1.1: CURRICULUM DESIGN AND DEVELOPMENT

Program Outcomes (POs)

Program Specific Outcomes (PSOs)

Course Outcomes (COs)

COLLEGE OF AGRICULTURE

Sardar Vallabhbhai Patel University of Agriculture & Technology Meerut-250110 U.P. India

COLLEGE OF AGRICULTURE

Brief History of the Degree Programme

The College of Agriculture, as the first constituent faculty of Sardar Vallabhbhai Patel University of Agriculture & Technology, Meerut, was established in year 2000 within the existing infrastructure and manpower as the western campus of GBPUA&T, Pantnagar consequent upon the division of the Uttar Pradesh. The college admitted 23 students in undergraduate degree programme in academic session 2001-02. Since then, the college has been progressively gaining new dimensions in all the spheres.

Objective:

1. To impart teaching for the development of human resource who can apply their acquired knowledge and skills to diversify and industrialize agriculture for socio-economic transformation of the rural society.
2. To develop strategies for enhancing income of farmers and to make them globally competitive.
3. To support extension education programme for upliftment of rural masses

PROGRAMME OUTCOMES (POs)

Students graduating with the B.Sc. (Hons.) Agriculture degree should be able to acquire

PO-1: To provide the sound knowledge in the agriculture and allied science subjects required to solve common problems in management of crop cultivation, improvement, livestock rearing and their marketing.

PO-2: Able to recognize and examine the relationships between inputs and outputs in their agricultural field to make effective and profitable decisions. To understand the process of entrepreneurship.

PO-3: Understand the impact of the professional agricultural solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

PO-4: To demonstrate research-based knowledge of the legal and ethical environment impacting agriculture organizations and exhibit an understanding and appreciation of the ethical implications of decisions.

PO-5: To demonstrate an ability to engage in critical thinking by analysing situations and constructing and selecting viable solutions to solve problems. Ability to work effectively with others. To develops analytical ability and team work spirit.

PO-6: To understand and analyse the current events and issues that are occurring in agriculture and how they affect futuristic agriculture.

PO-7: Understand how all aspects of agriculture combine and are used by scientists, marketers, producers and understand how employer characteristics and decision-making at various levels enhance the success of an agricultural enterprise. To understand components of agri-business and economics of market.

PO-8: Able to demonstrate critical thinking and problem-solving skills as they apply to a variety of animal and or plant production systems. To understand problem solving skills in crop production and animal husbandry.

PO-9: Knowledge of Weather codes and Symbols, Reading and Recording of weather and climatic data. To get trained for climatologically records, soil data and soil nutrition

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PO-10: To develop critical and self-critical opinion and approach aiming at solving the most important practical problems in the field of agriculture to develop competence to work in Government, public and private sectors

PO-11: Demonstrate knowledge and understanding in horticulture section: Current applications of horticultural principles and practices: propagation, pest management, production, maintenance, and business practices. Comprehensive knowledge of horticultural production

PO-12: This programme will also help students to enhance their employability for jobs in different sectors

PROGRAMME SPECIFIC OUTCOME (PSOs)

1. To provide knowledge from ancient to modern agricultural practices
2. To impart in-depth practical knowledge in crop cultivation practices
3. To give detailed knowledge about agri-allied sectors
4. To provide knowledge on working of different farm implements
5. To serve the rural agricultural population
6. To disseminate recent agricultural technologies through extension.
7. Detailed knowledge on various agri-business activities through student READY program

COURSE OUTCOME (COs)

