

CURRICULUM & SYLLABUS



**CHOICE BASED CREDIT SYSTEM (CBCS)
FOR
B.Sc. (H) AGRICULTURE (FOUR YEAR DEGREE
PROGRAMME)**

2023-24

**DEPARTMENT OF AGRICULTURE SCIENCE
FACULTY OF SCIENCE AND HUMANITIES
SRM UNIVERSITY DELHI-NCR, SONEPAT,
PLOT NO. 39, RAJIV GANDHI EDUCATION CITY SONEPAT, HARYANA-131029**

Vision

SRM University Delhi-NCR, Sonapat, Haryana aims to emerge as a leading world-class university that creates and disseminates knowledge upholding the highest standards of instructions in Medicine & Health Sciences, Engineering & Technology, Management, Law, Science and Humanities. Along with academic excellence and skills, our curriculum imparts integrity and social sensitivity to mould our graduates who may be best suited to serve the nation and the world.

Mission

- ☐ To create a diverse community campus that inspires freedom and innovation.
- ☐ Promote excellence in educational and skill development processes.
- ☐ Continue to build productive international alliances.
- ☐ Explore optimal development opportunities available to students and faculty.
- ☐ Cultivate an exciting and rigorous research environment.

Agriculture Science Graduate Attributes

Successful completion of an undergraduate programme will endow the learners/ aspirants with the following attributes:

- ☐ Sound knowledge and understanding of the domain area
- ☐ Critical thinking, analytical mind and decision-making mindset
- ☐ Originality and creativity in formulating, evaluating and applying evidence-based arguments
- ☐ Ability to identify and draw synergy between/among events and/or aspects/theories to provide a wider, deeper and critical understanding and solution to problems
- ☐ Effective communication skills – Reading, Writing, Speech and thoughts
- ☐ Working on your own initiative.

Programme Educational Objectives (PEOs)

PEO 1 : Graduates of the program will accommodate insightful information of Agriculture principles necessary for the applications of Agriculture.

PEO 2 : Graduates of the program will acquire knowledge of recent trends in technology and solve problem in industry and farmers.

PEO 3 : Graduates of the program will have practical experience and interpersonal skills to work both in local and international environments.

PEO 4 : Graduates of the program will possess creative professionalism, understand their ethical responsibility and committed towards society.

PEO 5 : Graduates of the program shall be able to Critically evaluate and reflect learning and

development throughout their career in agriculture sciences.

Programme Educational Outcomes (PEOs)

Agriculture Graduates will be

PLO 1: Able to evaluate critical and intricate agricultural related issues by using quantitative and qualitative research techniques and evolve effective solutions.

PLO 2 : Able to formulate solutions to field and scientific problems in crop production and cropping systems.

PLO 3 : Demonstrate ability for self-directed learning, time management and dedication to serve the community by working effectively individually as well as in teams. Display initiative, honesty, integrity and diligence by empathizing with farmers.

PLO 4 : Evaluate impact of globalization and liberalisation on the agriculture sector and farmers in particular. Ability to understand technological advancements and implications and applying them for developing adaptability and managing diversity in global complex situations.

PLO 5 : Analyze the role and impact of agriculture in society and the international community Learn to appreciate diversity and equality, demonstrate ethical and professional behaviours in all situations.

PLO 6 : Relate the value of linkages and networks with their importance in self-reliance and research. Linking learning to real world problems to stimulate professionalism in research.

Mapping Matrix of PEOs & PLOs:

