

COURSE SCHEME & SYLLABUS
B.Sc. (Hons) Agriculture
(Four-Year Course)



Department of Natural Sciences

UISH

Sant Baba Bhag Singh University

2018-2022

FACULTY OF AGRICULTURAL SCIENCES

COURSE SCHEME & SYLLABUS
(STRICTLY IN ACCORDANCE WITH 5TH DEANS'
COMMITTEE REPORT)

FOR

B.Sc. (Hons) Agriculture

(Four-Year Course)

1st to 8th SEMESTER

Examination 2018-2019 onwards

Applicable for admissions in 2018

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Course Scheme for B.Sc. (Hons.) Agriculture

Scheme of Courses B. Sc. (Hons.) Agriculture							
Semester I							
S. No.	Subject/ Paper Code	Subject Name	Contact Hours (Lecture)	Contact Hours (Tutorial)	Contact Hours (Practical)	Total Contact Hours	Total Credit Hours
1.		Fundamentals of Horticulture	1	0	2	3	2 (1+1)
2.		Fundamentals of Plant Biochemistry and Biotechnology	2	0	2	4	3(2+1)
3.		Fundamentals of Soil Science	2	0	2	4	3(2+1)
4.		Introduction to Forestry	1	0	2	3	2 (1+1)
5.		Comprehension & Communication Skills in English	1	0	2	3	2 (1+1)
6.		Fundamentals of Agronomy	3	0	2	5	4(3+1)
7.*		Introductory Biology*	1	0	2	3	2 (1+1)*
7.* #		Elementary Mathematics*#	2	0	0	2	2(2+0)*#
8.		Agricultural Heritage	1	0	0	1	1(1+0)
9.		Rural Sociology & Educational Psychology	2	0	0	2	2 (2+0)
10.		Human Values & Ethics (non gradial)	1	0	0	1	1(1+0)
11.		NSS/NCC/Physical Education & Yoga Practices**	0	0	4	4	2 (0+2)**
TOTAL			17	0	18	35	22 +02**

Students who have studied Mathematics (both Biology and Mathematics) in 10+2 will have to opt and pass the course Introductory Biology (Gradial Course: Grades will be counted).

#Students who have studied Biology in 10+2 will have to opt and pass the course Elementary Mathematics# (Gradial Course: Grades will be counted).

****NC: Non-gradial course**

Total Contact Hours: 35

Total Credit Hours: 22+02**

Scheme of Courses B. Sc. (Hons.) Agriculture
Semester II

S. No.	Subject/ Paper Code	Subject Name	Contact Hours (Lecture)	Contact Hours (Tutorial)	Contact Hours (Practical)	Total Contact Hours	Total Credit Hours
1.		Fundamentals of Genetics	2	0	2	4	3(2+1)
2.		Agricultural Microbiology	1	0	2	3	2(1+1)
3.		Soil and Water Conservation Engineering	1	0	2	3	2(1+1)
4.		Fundamentals of Crop Physiology	1	0	2	3	2(1+1)
5.		Fundamentals of Agricultural Economics	2	0	0	2	2(2+0)
6.		Fundamentals of Plant Pathology	3	0	2	5	4(3+1)
7.		Fundamentals of Entomology	3	0	2	5	4(3+1)
8.		Fundamentals of Agricultural Extension Education	2	0	2	4	3(2+1)
9.		Communication Skills and Personality Development	1	0	2	3	2(1+1)
TOTAL			16		16	32	24

Total Contact Hours: 32

Total Credit Hours: 24

Scheme of Courses B. Sc. (Hons.) Agriculture
Semester III

S. No.	Subject/ Paper Code	Subject Name	Contact Hours (Lecture)	Contact Hours (Tutorial)	Contact Hours (Practical)	Total Contact Hours	Total Credit Hours
1.		Crop Production Technology – I (<i>Kharif Crops</i>)	1	0	2	3	2 (1+1)
2.		Fundamentals of Plant Breeding	2	0	2	4	3 (2+1)
3.		Agricultural Finance and Cooperation	2	0	2	4	3 (2+1)
4.		Agri- Informatics	1	0	2	3	2(1+1)
5.		Farm Machinery and Power	1	0	2	3	2 (1+1)
6.		Production Technology for Vegetables and Spices	1	0	2	3	2 (1+1)
7.		Environmental Studies and Disaster Management	2	0	2	4	3(2+1)
8.		Statistical Methods	1	0	2	3	2(1+1)
9.		Livestock and Poultry Management	3	0	2	5	4 (3+1)
TOTAL			14		18	32	23

Total Contact Hours: 32

Total Credit Hours: 23

Scheme of Courses B. Sc. (Hons.) Agriculture
Semester IV

S. No.	Subject/ Paper Code	Subject Name	Contact Hours (Lecture)	Contact Hours (Tutorial)	Contact Hours (Practical)	Total Contact Hours	Total Credit Hours
1.		Crop Production Technology –II (<i>Rabi Crops</i>)	1	0	2	3	2(1+1)
2.		Production Technology for Ornamental Crops, MAP and Landscaping	1	0	2	3	2(1+1)
3.		Renewable Energy and Green Technology	1	0	2	3	2(1+1)
4.		Problematic Soils and their Management	2	0	0	2	2(2+0)
5.		Production Technology for Fruit and Plantation Crops	1	0	2	3	2(1+1)
6.		Principles of Seed Technology	1	0	4	5	3(1+2)
7.		Farming System & Sustainable Agriculture	1	0	0	1	1(1+0)
8.		Agricultural Marketing Trade & Prices	2	0	2	4	3(2+1)
9.		Introductory Agro- meteorology & Climate Change	1	0	2	3	2(1+1)
10.		Elective Course	1/2 ϕ	0	4/2 ϕ	5/4 ϕ	3 credit ϕ
TOTAL			11+ 1/2 ϕ		16+ 4/2 ϕ	27+5/4ϕ (31/32)	22

ϕ Students have to opt 3 credits course which can be 1+2 or 2+1 course.