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Course Code	Discipline/Course title	Credit Hrs
	Agronomy	
AGR-111	Fundamentals of Agronomy	4(3+1)
AGR-112	Introduction to Forestry	2(1+1)
AGR-121	Fundamentals of Crop Physiology	2(1+1)
AGR- 211	Environmental Studies & Disaster Management	3(2+1)
AGR-212	Crop Production Technology – I (*Kharif* crops)	3(2+1)
AGR-221	Crop Production Technology – II (*Rabi* crops)	3(2+1)
AGR-223	Farming System & Sustainable Agriculture	1(1+0)
AGR-224	Introductory Agro-meteorology & Climate Change	2(1+1)
AGR-311	Geoinformatics and Nanotechnology and Precision Farming	2(1+1)
AGR-312	Practical Crop Production - I *(Kharif* crops*)*	2(0+2)
AGR-321	Rainfed Agriculture & Watershed Management	2(1+1)
AGR-322	Practical Crop Production - II *(Rabi* crops*)*	2(0+2)
AGR-323	Principles of Organic Farming	2(1+1)
	Genetics & Plant Breeding	
GPB-121	Fundamentals of Genetics	3(2+1)
GPB-211	Fundamentals of Plant Breeding	3(2+1)
GPB-221	Principles of Seed Technology	3(1+2)
GPB-311	Crop Improvement-I (*Kharif* crops)	2(1+1)
GPB-321	Crop Improvement-II (*Rabi* crops)	2(1+1)

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Head
Department of Genetics and Plant Breeding
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	Agricultural Engineering	
AGE-112	Farm Machinery and Power	2(1+1)
AGE-121	Soil and Water Conservation Engineering	2(1+1)
~~AGE-211~~	~~Environmental Studies & Disaster Management~~	3(2+1)
AGE-222	Renewable Energy and Green Technology	2(1+1)
AGE-322	Post-harvest Management and Value Addition of Fruits and Vegetables	2(1+1)
	Basic Science	
BAS-111	Comprehension & Communication Skills in English (Gradial course)	2(1+1)
BAS-212	Agri- Informatics	2(1+1)
BAS-213	Statistical Methods	2(1+1)
BAS-312	Intellectual Property Rights	1(1+0)
	Soil Science and Agricultural Chemistry	
SAC-111	Fundamentals of Soil Science	3(2+1)
SAC-121	Agricultural Microbiology	2(1+1)
SAC-211	Environmental Studies & Disaster Management	3(2+1)
SAC-221	Problematic soils and their Management	2(2+0)
	Soil Fertility Management	
SAC-311	Manures, Fertilizers and Soil Fertility Management	3(2+1)
	Entomology	
ENT-121	Fundamentals of Entomology	4(3+1)
ENT-311	Pests of Crops and Stored Grain and their Management	3(2+1)
ENT-321	Management of Beneficial Insects	2(1+1)
	Agricultural Economics	
AAE-121	Fundamentals of Agricultural Economics	2(2+0)
AAE-221	Agricultural Marketing Trade & Prices	3(2+1)
AAE-311	Agricultural Finance and Co-Operation	3(2+1)
AAE-312	Entrepreneurship Development and Business Communication	2(1+1)
AAE-321	Farm Management, Production & Resource Economics	2(1+1)
	Plant Pathology	
PPA-121	Fundamentals of Plant Pathology	4(3+1)
PPA-211	Diseases of Field and Horticultural Crops and their Management-I	3(2+1)
PPA-312	Principles of Integrated Pest and Disease Management	3(2+1)
PPA-321	Diseases of Field and Horticultural Crops and their Management-II	3(2+1)
	Horticulture	
HOR-111	Fundamentals of Horticulture	2(1+1)
HOR-211	Production Technology for Vegetables and Spices	2(1+1)
HOR-221	Production Technology for Ornamental Crops, MAP and Landscaping	2(1+1)
HOR-222	Production Technology for Fruit and Plantation Crops	2(1+1)
HOR-321	Protected Cultivation and Secondary Agriculture	2(1+1)
	Agricultural Extension and Communication	
AEC-112	Rural Sociology & Educational Psychology	2(2+0)
AEC-121	Fundamentals of Agricultural Extension Education	3(2+1)
AEC-211	Communication Skills and Personality Development	2(1+1)
AEC-312	Entrepreneurship Development and Business Communication	2(1+1)

Head
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Head
Deptt. of Agricultural Engg.
S.V.P.U.A. & T., Meerut (U.P.)