	PLO-1	PLO-2	PLO-3	PLO-4	PLO-5	PLO-6
PEO-1	√					
PEO-2		√				
PEO-3			√			
PEO-4				√	√	
PEO-5						√

Restructuring of UG programs for increased practical / practice contents

Discipline-wise Courses

Discipline/Course title	Credit Hours
Agronomy	
Fundamentals of Agronomy	4(3+1)
Introductory Agro-meteorology & Climate Change	2(1+1)
Crop Production Technology – I (<i>Kharif</i> crops)	2(1+1)
Crop Production Technology – II (<i>Rabi</i> crops)	2(1+1)
Farming System & Sustainable Agriculture	1(1+0)
Practical Crop Production - I (<i>Kharif</i> crops)	2(0+2)
Practical Crop Production - II (<i>Rabi</i> crops)	2(0+2)
Principles of Organic Farming	2(1+1)
Geoinformatics and Nanotechnology and Precision Farming	2(1+1)
Rainfed Agriculture & Watershed Management	2(1+1)
Genetics & Plant Breeding	
Fundamentals of Genetics	3(2+1)
Principles of Seed Technology	3(1+2)
Fundamentals of Plant Breeding	3(2+1)
Crop Improvement-I (<i>Kharif</i> crops)	2(1+1)
Crop Improvement-II (<i>Rabi</i> crops)	2(1+1)
Soil Science & Agricultural Chemistry	
Fundamentals of Soil Science	3(2+1)
Manures, Fertilizers and Soil Fertility Management	3(2+1)
Problematic soils and their Management	2(2+0)
Entomology	
Fundamentals of Entomology	4(3+1)
Pests of Crops and Stored Grain and their Management	3(2+1)
Management of Beneficial Insects	2(1+1)

Agricultural Economics	
Fundamentals of Agricultural Economics	2(2+0)
Agricultural Finance and Co-Operation	3(2+1)
Agricultural Marketing Trade & Prices	3(2+1)
Farm Management, Production & Resource Economics	2(1+1)
Agricultural Engineering	
Soil and Water Conservation Engineering	2(1+1)
Farm Machinery and Power	2(1+1)
Renewable Energy and Green Technology	2(1+1)
Protected Cultivation and Secondary Agriculture	2(1+1)
Plant Pathology	
Fundamentals of Plant Pathology	4(3+1)
Diseases of Field and Horticultural Crops and their Management-I	3(2+1)
Diseases of Field and Horticultural Crops and their Management-II	3(2+1)
Principles of Integrated Pest and Disease Management	3(2+1)
Horticulture	
Fundamentals of Horticulture	2(1+1)
Production Technology for Fruit and Plantation Crops	2(1+1)
Production Technology for Vegetables and Spices	2(1+1)
Production Technology for Ornamental Crops, MAP and Landscaping	2(1+1)
Post-harvest Management and Value Addition of Fruits and Vegetables	2(1+1)
Food Science & Technology	
Principles of Food Science & Nutrition	2(2+0)
Agricultural Extension and Communication	
Fundamentals of Agricultural Extension Education	3(2+1)
Rural Sociology & Educational Psychology	2(2+0)
Entrepreneurship Development and Business Communication	2(1+1)
Communication Skills and Personality Development	2(1+1)
Biochemistry / Physiology / Microbiology/ Environmental Sciences	
Fundamentals of Plant Biochemistry and Biotechnology	3(2+1)

Fundamentals of Crop Physiology	2(1+1)
Agricultural Microbiology	2(1+1)
Environmental Studies & Disaster Management	3(2+1)
Introduction to Forestry	2(1+1)
Statistics, Computer Application and I.P.R.	
Statistical Methods	2(1+1)
Intellectual Property Rights	1(1+0)
Agri- Informatics	2(1+1)
Animal Production	
Livestock and poultry Management	4(3+1)
Language	
Comprehension & Communication Skills in English (Gradiual course)	2(1+1)
Remedial Courses	
Agricultural Heritage	1(1+0)
Introductory Biology	2(1+1)
Elementary Mathematics	2(2+0)
Non-Gradiual Courses	
NSS/NCC/Physical Education & Yoga Practices	2(0+2)
Human Values & Ethics	1(1+0)
Educational Tour	2(0+2)

**B.Sc. (Hons.) Agriculture
I- Semester**

S. No	Paper Code	Course Title	L	T	P	Cr
1.	22AGBS101	Fundamentals of Horticulture	1	0	1	2 (1+1)
2.	22AGBS102	Fundamentals of Plant Biochemistry and Biotechnology	2	0	1	3(2+1)
3.	22AGBS103	Fundamentals of Soil Science	2	0	1	3(2+1)
4.	22AGBS104	Introduction to Forestry	1	0	1	2 (1+1)
5.	22AGBS109	Comprehension & Communication Skills in English	1	0	1	2 (1+1)
6.	22AGBS105	Fundamentals of Agronomy	3	0	1	4(3+1)
7.	22AGBS109	Introductory Biology*/Elementary Mathematics*	1/1	0/0	1/1	2 (1+1)*/ 2(2+0)*
8.	22AGBS106	Agricultural Heritage*	1	0	0	1(1+0)*
9.	22AGBS107	Rural Sociology & Educational Psychology	2	0	0	2 (2+0)
10	22AGBS108	Human Values & Ethics (non gradial)	1	0	0	1(1+0)**
11		NSS/NCC/Physical Education & Yoga Practices (non gradial)	0	0	1	2 (0+2)**
12		Overview of Artificial Intelligence, Ethics and Foundation of Data Analysis	2	0	1	3(2+1) **
TOTAL			17	0	9	21+03*+03**
*R: Remedial course; **NC: Non-gradial courses						

