core	T04BSAG0501	Introduction to Agro-meteorology	1-0-1	2
DSE	T04BSAG0530	Fundamentals of Crop Physiology	2-0-1	3
DSE	T04BSAG0531	Pest management in Crops and Stored Grains	2-0-1	3
Core	T04BSAG0502	Diseases of Field & Horticultural Crops & their Management	2-0-1	3
Core	T04BSAG0503	Crop Improvement - I	1-0-1	2
Core	T04BSAG0504	Weed Management	1-0-1	2
Core	T04BSAG0505	Ornamental Crops, MAPs and Landscaping	1-0-1	2
Core	T04BSAG0506	Introductory Agro forestry	1-0-1	2
***Non gradial**	T04BSAG0506	Educational Tour	0-0-2	2
Total			**13-0-9**	**22 + 2***

SEMESTER VI				
Course Type	**Course Code**	**Course Title**	**L-T-P**	**Credit Units**
DSE	T04BSAG0630	Fundamentals of Agri Biotechnology	2-0-1	3
DSE	T04BSAG0631	Basic and Applied Agril. Statistics	2-0-1	3
Core	T04BSAG0601	Crop Improvement - II	1-0-1	2
Core	T04BSAG0602	Renewable energy in Agriculture and Allied Sector	1-0-1	2
Core	T04BSAG0603	Dryland Agriculture/Rainfed agriculture and watershed management	1-0-1	2
Core	T04BSAG0604	Essentials of Plant Biochemistry	2-0-1	3
Core	T04BSAG0605	Agricultural Microbiology and Phyto -remediation	1-0-1	2
Core	T04BSAG0606	Agricultural Finance & Cooperation	1-0-1	2
Core	T04BSAG0607	Fundamentals of Seed Science & Technology	1-0-1	2
Total			**12-0-9**	**21**

SEMESTER VII				
Course Type	**Course Code**	**Course Title**	**L-T-P**	**Credit Units**
DSE	T04BSAG07..	Elective-1	3-0-1	4
DSE	T04BSAG07..	Elective-2	3-0-1	4
DSE	T04BSAG07..	Elective-3	3-0-1	4
DSE	T04BSAG07..	Elective-4	3-0-1	4
DSE	T04BSAG07..	Elective-5	3-0-1	4
		Total	**15-0-5**	**20**

SEMESTER VIII				
Course Type	**Course Code**	**Course Title**	**L-T-P**	**Credit Units**
Student READY programs	T04BSAG0890	Rural Agricultural Work Experience (RAWE)	0-0-10	10
Student READY programs	T04BSAG0891	Internship	0-0-10	10
Total			**0-0-20**	**20**

List of Discipline Specific Electives (DSE)				
Sl. No	**Couse code**	**Course Title**	**Credits**	
1.	30	Agrochemicals	4(3+1)	**20*(15+5)** 5* Elective Courses
2.	31	Landscaping	4(3+1)	
3.	32	Biopesticides and Biofertilizers	4(3+1)	
4.	33	Protected cultivation	4(3+1)	
5.	34	Biotechnology of Crop Improvement	4(3+1)	
6.	35	Geoinformatics and Remote Sensing, precision farming	4(3+1)	
7.	36	Micro-propagation Technologies	4(3+1)	
8.	37	Commercial Seed Production	4(3+1)	
9.	38	Principles and Practices of Organic Farming/ Conservation Agriculture	4(3+1)	
10.	39	Post-Harvest Technology and Value Addition	4(3+1)	

Skill Enhancement Courses (SECs)				
Sl. No	**Course code**	**Course Title**	**Credits**	
1.	60	Biofertilizer and Biopesticide production	2(0+2)	**12*(0+12)** 5* Skill Enhancement Courses
2.	61	Production Technology of Bio agents	2(0+2)	
3.	62	Seed Production and Testing Technology	2(0+2)	
4.	63	Mushroom Production Technology	2(0+2)	
5.	64	Soil, Plant and Water Testing	2(0+2)	
6.	65	Post-harvest Processing technology	2(0+2)	
7.	66	Beneficial insect farming	2(0+2)	
8.	67	Plantation Crop Production and Processing	2(0+2)	
9.	68	Poultry Production Technology	2(0+2)	
10.	69	Piggery Production Technology	2(0+2)	
11.	70	Commercial Horticulture	2(0+2)	
12.	71	Floriculture and Landscaping	2(0+2)	
13.	72	Food Processing	2(0+2)	
14.	73	Agriculture Waste Management	2(0+2)	
15.	74	Organic Production Technology	2(0+2)	
16.	75	Commercial Sericulture	2(0+2)	
17.	76	Livestock management	2(0+2)	
18.	77	Dairy Technology	2(0+2)	
19.	78	Geoinformatics	2(0+2)	
20.	79	Video Production	2(0+2)	