Professor & Head
Department of Basic Sciences
S.V.P.U.A. & T., Meerut (U.P.)

Head
Deptt of Soil Science & Agricultural Chemistry
S.V.P. Uni. of Ag. & Tech. Meerut-250110

Head
Deptt. of Entomology
S.V.P.U.A. & T., Meerut-250110

24.11.22
Head
Agril.Economics

Head (Plant Pathology)

Prof. Sunil Dutt
HOD, Horticulture

Head
Deptt. of Agril. Extn. & Commun.
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	Agricultural Biotechnology		
AGB-111	Fundamentals of Plant Biochemistry and Biotechnology		3(2+1)
	Animal Production		
AAP-211	Livestock and poultry Management		2(1+1)
AAP-212	Principles of Animal Nutrition		2(1+1)
AAP- 221	Breeding and Improvement of Farm Animals		2(1+1)
	Remedial Courses		
UGR-111	Agricultural Heritage	Department of Agronomy	1(1+0)
UGR-112	Introductory Biology	Department of Basic Science	2(1+1)
UGR-113	Elementary Mathematics	Department of Basic Science	2(2+0)
	Non-Gradial Courses		
NCC-111	National Cadet Corps		2(0+2)
NSS-111	National Service Scheme		2(0+2)
PEY-111	Physical Education & Yoga Practices		2(0+2)
BAS – 113 /AEC-113	Human Values & Ethics		1(1+0)
NGC - 321	Educational Tour		2(0+2)

Head Department of Biotechnology

Professor & Head Department of A.H.

Semester-wise distribution of courses

Course code	I Semester	
HOR-111	Fundamentals of Horticulture	2 (1+1)
AGB-111	Fundamentals of Plant Biochemistry and Biotechnology	3 (2+1)
SAC-111	Fundamentals of Soil Science	3 (2+1)
AGR-112	Introduction to Forestry	2 (1+1)
BAS-111	Comprehension & Communication Skills in English	2 (1+1)
AGR-111	Fundamentals of Agronomy	4 (3+1)
UGR-112	Introductory Biology*/	2 (1+1)
UGR-113	Elementary Mathematics*	2 (2+0)*
UGR-111	Agricultural Heritage*	1(1+0)*
AEC-112	Rural Sociology & Educational Psychology	2 (2+0)
BAS – 113 / AEC-113	Human Values & Ethics (non gradial)	1(1+0)**
NCC-111/ NSS-111/PEY-111	NSS/NCC/Physical Education & Yoga Practices**	1 (0+1)**
TOTAL *R: Remedial course; **NC: Non-gradial courses		**18 (12 + 6) 03*+02****

Course code	II Semester	
GPB-121	Fundamentals of Genetics	3(2+1)
SAC-121	Agricultural Microbiology	2(1+1)

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AGE-121	Soil and Water Conservation Engineering	2(1+1)
AGR-121	Fundamentals of Crop Physiology	2(1+1)
AAE-121	Fundamentals of Agricultural Economics	2(2+0)
PPA-121	Fundamentals of Plant Pathology	4(3+1)
ENT-121	Fundamentals of Entomology	4(3+1)
AEC-121	Fundamentals of Agricultural Extension Education	3(2+1)
AGE-122	Farm Machinery and Power	2 (1+1)
	Total	**24(16+8)**