Total Contact Hours: 27+5/4 ϕ (31/32)

Total Credit Hours: 22

- **Note:** SBBSU University will offer elective courses depending upon the availability of faculty (specialization of available faculty).

Scheme of Courses B. Sc. (Hons.) Agriculture
Semester V

S. No.	Subject/ Paper Code	Subject Name	Contact Hours (Lecture)	Contact Hours (Tutorial)	Contact Hours (Practical)	Total Contact Hours	Total Credit Hours
1.		Principles of Integrated Pest and Disease Management	2	0	2	4	3(2+1)
2.		Manures, Fertilizers and Soil Fertility Management	2	0	2	4	3 (2+1)
3.		Pests of Crops and Stored Grain and their Management	2	0	2	4	3 (2+1)
4.		Diseases of Field and Horticultural Crops and their Management -I	2	0	2	4	3 (2+1)
5.		Crop Improvement-I (<i>Kharif Crops</i>)	1	0	2	3	2 (1+1)
6.		Entrepreneurship Development and Business Communication	1	0	2	3	2 (1+1)
7.		Geoinformatics and Nano-technology and Precision Farming	1	0	2	3	2 (1+1)
8.		Practical Crop Production – I (<i>Kharif</i> crops)	0	1	4	4	2 (0+2)
9.		Intellectual Property Rights	1	0	0	1	1(1+0)
10.		Elective Course	1/2 ϕ	0	4/2 ϕ	5/4 ϕ	3 credit ϕ
TOTAL			12+ 1/2 ϕ		18+ 4/2 ϕ	30+5/4ϕ (34/35)	24

ϕ Students have to opt 3 credits course which can be 1+2 or 2+1 course.

Total Contact Hours: 30+5/4 ϕ (34/35)

Total Credit Hours: 24

- **Note:** SBBSU University will offer elective courses depending upon the availability of faculty (specialization of available faculty) .

Scheme of Courses B. Sc. (Hons.) Agriculture
Semester VI

S. No.	Subject/ Paper Code	Subject Name	Contact Hours (Lecture)	Contact Hours (Tutorial)	Contact Hours (Practical)	Total Contact Hours	Total Credit Hours
1.		Rainfed Agriculture & Watershed Management	1	0	2	3	2 (1+1)
2.		Protected Cultivation and Secondary Agriculture	1	0	2	3	2 (1+1)
3.		Diseases of Field and Horticultural Crops and their Management-II	2	0	2	4	3 (2+1)
4.		Post-harvest Management and Value Addition of Fruits and Vegetables	1	0	2	3	2 (1+1)
5.		Management of Beneficial Insects	1	0	2	3	2 (1+1)
6.		Crop Improvement-II (<i>Rabi</i> crops)	1	0	2	3	2 (1+1)
7.		Practical Crop Production –II (<i>Rabi</i> crops)	0	1	4	4	2 (0+2)
8.		Principles of Organic Farming	1	0	2	3	2 (1+1)
9.		Farm Management, Production & Resource Economics	1	0	2	3	2 (1+1)
10		Principles of Food Science and Nutrition	2	0	0	2	2(2+0)
11.		Elective Course	1/2 ϕ	0	4/2 ϕ	5/4 ϕ	3 credit ϕ
TOTAL			11+ 1/2 ϕ		20+ 4/2 ϕ	31+5/4ϕ (35/36)	24

ϕ Students have to opt 3 credits course which can be 1+2 or 2+1 course. (preferably 2+1 course.)

Total Contact Hours: 31+5/4 ϕ (35/36)

Total Credit Hours: 24

- **Note:** SBBSU University will offer elective courses depending upon the availability of faculty (specialization of available faculty) .

**Scheme of Courses B. Sc. (Hons.) Agriculture
Semester VII**

S. No.	Subject/ Paper Code	Subject Name	Contact Hours (Lecture)	Contact Hours (Tutorial)	Contact Hours (Practical)	Total Contact Hours	Total Credit Hours
1		General orientation & On campus training by different faculties					
2		Village attachment	0	1	28	28	14
3		Unit attachment in Univ./ College. KVK/ Research Station Attachment					
4		Plant clinic	0	1	2	2	2
5		Agro-Industrial Attachment	0	1	4	4	4
			0	0	34	34	20

**Total Contact Hours: 34
Total Credit Hours: 20**

Instructions to conduct RAWE &AIA for the B.Sc. (Hons.) Agriculture VII Semester			
SN.	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	02
	Agro-Industrial Attachment	3	04
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.

**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	
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

- **Note:** SBBSU University will offer the RAWE component depending upon the availability of sources or faculty (specialization of available faculty) .

Scheme of Courses B. Sc. (Hons.) Agriculture
Semester VIII

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.

- **Note:** SBBSU University will offer the modules depending upon the availability of sources/ faculty (specialization of available faculty) .

S. No.	Subject/ Paper Code	Subject/Module Name	Contact Hours (Lecture)	Contact Hours (Tutorial)	Contact Hours (Practical)	Total Contact Hours	Total Credit Hours
1		Production Technology for Bioagents and Biofertilizer	0	1	20	20	0+10
2		Seed Production and Technology	0	1	20	20	0+10
3		Mushroom Cultivation Technology	0	1	20	20	0+10
4		Soil, Plant, Water and Seed Testing	0	1	20	20	0+10
5		Commercial Beekeeping	0	1	20	20	0+10
6		Poultry Production Technology	0	1	20	20	0+10
7		Commercial Horticulture	0	1	20	20	0+10
8		Floriculture and Landscaping	0	1	20	20	0+10
9		Food Processing	0	1	20	20	0+10
10		Agriculture Waste Management	0	1	20	20	0+10
11		Organic Production Technology	0	1	20	20	0+10
12		Commercial Sericulture	0	1	20	20	0+10

Total Credit Hours: 20

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



LIST OF ELECTIVE COURSES

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

NOTE: The Student of 6th semester should prefer 2+1 course (3 credits course).