B.Sc. (Hons.) Agriculture
II- Semester

S. No	Paper Code	Course Title	L	T	P	Cr
1	22AGBS201	Fundamentals of Genetics	2	0	1	3(2+1)
2	22AGBS202	Agricultural Microbiology	1	0	1	2(1+1)
3	22AGBS203	Soil and Water Conservation Engineering	1	0	1	2(1+1)
4	22AGBS204	Fundamentals of Crop Physiology	1	0	1	2(1+1)
5	22AGBS205	Fundamentals of Agricultural Economics	1	0	0	2(2+0)
6	22AGBS206	Fundamentals of Plant Pathology	3	0	1	4(3+1)
7	22AGBS207	Fundamentals of Entomology	3	0	1	4(3+1)
8	22AGBS208	Fundamentals of Agricultural Extension Education	2	0	1	3(2+1)
9	22AGBS209	Communication Skills and Personality Development	1	0	1	2(1+1)
10		Programming Language – Python	2	0	1	3(2+1) **
Total			17	0	9	24+03**
*R: Remedial course; **NC: Non-gradial courses						

B.Sc. (Hons.) Agriculture

III- Semester

S. No	Paper Code	Course Title	L	T	P	Cr
1	22AGBS301	Crop Production Technology – I (<i>Kharif Crops</i>)	1	0	1	2 (1+1)
2	22AGBS302	Fundamentals of Plant Breeding	2	0	1	3 (2+1)
3	22AGBS303	Agricultural Finance and Cooperation	2	0	1	3 (2+1)
4	22AGBS304	Agri- Informatics	1	0	1	2(1+1)
5	22AGBS305	Farm Machinery and Power	1	0	1	2 (1+1)
6	22AGBS306	Production Technology for Vegetables and Spices	1	0	1	2 (1+1)
7	22AGBS307	Environmental Studies and Disaster Management	2	0	1	3(2+1)
8	22AGBS308	Statistical Methods	1	0	1	2(1+1)
9	22AGBS309	Livestock and Poultry Management	3	0	1	4 (3+1)
10		Probabilistic Modelling and Reasoning with Python	2	0	1	3(2+1) **
Total			16	0	10	23+0
*R: Remedial course; **NC: Non-gradual courses						3**

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IV- Semester

S. No	PaperCode	Course Title	L	T	P	Cr
1	22AGBS401	Crop Production Technology –II (<i>Rabi Crops</i>)	1	0	1	2(1+1)
2	22AGBS402	Production Technology for Ornamental Crops, MAP and Landscaping	1	0	1	2(1+1)
3	22AGBS403	Renewable Energy and Green Technology	1	0	1	2(1+1)
4	22AGBS404	Problematic Soils and their Management	2	0	0	2(2+0)
5	22AGBS405	Production Technology for Fruit and Plantation Crops	1	0	1	2(1+1)
6	22AGBS406	Principles of Seed Technology	1	0	2	3(1+2)
7	22AGBS407	Farming System & Sustainable Agriculture	1	0	0	1(1+0)
8	22AGBS408	Agricultural Marketing Trade & Prices	2	0	1	3(2+1)
9	22AGBS409	Introductory Agro-meteorology & Climate Change	1	0	1	2(1+1)
10	22AGBS410	Elective Course	3	0	0	3 credit
11	22AGBS411	Machine Learning and Pattern Recognition	2	0	1	3(2+1) **
Total			16	0	9	22+03**
*R: Remedial course; **NC: Non-gradual courses						