Course code	III Semester	
AGR-212	Crop Production Technology – I *(Kharif Crops)*	3 (2+1)
GPB-211	Fundamentals of Plant Breeding	3 (2+1)
PPA-211	Diseases of Field and Horticultural Crops and their Management -I	3 (2+1)
AEC-211	Communication Skills and Personality Development	2(1+1)
BAS-212	Agri- Informatics	2(1+1)
HOR-211	Production Technology for Vegetables and Spices	2 (1+1)
AGE-211 / SAC -211 / AGR- 211	Environmental Studies and Disaster Management	3(2+1)
BAS-213	Statistical Methods	2(1+1)
AAP-211	Livestock and Poultry Management	2 (1+1)
AAP- 212	Principles of Animal Nutrition	2(1+1)
NCC-111/ NSS-111/PEY-111	NSS/NCC/Physical Education & Yoga Practices**	1 (0+1) **
	TOTAL **NC: Non-gradial courses Total	**24(14+10)**

Course code	IV Semester	
AGR-221	Crop Production Technology –II *(Rabi Crops)*	3(2+1)
HOR-221	Production Technology for Ornamental Crops, MAP and Landscaping	2(1+1)
AGE-222	Renewable Energy and Green Technology	2(1+1)
SAC-221	Problematic Soils and their Management	2(2+0)
HOR-222	Production Technology for Fruit and Plantation Crops	2(1+1)
GPB-221	Principles of Seed Technology	3(1+2)
AGR-223	Farming System & Sustainable Agriculture	1(1+0)
AAE-221	Agricultural Marketing Trade & Prices	3(2+1)
AGR-224	Introductory Agro-meteorology & Climate Change	2(1+1)
AAP-221	Breeding & Improvement of Farm Animals	2(1+1)
UGE-221	Agribusiness Management*	3(2+1)
UGE-222	Agrochemicals*	3(2+1)
UGE-223	Commercial Plant Breeding*	3(1+2)
UGE-224	Landscaping*	3(2+1)
	TOTAL *Elective Course	**22(13+9) + 3***

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Course code	V Semester	
AAE-311	Agricultural Finance and Cooperation	3 (2+1)
SAC-311	Manures, Fertilizers and Soil Fertility Management	3 (2+1)
ENT-311	Pests of Crops and Stored Grain and their Management	3 (2+1)
PPA-312	Principles of Integrated Pest and Disease Management	3(2+1)
GPB-311	Crop Improvement-I *(Kharif Crops)*	2 (1+1)
AEC-312 / AAE- 312	Entrepreneurship Development and Business Communication	2 (1+1)
AGR-311	Geo informatics and Nano-technology and Precision Farming	2 (1+1)
AGR-312	Practical Crop Production – I (*Kharif* crops)	2 (0+2)
BAS-312	Intellectual Property Rights	1(1+0)
UGE-311	Food Safety and Standards*	3(2+1)
UGE312	Biopesticides & Biofertilizers*	3(2+1)
UGE-313	Protected Cultivation*	3(2+1)
UGE-314	Micro propagation Technologies*	3(1+2)
	TOTAL *Elective Course	**21(12+09) + 3***
Course code	**VI Semester**	
AGR-321	Rainfed Agriculture & Watershed Management	2 (1+1)
HOR-321 / AGE-321	Protected Cultivation and Secondary Agriculture	2 (1+1)
PPA-321	Diseases of Field and Horticultural Crops and their Management-II	3 (2+1)
AGE-322 / HOR-322	Post-harvest Management and Value Addition of Fruits and Vegetables	2 (1+1)
ENT-321	Management of Beneficial Insects	2 (1+1)
GPB-321	Crop Improvement-II *(Rabi crops)*	2 (1+1)
AGR-322	Practical Crop Production –II (*Rabi* crops)	2 (0+2)
AGR-323	Principles of Organic Farming	2 (1+1)
AAE-321	Farm Management, Production & Resource Economics	2 (1+1)
UGE-321	Hi-tech. Horticulture*	3(2+1)
UGE-322	Weed Management*	3(2+1)
UGE-323	System Simulation and Agro-advisory*	3(2+1)
UGE-324	Agricultural Journalism*	3(2+1)
NGC - 321	Educational Tour**	2(0+2)
	TOTAL *Elective Course, **NC: Non-gradial courses	**19(9 + 10)+ 3*+2****