S. No.	Subject/ Paper Code	Subject Name	Contact Hours (Lecture)	Contact Hours (Tutorial)	Contact Hours (Practical)	Total Contact Hours	Total Credit Hours
1		Agribusiness Management	2	0	2	4	3(2+1)
2		Agrochemicals	2	0	2	4	3(2+1)
3		Commercial Plant Breeding	1	0	4	5	3(1+2)
4		Landscaping	2	0	2	4	3(2+1)
5		Food Safety and Standards	2	0	2	4	3(2+1)
6		Biopesticides & Biofertilizers	2	0	2	4	3(2+1)
7		Protected Cultivation	2	0	2	4	3(2+1)
8		Micro propagation Technologies	1	0	4	5	3(1+2)
9		Hi-tech. Horticulture	2	0	2	4	3(2+1)
10		Weed Management	2	0	2	4	3(2+1)
11		System Simulation and Agro-advisory	2	0	2	4	3(2+1)
12		Agricultural Journalism	2	0	2	4	3(2+1)

Course Code	AGR
Course Title	Principles of Integrated Pest and Disease Management
Type of course	Theory
L T P	2 0 1
Credits	3 (2+1)
Course prerequisite	10+2 (Non Medical or Medical) or Equivalent
Course objective	

Theory

UNIT-I

Categories of insect pests and diseases, IPM: Introduction, history, importance, concepts, principles and tools of IPM. Economic importance of insect pests, diseases and pest risk analysis. Methods of detection and diagnosis of insect pest and diseases.

UNIT-II

Calculation and dynamics of economic injury level and importance of Economic threshold level. Methods of control: Host plant resistance, cultural, mechanical, physical, legislative, biological and chemical control. Ecological management of crop environment.

UNIT-III

Introduction to conventional pesticides for the insect pests and disease management. Survey surveillance and forecasting of Insect pest and diseases. Development and validation of IPM module.

UNIT-IV

Implementation and impact of IPM (IPM module for Insect pest and disease. Safety issues in pesticide uses. Political, social and legal implication of IPM. Case histories of important IPM programmes. Case histories of important IPM programmes.

Practical

1. Methods of diagnosis and detection of various insect pests, and plant diseases
2. Methods of insect pests and plant disease measurement
3. Assessment of crop yield losses, calculations based on economics of IPM
4. Identification of biocontrol agents, different predators and natural enemies
5. Mass multiplication of Trichoderma, Pseudomonas, Trichogramma, NPV

6. Identification and nature of damage of important insect pests and diseases and their management.
7. Crop (agroecosystem) dynamics of a selected insect pest and diseases.
8. Plan & assess preventive strategies (IPM module) and decision making. crop monitoring attacked by insect, pest and diseases .
9. Awareness campaign at farmers fields.

Recommended Books:

S.No.	Name	Author(S)	Publisher
1	Integrated Pest Management -concepts and Approaches	G S Dhaliwal and R Arora	Kalyani
2	Integrated Management of Insects in Stored Products	B Subramanyam and D W Hagstrum	Marcel Dekker
3	Introduction of Insect Pest mangemnt	S S Ignacimuthu and S.Jayaraj	Elite, New Delhi

Course Code	AGR
Course Title	Manures, Fertilizers and Soil Fertility Management
Type of course	Theory
L T P	2 0 1
Credits	3 (2+1)
Course prerequisite	10+2 (Non Medical or Medical) or Equivalent
Course objective	To introduce basic postulates of soil fertility and nutrient management. Introduction to basic fundamentals of soil fertility and nutrient management .

SYLLABUS

Theory

UNIT-I

Introduction and importance of organic manures, properties and methods of preparation of bulky and concentrated manures. Green/leaf manuring. Fertilizer recommendation approaches. Integrated nutrient management.

UNIT-II

Chemical fertilizers: classification, composition and properties of major nitrogenous, phosphatic, potassic fertilizers, secondary & micronutrient fertilizers, Complex fertilizers, nano fertilizers
Soil amendments, Fertilizer Storage, Fertilizer Control Order.

UNIT-III

History of soil fertility and plant nutrition. criteria of essentiality. role, deficiency and toxicity symptoms of essential plant nutrients, Mechanisms of nutrient transport to plants, factors affecting nutrient availability to plants. Chemistry of soil nitrogen, phosphorus, potassium, calcium, magnesium, sulphur and micronutrients.

UNIT-IV

Soil fertility evaluation, Soil testing. Critical levels of different nutrients in soil. Forms of nutrients in soil, plant analysis, rapid plant tissue tests. Indicator plants. Methods of fertilizer recommendations to crops. Factor influencing nutrient use efficiency (NUE), methods of application under rainfed and irrigated conditions.

Practical

1. Introduction of analytical instruments and their principles, calibration and applications, Colorimetry and flame photometry.
2. Estimation of soil organic carbon, Estimation of alkaline hydrolysable N in soils.
3. Estimation of soil extractable P in soils.
4. Estimation of exchangeable K; Ca and Mg in soils .
5. Estimation of soil extractable S in soils.
6. Estimation of DTPA extractable Zn in soils.
7. Estimation of N in plants. Estimation of P in plants. Estimation of K in plants.
8. Estimation of S in plants.