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V- Semester

S. No	PaperCode	Course Title	L	T	P	Cr
1	22AGBS501	Principles of Integrated Pest and Disease Management	2	0	1	3(2+1)
2	22AGBS502	Manures, Fertilizers and Soil Fertility Management	2	0	1	3 (2+1)
3	22AGBS503	Pests of Crops and Stored Grain and their Management	2	0	1	3 (2+1)
4	22AGBS504	Diseases of Field and Horticultural Crops and their Management -I	2	0	1	3 (2+1)
5	22AGBS505	Crop Improvement-I (<i>Kharif Crops</i>)	1	0	1	2 (1+1)
6	22AGBS506	Entrepreneurship Development and Business Communication	1	0	1	2 (1+1)
7	22AGBS507	Geoinformatics and Nano-technology and Precision Farming	1	0	1	2 (1+1)
8	22AGBS508	Practical Crop Production – I (<i>Kharif crops</i>)	0	0	2	2 (0+2)
9	22AGBS509	Intellectual Property Rights	1	0	0	1(1+0)
10	22AGBS510	Elective Course	2	0	1	3 credit
11	22AGBS511	Data Visualization	2	0	1	3(2+1) **
Total			17		10	24+03**

*R: Remedial course; **NC: Non-gradual courses

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VI- Semester

S. No	Paper Code	Course Title	L	T	P	Cr
1	22AGBS601	Rainfed Agriculture & Watershed Management	1	0	1	2 (1+1)
2	22AGBS602	Protected Cultivation and Secondary Agriculture	1	0	1	2 (1+1)
3	22AGBS603	Diseases of Field and Horticultural Crops and their Management-II	2	0	1	3 (2+1)
4	22AGBS604	Post-harvest Management and Value Addition of Fruits and Vegetables	1	0	1	2 (1+1)
5	22AGBS605	Management of Beneficial Insects	1	0	1	2 (1+1)
6	22AGBS606	Crop Improvement-II (<i>Rabi crops</i>)	1	0	1	2 (1+1)
7	22AGBS607	Practical Crop Production –II (<i>Rabi crops</i>)	0	0	2	2 (0+2)
8	22AGBS608	Principles of Organic Farming	1	0	1	2 (1+1)
9	22AGBS609	Farm Management, Production & Resource Economics	1	0	1	2 (1+1)
10	22AGBS610	Principles of Food Science and Nutrition	2	0	0	2(2+0)
11	22AGBS611	Elective Course	3	0	0	3 credits
12	22AGBS612	IoT for Smart Farming	2	0	1	3(2+1) **
Total			16	0	11	24+03**
*R: Remedial course; **NC: Non-gradual courses						

B.Sc. (Hons.) Agriculture**VII- Semester**

S. No	Rural Agricultural Work Experience and Agro-industrial Attachment (RAWE &AIA)		
	Activities	No. of weeks	Credit Hours
1	General orientation & On campus training by different faculties	1	14
2	Village attachment	8	
	Unit attachment in Univ./ College. KVK/ Research Station Attachment	5	
3	Plant clinic	2	2
	Agro-Industrial Attachment	3	4
4	Project Report Preparation, Presentation and Evaluation	1	
Total weeks for RAWE & AIA		20	20

- **Agro- Industrial Attachment:** The students would be attached with the agro-industries for a period of 3 weeks to get an experience of the industrial environment and working.
- Educational tour will be conducted in break between IV & V Semester or VI & VII Semester

RAWE Component-I**Village Attachment Training Programme**

Sl. No.	Activity	Duration
1	Orientation and Survey of Village	1 week
2	Agronomical Interventions	1 week
3	Plant Protection Interventions	1 week
4	Soil Improvement Interventions (Soil sampling and testing)	1 week
5	Fruit and Vegetable production interventions	1 week
6	Food Processing and Storage interventions	1 week
7	Animal Production Interventions	1 week
8	Extension and Transfer of Technology activities	1 week

RAWE Component –II

Agro Industrial Attachment

- Students shall be placed in Agro-and Cottage industries and Commodities Boards for 03 weeks.
- Industries include Seed/Sapling production, Pesticides-insecticides, Post harvest-processing-value addition, Agri-finance institutions, etc.

Activities and Tasks during Agro-Industrial Attachment Programme

- Acquaintance with industry and staff
- Study of structure, functioning, objective and mandates of the industry
- Study of various processing units and hands-on trainings under supervision of industry staff
- Ethics of industry
- Employment generated by the industry
- Contribution of the industry promoting environment
- Learning business network including outlets of the industry
- Skill development in all crucial tasks of the industry
- Documentation of the activities and task performed by the students
- Performance evaluation, appraisal and ranking of students

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VIII- Semester

Modules for Skill Development and Entrepreneurship: A student has to register 20 credits opting for two modules of (0+10) credits each (total 20 credits) from the package of modules in the **VIII semester**.