VII Semester		
Activities	**No. of weeks**	**Credit Hours**
Rural Agricultural Work Experience and Agro-industrial Attachment(RAWE & AIA) READY-Component-I		14
RAWE- 411 (Rural Agricultural Work Experience)		

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1. General orientation & On campus training by different faculties	1	
2. (a) Village attachment training programme	8	
i. Orientation and Survey of Village		
ii. Agronomical Interventions		
iii. Plant Protection Interventions		
iv. Soil Improvement Interventions (Soil sampling and testing)		
v. Fruit and Vegetable production interventions		
vi. Food Processing and Storage interventions		
vii. Animal Production Interventions		
viii. Extension and Transfer of Technology activities		
(b) Attachment in University/College/KVK/research Station	5	
READY- Component –II		
AIA- 412 (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.	3	4
Plant Clinic • Seed/Sampling production, Pesticide/insecticide, post harvest industries, processing- value addition, Agri -finance institutions etc.	2	2
Activities and Tasks during Agro-Industrial Attachment Programme		
i. Acquaintance with industry and staff		
ii. Study of structure, functioning, objective and mandates of the industry		
iii. Study of various processing units and hands-on trainings under supervision of industry staff		
iv. Ethics of industry		
v. Employment generated by the industry		
vi. Contribution of the industry promoting environment		
vii. Learning business network including outlets of the industry		
viii. Skill development in all crucial tasks of the industry		
ix. Documentation of the activities and task performed by the students		
x. Performance evaluation, appraisal and ranking of students		
Total		**20**

VII

I Semester READY- Component –III (Experiential Learning Programme)Modules for Skill Development and Entrepreneurship

A student has to register 20 credits opting for two modules of (0+10) credits each

(total 20credits) from the package of modules in the VIII Semester

Course code	Title of module	Department	Credits
ELP-421	Production Technology for Bio-agents and Biofertilizer	Soil Science & Agricultural Chemistry	0+10
ELP-422	Seed Production Technology	Genetics & Plant Breeding	0+10

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ELP-423	Mushroom Cultivation Technology	Plant Pathology	0+10
ELP-424	Soil,Plant,Water and Seed Testing	Soil Science & Agrl chem	0+10
ELP-425	Commercial Beekeeping	Entomology	0+10
ELP-426	Poultry Production Technology	Animal Production	0+10
ELP-427	Commercial Horticulture	Horticulture	0+10
ELP-428	Floriculture and Landscaping	Horticulture	0+10
ELP-429	Food Processing	Agricultural Engineering	0+10
ELP-430	Agriculture Waste Management	Agricultural Engineering	0+10
ELP-431	Organic Production Technology	Agronomy	0+10
ELP-432	Commercial Sericulture	Entomology	0+10

Grand Total (Credit Hours) = 185

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

S.N.	Course Code	Courses	Department	Credit Hours
IV Semester				
1.	UGE-221	Agribusiness Management	Agricultural Economics	3(2+1)
2.	UGE-222	Agrochemicals	Soil Science & AgriculturalChemistry	3(2+1)
3.	UGE-223	Commercial Plant Breeding	Genetics & Plant Breeding	3(1+2)
4.	UGE-224	Landscaping	Horticulture	3(2+1)
V Semester				
1.	UGE-311	Food Safety and Standards	Agricultural Engineering	3(2+1)
2.	UGE-312	Bio-pesticides & Bio-fertilizers	Soil Science & AgriculturalChemistry	3(2+1)
3.	UGE-313	Protected Cultivation	Horticulture	3(2+1)
4.	UGE-314	Micro propagation Technologies	Horticulture	3(1+2)
VI Semester				
1.	UGE-321	Hi-tech. Horticulture	Horticulture	3(2+1)
2.	UGE-322	Weed Management	Agronomy	3(2+1)
3.	UGE-323	System Simulation and Agro-advisory	Soil Science & AgriculturalChemistry	3(2+1)
4.	UGE-324	Agricultural Journalism	Agriculture Extension & Communication	3(2+1)

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Course Outcome:

AGR-111 Fundamentals of Agronomy Course Outcomes

CO.1: In modern terminology however, the word has come to mean and denote a branch of science dealing with all aspects of crop cultivation and production.