Recommended Books:

S.No.	Name	Author(S)	Publisher
1	Manures and Fertilizers	P.C.Das	Kalyani
2	Soil Fertility and fertilizers (5 th ed.)	S.L.Tisdale	Prentice Hall of India Pvt. Ltd
3	Manures and fertilizers	K S Yawalkar	Agriculture-Horticulture Publishing House, Nagpur

Course Code	AGR
Course Title	Diseases of Field & Horticultural Crops & their Management-I
Type of course	Theory & Practical
L T P	2 0 1
Credits	3(2+1)
Course prerequisite	10+2 (Non Medical or Medical) or Equivalent
Course objective	

SYLLABUS

Theory

UNIT-I

Symptoms, etiology, disease cycle and management of major diseases of following crops: Field Crops: Rice: blast, brown spot, bacterial blight, sheath blight, false smut, khaira and tungro

UNIT-II

Maize: stalk rots, downy mildew, leaf spots; Sorghum: smuts, grain mold and anthracnose, Bajra :downy mildew and ergot; Groundnut: early and late leaf spots, wilt Soybean: Rhizoctonia blight, bacterial spot, seed and seedling rot and mosaic; Pigeonpea: Phytophthora blight, wilt and sterility mosaic; Finger millet: Blast and leaf spot; black & green gram: Cercospora leaf spot and anthracnose, web blight and yellow mosaic

UNIT-III

Castor: Phytophthora blight;Tobacco: black shank, black root rot and mosaic. Horticultural Crops: Guava: wilt and anthracnose; Banana: Panama wilt, bacterial wilt, Sigatoka and bunchy top;Papaya: foot rot, leaf curl and mosaic, Pomegranate: bacterial blight; Cruciferous vegetables: Alternaria leaf spot and black rot; Brinjal: Phomopsis blight and fruit rot and Sclerotinia blight

UNIT-IV

Tomato: damping off, wilt, early and late blight, buck eye rot and leaf curl and mosaic; Okra: Yellow Vein Mosaic; Beans: anthracnose and bacterial blight; Ginger: soft rot; Colocasia: Phytophthora blight; Coconut: wilt and bud rot; Tea: blister blight; Coffee: rust

Practical

1. Identification and histopathological studies of selected diseases of field and horticultural crops covered in theory.
2. Field visit for the diagnosis of field problems.
3. Collection and preservation of plant diseased specimens for Herbarium; Note: Students should submit 50 pressed and wellmounted specimens.

Recommended Books:

S.No.	Name	Author(S)	Publisher
1	Crop diseases and their management	Y S Ahlawat and S Nagarajan	Kalyani
2	Diseases of Field crops	V K Gupta & Y S Paul	Indus Publishing Co. New Delhi
3	Diseases of Fruit Crops	RS Singh 2012	Oxford and IBH Publishing Co.Pvt.Ltd. New Delhi
4	Diseases of Vegetable Crops 3 rd ed.	R S Singh 1998	Oxford and IBH Publishing Co. Pvt. Ltd. New Delhi

Course Code	AGR
Course Title	Crop Improvement – I (Kharif)
Type of course	Theory & Practical
L T P	1 0 1
Credits	2 (1+1)
Course prerequisite	10+2 (Non Medical or Medical) or Equivalent
Course objective	

Syllabus

Theory

UNIT-I

Centers of origin, distribution of species, wild relatives in different cereals; pulses; oilseeds; fibres; fodders and cash crops; vegetable and horticultural crops

UNIT-II

Plant genetic resources, its utilization and conservation, study of genetics of qualitative and quantitative characters; Important concepts of breeding self pollinated, cross pollinated and vegetatively propagated crops

UNIT-III

Major breeding objectives and procedures including conventional and modern innovative approaches for development of hybrids and varieties for yield, adaptability, stability, abiotic and biotic stress tolerance and quality (physical, chemical, nutritional)

UNIT-IV

Hybrid seed production technology in Maize, Rice, Sorghum, Pearl millet and Pigeonpea, etc.
Ideotype concept and climate resilient crop varieties for future.

Practical

1. Floral biology, emasculation and hybridization techniques in different crop species; viz., Rice, Maize,
2. Floral biology, emasculation and hybridization techniques in different crop species; viz Sorghum, Pearl millet
3. Floral biology, emasculation and hybridization techniques in different crop species; viz Ragi, Pigeonpea, Urdbean, Mungbean,
4. Floral biology, emasculation and hybridization techniques in different crop species; viz Soybean, Groundnut, Sesame, Caster, Cotton,
5. Floral biology, emasculation and hybridization techniques in different crop species; viz Cowpea, Jute, Tobacco, Brinjal, Okra and Cucurbitaceous crops.
6. Maintenance breeding of different kharif crops.
7. Handling of germplasm and segregating populations by different methods like pedigree, bulk and single seed decent methods;
8. Study of field techniques for seed production and hybrid seeds production in Kharif crops;
9. Estimation of heterosis, inbreeding depression and heritability;
10. Layout of field experiments;
11. Study of quality characters, donor parents for different characters;
12. Visit to seed production plots; Visit to AICRP plots of different field crops.

Recommended Books:

S.No.	Name	Author(S)	Publisher
1	Crop Improvement: Challenges in the Twenty-first century (Edt.)	Manjit S. Kang	International Book Distributing Co. Lukhnow
2	Breeding Technology of Crop Plants (Edt.).	A.K. Sharma	Yash Publishing House, Bikaner

Course Code	AGR
Course Title	Pests of Crops and Stored Grains and their Management
Type of course	Theory & Practical
L T P	2 0 1
Credits	3 (2+1)
Course prerequisite	10+2 (Non Medical or Medical) or Equivalent
Course objective	

SYLLABUS

Theory

UNIT-I

General account on nature and type of damage by different arthropods pests.

UNIT-II

Scientific name, order, family, host range, distribution, biology and bionomics, nature of damage, and management of major pests and scientific name, order, family, host range, distribution,

UNIT-III

nature of damage and control practice other important arthropod pests of various field crop, vegetable crop, fruit crop, plantation crops, ornamental crops, spices and condiments.