Sl. No.	Title of the module	Credits
1	Production Technology for Bioagents and Biofertilizer	0+10
2	Seed Production and Technology	0+10
3	Mushroom Cultivation Technology	0+10
4	Soil, Plant, Water and Seed Testing	0+10
5	Commercial Beekeeping	0+10
6	Poultry Production Technology	0+10
7	Commercial Horticulture	0+10
8	Floriculture and Landscaping	0+10
9	Food Processing	0+10
10	Agriculture Waste Management	0+10
11	Organic Production Technology	0+10
12	Commercial Sericulture	0+10

NOTE: In addition to above ELP modules other important modules may be given to the students by SAUs

Evaluation of Experiential Learning Programme/ HOT

Sl. No.	Parameters	Max Marks
1	Project Planning and Writing	10
2	Presentation	10
3	Regularity	10
4	Monthly Assessment	10
5	Output delivery	10
6	Technical Skill Development	10
7	Entrepreneurship Skills	10
8	Business networking skills	10
9	Report Writing Skills	10
10	Final Presentation	10
Total		100

Discipline-wise summary of credit hours

S.N.	Group	Credits
1	Agronomy	21(10+11)
2	Genetics & Plant Breeding	13(7+6)
3	Soil Science & Agricultural Chemistry	8(6+2)
4	Entomology	9(6+3)
5	Agricultural Economics	10(7+3)
6	Agricultural Engineering	8(4+4)
7	Plant Pathology	13(9+4)
8	Horticulture	10(5+5)
9	Food Science	2(2+0)
10	Agricultural Extension	9(6+3)
11	Biochemistry / Physiology / Microbiology/ Environmental Sciences	12(7+5)
12	Statistics, Computer Application and I.P.R.	5(3+2)
13	Animal Production	4(3+1)
14	English	2 (1+1)
15	Remedial Courses	03 (Biol/ Math); 01 (Agriculture)
16	NSS/NCC/Physical Education & Yoga Practices	2(0+2)
17	Human Values and Ethics	1(1+0)
18	Educational Tour	2(0+2)
	Total	126 + 3 (for Bio / Math)/ 01(Agri) + 5 NC 126+3+1+5+ 9 credits elective
	RAWE ELP	20 +20
	Grand Total	144+20+20=184
	New Courses	24+4 (remedial)+1 (NC)

NEW COURSES

Sl. No.	Course Title	Credit Hours
1	Geoinformatics, Nanotechnology and Precision Farming	2(1+1)
2	Rainfed Agriculture and Watershed Management	2(1+1)
3	Problematic Soils and their Management	2(2+0)
4	Renewable Energy and Green Technology	2(1+1)
5	Management of Beneficial Insects	2(1+1)
6	Fundamentals of Horticulture	2(1+1)
7	Introduction to Forestry	2(1+1)
8	Agri- Informatics	2(1+1)

9	Intellectual Property Rights	1(1+0)
10	Principles of Food Science & Technology	2(2+0)
11	Communication Skills and Personality Development	2(1+1)
12	Principles of Integrated Pest & Diseases Management	3(2+1)
13	Agricultural Heritage	1(1+0)*
14	Introductory Biology	2(1+1)*
15	Elementary Mathematics	2(2+0)*
16	Human Values & Ethics (NG)	1(1+0)**

* Remedial courses ** Non-gradual courses

Elective Courses : A student can select three elective courses out of the following and offer during 4th, 5th and 6th semesters.

Elective Courses, IV- Semester		
S.N.	Courses	Credit Hours
1	Agribusiness Management	3(2+1)
2	Agrochemicals	3(2+1)
3	Commercial Plant Breeding	3(1+2)
4	Landscaping	3(2+1)

Elective Courses, V- Semester		
S.N.	Courses	Credit Hours
1	Food Safety and Standards	3(2+1)
2	Biopesticides & Biofertilizers	3(2+1)
3	Protected Cultivation	3(2+1)
4	Micro propagation Technologies	3(1+2)

Elective Courses, VI- Semester		
S.N.	Courses	Credit Hours
1	Hi-tech. Horticulture	3(2+1)
2	Weed Management	3(2+1)
3	System Simulation and Agro-advisory	3(2+1)
4	Agricultural Journalism	3(2+1)

	Odd Sem Credits	Even Sem Credits	Total
First Year	27	27	54
Second Year	26	25	51
Third Year	27	27	54
Fourth Year	20	20	40
		Total	199