CO.2: A study of agronomy often involves a summoning of resources from related disciplines such as Botany, Soil Science, Irrigation, plant protection, Plant Genetics and Breeding, Agro- meteorology etc.

CO.3: In a more fundamental sense it can be categorized as an applied Science, the object of which is crop cultivation and management for the purpose of producing food for humans, feed for animals as well as raw materials for the industry.

CO.4: Knowledge about Indian Agriculture and importance, present status, scope and future prospect.

CO.5 Cropping seasons of India. Soil formation, classification, physical, chemical properties. Identification of important crops and crop seeds.

AGR-112 Introduction to Forestry Course outcome-

CO.1. Students will understand recognize various harvesting, transportation, and processing systems used in the management of forest resources and production of forest products CO.2. Students will understand develop and evaluate management plans with multiple objectives and constraints.

CO.2. Students will learn how to develop and apply silvicultural prescriptions appropriate to management objectives.

CO.3. Students will understand analyse forest inventory information and project future forest, stand, and tree conditions

AGR-121- (Fundamentals of Crop Physiology). Course Outcome:

CO-1: Role of crop physiology in crop health.

CO-2: Identification of deficiency symptoms of nutrients.

CO-3: To understand the metabolic and synthetic pathway of biomolecules.

CO-4: To know the difference between C3, C4 and CAM plant.

AGR- 211 Environmental Studies and Disaster Management (to be shared with Soil Science & Agril. Chemistry)

CO1: Appreciate concepts and methods from ecological and physical sciences and their application in environmental problem solving. Interdisciplinary branches of environment and their scopes.

CO2: Concepts of natural resources, Food resources, mineral resources, Concept of non-Conventional energy resources, types and various applications of renewable resources and current potentials of energy resources.

CO3: Ecosystem Links between environmental components and their role and types of ecosystems.

CO4: Types of biodiversity, their values, depletion and conservation methods.

CO5: Basic Structure of atmosphere and their functions Current problems related issues context in solving environmental issues such as environmental health, food and agriculture, energy, waste and

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pollution, climate change, management, Basic knowledge about water recourses, current problems related issues, water borne diseases, technologies of water treatment.

CO6: Composition of solid waste, sources of generation, collection and disposal methods of solid waste, recycling, reuse of wastes.

CO7: Urban problems related to energy, Water conservation, rain water harvesting, watershed management. Environmental ethics: Issues and possible solutions, climate change, global warming, acid rain, ozone layer depletion.

CO8: Public awareness. Human Population and the Environment: population growth, variation among nations, population explosion, Family Welfare Programme. Environment and human health: Human Rights, Value Education, HIV/AIDS. Women and Child Welfare. Role of Information Technology in Environment and human health.

CO9: Meaning and nature of natural disasters, their types and effects and management

AGR-212 Practical Crop Production – I (Kharif crops) Course Outcome

CO.1: In the course study students will be acquainted with the knowledge of profitable crop production technology.

CO.2: Course content will help to students/farmers about ruminative crop production techniques.

CO.3. It helps to adopt diversified farming system according to available farming situation.

CO.4. It will assist to encourage the sustainable agriculture system.

CO.5. Profitable based farming system can we adopted with the help of course content

AGR-221 Practical Crop Production – II (Rabi crops) Course Outcome

CO.1: In the course study students will be acquainted with the knowledge of profitable crop production technology.

CO.2: Course content will help to students/farmers about ruminative crop production techniques.