UNIT-IV

Factors affecting losses of stored grain and role of physical, biological, mechanical and chemical factors in deterioration of grain. Insect pests, mites, rodents, birds and microorganisms associated with stored grain and their management. Storage structure and methods of grain storage and fundamental principles of grain store management.

Practical

1. Identification of different types of damage.
2. Identification and study of life cycle and seasonal history of various insect pests attacking crops and their produce: (a) Field Crops; (b) Vegetable Crops(c) Fruit Crops; (d) Plantation, gardens, Narcotics, spices & condiments.
3. Identification of insect pests and Mites associated with stored grain.
4. Determination of insect infestation by different methods. Assessment of losses due to insects.

5. Calculations on the doses of insecticides application technique.
6. Fumigation of grain store / godown.
7. Identification of rodents and rodent control operations in godowns.
8. Identification of birds and bird control operations in godowns.
9. Determination of moisture content of grain. Methods of grain sampling under storage condition.
10. Visit to Indian Storage Management and Research Institute, Hapur and Quality Laboratory, Department of Food., Delhi. Visit to nearest FCI godowns.

Recommended Books:

S.No.	Name	Author(S)	Publisher
1	Insects and Mites of Crops in India	M.R.G.K. Nayar	ICAR, New Delhi
2	A Text Book of Entomology vol.I & II	K.P. Shrivastava	Kalyani Publishers, New Delhi

Course Code	AGR
Course Title	Entrepreneurship Development and Business Communication
Type of course	Practical
L T P	1 0 1
Credits	2 (1+1)
Course prerequisite	10+2 (Non Medical or Medical) or Equivalent
Course objective	

Theory

UNIT-I

Concept of Entrepreneur, Entrepreneurship Development, Characteristics of entrepreneurs; SWOT Analysis & achievement motivation, Government policy and programs and institutions for entrepreneurship development,

UNIT-II

Impact of economic reforms on Agribusiness/ Agri enterprises, Entrepreneurial Development Process; Business Leadership Skills; Developing organizational skill (controlling, supervising, problem solving, monitoring & evaluation)

UNIT-III

Developing Managerial skills, Business Leadership Skills (Communication, direction and motivation Skills), Problem solving skill

UNIT-IV

Supply chain management and Total quality management, Project Planning Formulation and report preparation; Financing of enterprise, Opportunities for agri entrepreneurship and rural enterprise.

Practical

1. Assessing entrepreneurial traits, problem solving skills, managerial skills and achievement motivation
2. Exercise in creativity, time audit through planning, monitoring and supervision
3. Identification and selection of business idea
4. preparation of business plan and proposal writing
5. visit to entrepreneurship development institute and entrepreneurs

Recommended Books:

S.No.	Name	Author(S)	Publisher
1	Entrepreneurship Development and Communication skills	R. R. Chole and P.S. kapse	Scientific Publishers (India) Jodhpur
2	A text book of Agricultural Extension Management	C Karthikeyan <i>et al</i>	Atlantic Publishers, New Delhi

Course Code	AGR
Course Title	Intellectual Property Rights
Type of course	Theory
L T P	1 0 0
Credits	1 (1+0)
Course prerequisite	10+2 (Non Medical or Medical) or Equivalent
Course objective	

Theory

UNIT-I

Introduction and meaning of intellectual property, brief introduction to GATT, WTO, TRIPs and WIPO, Treaties for IPR protection: Madrid protocol, Berne Convention, Budapest treaty, etc.

UNIT-II

Types of Intellectual Property and legislations covering IPR in India:-Patents, Copyrights, Trademark, Industrial design, Geographical indications, Integrated circuits, Trade secrets. Patents Act 1970 and Patent system in India, patentability, process and product patent, filing of patent, patent specification, patent claims, Patent opposition and revocation, infringement, Compulsory licensing, Patent Cooperation Treaty, Patent search and patent database.

UNIT-III

Origin and history including a brief introduction to UPOV for protection of plant varieties, Protection of plant varieties under UPOV and PPV&FR Act of India, Plant breeders rights, Registration of plant varieties under PPV&FR Act 2001, breeders, researcher and farmers rights.

UNIT-IV

Traditional knowledge-meaning and rights of TK holders. Convention on Biological Diversity, International treaty on plant genetic resources for food and agriculture (ITPGRFA). Indian Biological Diversity Act, 2002 and its salient features, access and benefit sharing.

Recommended Books:

S.No.	Name	Author(S)	Publisher
1	Law Relating to Intellectual Property Rights	V K Ahuja	Jain Book Agency
2	Intellectual Property Rights	Neeraj Pandey and Khushdeep Dharni	UBS

Course Code	AGR
Course Title	Geoinformatics, Nano-technology and Precision Farming
Type of course	Theory
L T P	1 0 1
Credits	2 (1+1)
Course prerequisite	10+2 (Non Medical or Medical) or Equivalent

Theory

UNIT-I

Precision agriculture: concepts and techniques; their issues and concerns for Indian agriculture; Geo-informatics- definition, concepts, tool and techniques; their use in Precision Agriculture.

UNIT-II

Crop discrimination and Yield monitoring, soil mapping; fertilizer recommendation using geospatial technologies; Spatial data and their management in GIS; Remote sensing concepts and application in agriculture

UNIT-III

Image processing and interpretation; Global positioning system (GPS), components and its functions; Introduction to crop Simulation Models and their uses for optimization of Agricultural Inputs; STCR approach for precision agriculture

UNIT-IV

Nanotechnology, definition, concepts and techniques, brief introduction about nanoscale effects, nano-particles, nano-pesticides, nano-fertilizers, nano-sensors, Use of nanotechnology in seed, water, fertilizer, plant protection for scaling-up farm productivity.

Practical

1. Introduction to GIS software, spatial data creation and editing.
2. Introduction to image processing software. Visual and digital interpretation of remote sensing images.
3. Generation of spectral profiles of different objects.
4. Supervised and unsupervised classification and acreage estimation.
5. Multispectral remote sensing for soil mapping. Creation of thematic layers of soil fertility based on GIS. Creation of productivity and management zones.
6. Fertilizers recommendations based of VRT and STCR techniques. Crop stress (biotic/abiotic) monitoring using geospatial technology.
7. Use of GPS for agricultural survey. Formulation, characterization and applications of nanoparticles in agriculture.
8. Projects formulation and execution related to precision farming

Recommended Books:

S.No.	Name	Author(S)	Publisher
1	An introduction to Geo informatics	G.S. Shrivastava 2014	McGrew Hill Education(India)Pvt Ltd.
2	Applied Nanotechnology in Agriculture	S. Choudhary	Arise Publishers & Distributors
3.	Principles of Geo informatics	R K Gupta	Jain Brothers, New Delhi

Course Code	AGR
Course Title	Practical Crop Production-I (Kharif Crops)
Type of course	Theory
L T P	0 0 2
Credits	2 (0+2)
Course prerequisite	10+2 (Non Medical or Medical) or Equivalent
Course objective	

SYLLABUS

Practical

1. Crop planning, raising field crops in multiple cropping systems: Field preparation, seed, treatment, nursery raising, sowing, nutrient, water and weed management
2. Management of insect-pests diseases of crops, harvesting,
3. Threshing, drying winnowing, storage and marketing of produce.
4. The emphasis will be given to seed production, mechanization, resource conservation and integrated nutrient, insect-pest and disease management technologies.

Preparation of balance sheet including cost of cultivation, net returns per student as well as per team of 8-10 students.

Recommended Books:

S.No.	Name	Author(S)	Publisher
1	Principles and practices of Agronomy	P Subramaniyan	Agribios (India), Jodhpur
2	Manures and Fertilizers (10 th ed.)	K S Yawalkar & J.P. Aggarwal	Agri-Horticultural Publishing House, Nagpur

Semester VI

Course Code	AGR
Course Title	Rainfed Agriculture and Watershed Management – (New)
Type of course	Theory
L T P	1 0 1
Credits	2 (1+1)
Course prerequisite	10+2 (Non Medical or Medical) or Equivalent
Course objective	

Syllabus

Theory

UNIT-I

Rainfed agriculture: Introduction, types, History of rainfed agriculture and watershed in India; Problems and prospects of rainfed agriculture in India

UNIT-II

Soil and climatic conditions prevalent in rainfed areas; Soil and water conservation techniques, Drought: types, effect of water deficit on physio-morphological characteristics of the plants, Crop adaptation and mitigation to drought

UNIT-III

Water harvesting: importance, its techniques, Efficient utilization of water through soil and crop management practices, Management of crops in rainfed areas,

UNIT-IV

Contingent crop planning for aberrant weather conditions, Concept, objective, principles and components of watershed management, factors affecting watershed management.

Practical

1. Studies on climate classification,
2. studies on rainfall pattern in rainfed areas of the country and pattern of onset and withdrawal of monsoons.
3. Studies on cropping pattern of different rainfed areas in the country and demarcation of rainfed area on map of India.
4. Interpretation of meteorological data and scheduling of supplemental irrigation on the basis of evapo-transpiration demand of crops.
5. Critical analysis of rainfall and possible drought period in the country, effective rainfall and its calculation.
6. Studies on cultural practices for mitigating moisture stress.
7. Characterization and delineation of model watershed.
8. Field demonstration on soil & moisture conservation measures.
9. Field demonstration on construction of water harvesting structures.
10. Visit to rainfed research station/watershed

Recommended Books:

S.No.	Name	Author(S)	Publisher
1.	Dryland Agriculture	C Jayanthi & R Kalpana 2016	Kalyani Publishers
2.	Crop Management under Irrigated and Rainfed Conditions	S S Singh	Kalyani Publishers
3.	Sustainable Development of Dryland Agriculture in India	R P Singh	Scientific Publishers, Jodhpur

Course Code	AGR
Course Title	Diseases of Field & Horticultural Crops & their Management-II
Type of course	Theory
L T P	2 0 1
Credits	3 (2+1)
Course prerequisite	10+2 (Non Medical or Medical) or Equivalent
Course objective	

Theory

UNIT-I

Symptoms, etiology, disease cycle and management of following diseases: Field Crops: Wheat: rusts, loose smut, karnal bunt, powdery mildew, alternaria blight, and ear cockle; Sugarcane: red rot, smut, wilt, grassy shoot, ratoon stunting and Pokkah Boeng; Sunflower: Sclerotinia stem rot and Alternaria blight; Mustard: Alternaria blight, white rust, downy mildew and Sclerotinia stem rot; Gram: wilt, grey mould and Ascochyta blight; Lentil: rust and wilt; Cotton: anthracnose, vascular wilt, and black arm; Pea: downy mildew, powdery mildew and rust. Horticultural Crops: Mango: anthracnose, malformation, bacterial blight and powdery mildew; Citrus: canker and gummosis; Grape vine: downy mildew, Powdery mildew and anthracnose; Apple: scab, powdery mildew, fire blight and crown gall; Peach: leaf curl. Strawberry: leaf spot Potato: early and late blight, black scurf, leaf roll, and mosaic; Cucurbits: downy mildew, powdery mildew, wilt; Onion and garlic: purple blotch, and Stemphylium blight; Chillies: anthracnose and fruit rot, wilt and leaf curl; Turmeric: leaf spot Coriander: stem gall Marigold: Botrytis blight; Rose: dieback, powdery mildew and black leaf spot.

Practical

Identification and histopathological studies of selected diseases of field and horticultural crops covered in theory. Field visit for the diagnosis of field problems. Collection and preservation of plant diseased specimens for herbarium. Note: Students should submit 50 pressed and well-mounted specimens.