CO.3. It helps to adopt diversified farming system according to available farming situation.

CO.4. It will assist to encourage the sustainable agriculture system.

CO.5. Profitable based farming system can we adopted with the help of course content

AGR-223 Farming System & Sustainable Agriculture Course Outcomes: -

CO1 The student will be able to explain the major aspects of agricultural practices and traditions through time and throughout the world.

CO2 The student will be able to explain in general the relationships among culture, economics, politics, science, and agricultural development.

CO3 A solid understanding of the cross-cultural interactions and exchange that linked the world's people and facilitated agricultural development is also expected.

CO4 The student will study and analyze the refereed-journal articles, texts, and practices that represent the perspectives of different societies and agricultural traditions.

AGR-224 Introductory agro meteorology & Climate change Outcome

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CO.1: To understand roles of agrometeorology in agriculture and its relation to other areas of agriculture to acquaint with recent developments in agrometeorology with historical development of climate change.

CO.2: Agrometeorology or Agricultural meteorology studies meteorological and hydrological factors in relation to agriculture.

CO.3: Agrometeorology studies the behavior of the weather elements that have direct relevance to agriculture and their effect on crop production.

CO.4: Weather and climate are the factors determining the success or failure of agriculture.

AGR-311 Geoinformatics and Nanotechnology and Precision Farming Course Outcomes

CO.1: Maximization of input use efficiency in agriculture through recent technology like precision agriculture, nanoscience and geoinformatics. The concept of "doing the right thing in the right place at the right time" has a strong intuitive appeal which gives farmers the ability to use all operations and crop inputs more effectively.

CO.2: More effective use of inputs results in greater crop yield and/or quality, without polluting the environment.

CO.3: Precision agriculture can address both economic and environmental issues that surround production agriculture today.

CO.4: Encourage the farmers to study of spatial and temporal variability of the input parameters using primary data at field level.

CO.5: Creating awareness amongst farmers about consequences of applying imbalanced doses of farm inputs like irrigation, fertilizers, insecticides and pesticides.

AGR-312 Practical Crop Production – I (Kharif crops) Course Outcome

CO.1: In the course study students will be acquainted with the knowledge of profitable crop production technology.

CO.2: Course content will help to students/farmers about ruminative crop production techniques.

CO.3. It helps to adopt diversified farming system according to available farming situation.

CO.4. It will assist to encourage the sustainable agriculture system.

CO.5. Profitable based farming system can we adopted with the help of course content

AGR-321 Rainfed Agriculture & Watershed Management Course Outcomes

CO.1.The term Rain fed agriculture is used to describe farming practices that rely on rainfall for water.

CO.2. A major study into water use by agriculture, known as the Comprehensive Assessment of Water Management in Agriculture, coordinated by the International Water Management Institute, noted a close correlation between hunger, poverty and water. However, it concluded that there was much opportunity to raise productivity from rainfed farming.

CO.3 Rainfall water can be use for a larger area by suitable watershed management techniques CO.4. Conservation of soil by adopting latest soil conservation techniques will help in obtaining higher production of Rainfed crops.

AGR-322 Practical Crop Production – II (Rabi crops) Course Outcome

CO.1: In the course study students will be acquainted with the knowledge of profitable crop production technology.

CO.2: Course content will help to students/farmers about ruminative crop production techniques.

CO.3. It helps to adopt diversified farming system according to available farming situation.

CO.4. It will assist to encourage the sustainable agriculture system.

CO.5. Profitable based farming system can we adopted with the help of course content.

AGR-323 Principles of Organic Farming Course Outcomes

CO.1. Initiative from Government for organic produce.

CO.2.Role of NGOs in producing organic products. CO.3 Selection of crops and varieties for organic produce CO.4.Certification of organic produce.

Genetics & Plant Breeding

GPB-121 Fundamentals of Genetics Course outcomes: -

CO-1: Comprehensive, detailed understanding of the chemical basis of heredity specially in crop plants to improve and develop the new varieties of plants.