Recommended Books:

S.No.	Name	Author(S)	Publisher
1	Crop diseases and their management	Y S Ahlawat and S Nagarajan	Kalyani
2	Diseases of Field crops	V K Gupta & Y S Paul	Indus Publishing Co. New Delhi
3	Diseases of Fruit Crops	RS Singh 2012	Oxford and IBH

			Publishing Co.Pvt.Ltd. New Delhi
4	Diseases of Vegetable Crops 3 rd ed.	R S Singh 1998	Oxford and IBH Publishing Co. Pvt. Ltd. New Delhi

Course Code	AGR
Course Title	Management of Beneficial Insects
Type of course	Theory
L T P	1 0 1
Credits	2 (1+1)
Course prerequisite	10+2 (Non Medical or Medical) or Equivalent
Course objective	

SYLLABUS

Theory

UNIT-I

Importance of beneficial Insects, Beekeeping and pollinators, bee biology, commercial methods of rearing, equipment used, seasonal management, bee enemies and disease. Bee pasturage, bee foraging and communication. Insect pests and diseases of honey bee.

UNIT-II

Role of pollinators in cross pollinated plants. Types of silkworm, voltinism and biology of silkworm. Mulberry cultivation, mulberry varieties and methods of harvesting and preservation of leaves. Rearing, mounting and harvesting of cocoons. Pest and diseases of silkworm, management, rearing appliances of mulberry silkworm and methods of disinfection.

UNIT-III

Species of lac insect, morphology, biology, host plant, lac production – seed lac, button lac, shellac, lac- products. Identification of major parasitoids and predators commonly being used in biological control.

UNIT-IV

Insect orders bearing predators and parasitoids used in pest control and their mass multiplication techniques. Important species of pollinator, weed killers and scavengers with their importance.

Practical

1. Honey bee species, castes of bees.
2. Beekeeping appliances and seasonal management, bee enemies and disease.
3. Bee pasturage, bee foraging and communication.
4. Types of silkworm, voltinism and biology of silkworm.
5. Mulberry cultivation, mulberry varieties and methods of harvesting and preservation of leaves. Species of lac insect, host plant identification.
6. Identification of other important pollinators, weed killers and scavengers.
7. Visit to research and training institutions devoted to beekeeping, sericulture, lac culture and natural enemies.
8. Identification and techniques for mass multiplication of natural enemies.

Recommended Books:

S.No.	Name	Author(S)	Publisher
1.	Biological Control by Natural enemies	P. DeBach	Cambridge University Press
2.	Integrated Pest Management: Concepts and approaches	G S Dhaliwal & R. Arora 2001	Kalyani Publishers
3.	A text book of Entomology	K P Shrivastava vol.I	Kalyani Publishers, New Delhi

Course Code	AGR
Course Title	Crop Improvement – II (Rabi)
Type of course	Theory
L T P	1 0 1
Credits	2 (1+1)
Course prerequisite	10+2 (Non Medical or Medical) or Equivalent
Course objective	

SYLLABUS

Theory

UNIT-I

Centers of origin, distribution of species, wild relatives in different cereals; pulses; oilseeds; fodder crops and cash crops; vegetable and horticultural crops

UNIT-II

Plant genetic resources, its utilization and conservation; study of genetics of qualitative and quantitative characters;

UNIT-III

Major breeding objectives and procedures including conventional and modern innovative approaches for development of hybrids and varieties for yield, adaptability, stability, abiotic and biotic stress tolerance and quality (physical, chemical, nutritional);

UNIT-IV

Hybrid seed production technology of rabi crops. Ideotype concept and climate resilient crop varieties for future.

Practical

1. Floral biology, emasculation and hybridization techniques in different crop species namely Wheat, Oat, Barley, Chickpea, Lentil, Field pea, Rajma, Horse gram, Rapeseed Mustard, Sunflower, Safflower, Potato, Berseem. Sugarcane, Tomato, Chilli, Onion;
2. Handling of germplasm and segregating populations by different methods like pedigree, bulk and single seed decent methods;
3. Study of field techniques for seed production and hybrid seeds production in Rabi crops; Estimation of heterosis, inbreeding depression and heritability;
4. Layout of field experiments; Study of quality characters,
5. Study of donor parents for different characters;
6. Visit to seed production plots; Visit to AICRP plots of different field crops

Recommended Books:

S.No.	Name	Author(S)	Publisher
1.	Biological Control by Natural enemies	P. DeBach	Cambridge University Press
2.	Integrated Pest Management: Concepts and approaches	G S Dhaliwal & R. Arora 2001	Kalyani Publishers
3.	A text book of Entomology	K P Shrivastava vol.I	Kalyani Publishers, New Delhi

Course Code	AGR
Course Title	Practical Crop Production-II (Rabi Crops)
Type of course	Theory
L T P	0 0 2
Credits	2 (0+2)
Course prerequisite	10+2 (Non Medical or Medical) or Equivalent
Course objective	

Practical

Crop planning, raising field crops in multiple cropping systems:

Field preparation, seed, treatment, nursery raising, sowing, nutrient, water and weed management and management of insect-pests diseases of crops, harvesting, threshing, drying winnowing, storage and marketing of produce. The emphasis will be given to seed production, mechanization, resource conservation and integrated nutrient, insect-pest and disease management technologies. Preparation of balance sheet including cost of cultivation, net returns per student as well as per team of 8-10 students.

Recommended Books:

S.No.	Name	Author(S)	Publisher
1	Crop Improvement: Challenges in the Twenty-first century (Edt.)	Manjit S. Kang	International Book Distributing Co. Lukhnow
2	Breeding Technology of Crop Plants (Edt.).	A.K. Sharma	Yash Publishing House, Bikaner

Course Code	AGR
Course Title	Principles of Organic Farming
Type of course	Theory
L T P	1 0 1
Credits	2 (1+1)
Course prerequisite	10+2 (Non Medical or Medical) or Equivalent
Course objective	

SYLLABUS

Theory

UNIT-I

Organic farming, principles and its scope in India; Initiatives taken by Government (central/state), NGOs and other organizations for promotion of organic agriculture;

UNIT -II

Organic ecosystem and their concepts; Organic nutrient resources and its fortification; Restrictions to nutrient use in organic farming; Choice of crops and varieties in organic farming;

UNIT-III

Fundamentals of insect, pest, disease and weed management under organic mode of production; Operational structure of NPOP;

UNIT-IV

Certification process and standards of organic farming; Processing, leveling, economic considerations and viability, marketing and export potential of organic products.

Practical

1. Visit of organic farms to study the various components and their utilization preparation of enrich compost, vermicompost
2. Preparation of Bio-fertilizers/bio-inoculants and their quality analysis
3. Indigenous technology knowledge (ITK) for nutrient, insect, pest disease and weed management; Cost of organic production system;
4. Post harvest management; Quality aspect, grading, packaging and handling.

Recommended Books:

S.No.	Name	Author(S)	Publisher
1	Organic Farming for Sustainable Agriculture (2 nd edition)	A K Dharma	Agrobios (India), Jodhpur
2	Organic Farming in India, Problems and Prospects , Agertech	U Thapa and P. Tripathy	Publishing Academy , Udaipur
3.	A Handbook of Organic Farming	Arun K.Sharma	Agrobios(India),Jodhpur

Course Code	AGR
Course Title	Farm Management, Production and Resource Economics
Type of course	Theory
L T P	1 0 1
Credits	2 (1+1)
Course prerequisite	10+2 (Non Medical or Medical) or Equivalent
Course objective	

SYLLABUS

Theory

UNIT-I

Meaning and concept of farm management, objectives and relationship with other sciences. Meaning and definition of farms, its types and characteristics, factor determining types and size of farms.

UNIT-II

Principles of farm management: concept of production function and its type, use of production function in decision-making on a farm, factor-product, factor-factor and product relationship, law of equi-marginal/or principles of opportunity cost and law of comparative advantage. Meaning and concept of cost, types of costs and their interrelationship, importance of cost in managing farm business and estimation of gross farm income, net farm income, family labour income and farm business income.

UNIT-III

Farm business analysis: meaning and concept of farm income and profitability, technical and economic efficiency measures in crop and livestock enterprises. Importance of farm records and accounts in managing a farm, various types of farm records needed to maintain on farm, farm inventory, balance sheet, profit and loss accounts. Meaning and importance of farm planning and budgeting, partial and complete budgeting, steps in farm planning and budgeting-linear programming, appraisal of farm resources, selection of crops and livestock's enterprises.

UNIT-IV

Concept of risk and uncertainty occurs in agriculture production, nature and sources of risks and its management strategies, Crop/livestock/machinery insurance – weather based crop insurance, features, determinants of compensation. Concepts of resource economics, differences between NRE and agricultural economics, unique properties of natural resources. Positive and negative externalities in agriculture, Inefficiency and welfare loss, solutions, Important issues in economics and management of common property resources of land, water, pasture and forest resources etc.

Practical

1. Preparation of farm layout.
2. Determination of cost of fencing of a farm.
3. Computation of depreciation cost of farm assets.
4. Application of equi-marginal returns/opportunity cost principle in allocation of farm resources. Determination of most profitable level of inputs use in a farm production process.
5. Determination of least cost combination of inputs. Selection of most profitable enterprise combination.
6. Application of cost principles including CACP concepts in the estimation of cost of crop and livestock enterprises.
7. Preparation of farm plan and budget, farm records and accounts and profit & loss accounts.
8. Collection and analysis of data on various resources in India.

Recommended Books:

S.No.	Name	Author(S)	Publisher
1	Principles and Methods of Farm Management	R. K. Tandan & S.P. Dhondiyal	Kalyani
2	Fundamental of Farm Business Management	S.S. Johl and T.P. Kapoor	Kalyani

Course Code	AGR
Course Title	Protected Cultivation and Secondary Agriculture
Type of course	Theory
L T P	1 0 1
Credits	2 (1+1)
Course prerequisite	10+2 (Non Medical or Medical) or Equivalent

Theory**UNIT-I**

Green house technology: Introduction, Types of Green Houses; Plant response to Green house environment

UNIT-II

Planning and design of greenhouses, Design criteria of green house for cooling and heating purposes. Green house equipments, materials of construction for traditional and low cost green houses. Irrigation systems used in greenhouses, typical applications, passive solar green house, hot air green house heating systems, green house drying.

UNIT-III

Cost estimation and economic analysis. Important Engineering properties such as physical, thermal and aero & hydrodynamic properties of cereals, pulses and oilseed, their application in PHT equipment design and operation.

UNIT-IV

Drying and dehydration; moisture measurement, EMC, drying theory, various drying method, commercial grain dryer (deep bed dryer, flat bed dryer, tray dryer, fluidized bed dryer, recirculatory dryer and solar dryer). Material handling equipment; conveyer and elevators, their principle, working and selection.

Practical

1. Study of different type of green houses based on shape.
2. Determine the rate of air exchange in an active summer winter cooling system.
3. Determination of drying rate of agricultural products inside green house. Study of green house equipments.
4. Visit to various Post Harvest Laboratories.
5. Determination of Moisture content of various grains by oven drying & infrared moisture methods.
6. Determination of engineering properties (shape and size, bulk density and porosity of biomaterials).
7. Determination of Moisture content of various grains by moisture meter. Field visit to seed processing plant.

8. Recommended Books:

9.

S.No.	Name	Author(S)	Publisher
1	Greenhouse Technology-Applications and Practices	A Sharma and V Salokhe	Agro Tech publication,Udaipur
2	Greenhouse: Science and Technology	S.S.Kothari	Himanshu publication, Udaipur

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 y 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

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

S.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