CO-2: Understanding of how genetic concepts affect broad societal issues including health and disease, food and natural resources, environmental sustainability, etc.

CO-3: The knowledge required to design, execute, and analyze the results of genetic experimentation in plant systems.

CO-4: Insight into the mathematical, statistical, and computational basis of genetic analyses that use genome-scale data sets in systems biology settings.

CO-5: Understanding the role of genetic technologies in industries related to biotechnology, pharmaceuticals, energy, and other fields.

GPB-211 Fundamentals of Plant Breeding Course Outcome:

CO-1: Establish the commercial plant breeding company to developed new superior crops varieties.

CO-2: Develop the insect and disease resistant varieties for environment friendly management of disease and insect.

CO-3: Serve the quality food in the market by developing high nutritive varieties.

CO-4: Increase the farm yield to get higher income on farm by developing higher yield crop varieties.

CO-5: start a consultant company to guide & supply the better varieties to the farmers.

GPB-221 Principles of Seed Technology Course Outcomes: -

CO-1: Start a seed production program for fill full the requirement of quality seed in market and increase the income.

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CO-2: Storage the pure variety seed to avoid the availability crises of pure variety seed due to adverse environmental conditions.

CO-3: To supply the disease-free seed in the market to get the environment friendly cultivation of crops.

CO-4: To increase the farm income by producing high yielding disease free quality seed and decrease the cost of cultivation also.

CO-5: Production of hybrid seed of different crops to increase the farm income.

GPB-311 Crop Improvement-I (Kharif crops) Course Outcomes

CO-1: In this course Students learn importance of wild relative to produce new varieties of kharif crop.

CO-2: Learner learns Gene preservation method for further use to improve kharif crops.

CO-3: Learner learns to applies breeding method to improve kharif crops.

CO-4: Learner learns identification of resistance gene relate to kharif crop with high yield potential against Pest and pathogen and utilization genes.

CO-5: Learner learns new genetic approaches to achieve a definite ideotype of khaif crop.

GPB-321 Crop Improvement-II (Rabi crops)

Course Outcomes:

CO-1: In this course Students learn importance of wild relative to produce new varieties of Rabi crop.

CO-2: Learner learns Gene preservation method for further use to improve Rabi varieties.

CO-3: Learner learns to applies breeding method to improve Rabi crops.

CO-4: Learner learns identification of resistance gene relate to Rabi crop with high yield potential against Pest and pathogen and utilization genes.

CO-5: Learner learns new genetic approaches to achieve a definite ideotype of Rabi crop.

Agricultural Engineering

AGE-112 Farm Machinery and Power Course Outcomes:

At the end of the course, a student will be able to understand

CO1: Various sources of farm power and their uses

CO2: about working of IC Engines and their uses in modern equipment's CO3: about various parts of tractors and their mechanism

CO4: the financial aspects of using farm power

CO5: the various implements used in agriculture farm for various purposes.

AGE-121 Introductory Soil and Water Conservation Engineering Course Outcome:

CO-1: various causes of soil erosion and forms of water erosion, classification of gully control measures or structures.

CO-2: Course will give the knowledge of soil loss equation and it can estimate long - term annual soil loss and guide conservationists on proper cropping, management, and conservation practices.

CO-3: This course will help the students to learn about Contour strip cropping designed to minimize soil erosion and Contour bunds which can save soils from erosion.

CO-4: By this course student get the knowledge about Grassed waterways designed to move surface water across farmland without causing soil erosion and various water harvesting techniques.

CO-5: Students will be able to understand the wind erosion, centrifugal pumps and various pressurized irrigation methods. So overall the importance of this technology in farm is given to students by teaching this course.

AGE-211 Environmental Studies and Disaster Management

At the end of the course, the student will be able to:

CO1: Appreciate concepts and methods from ecological and physical sciences and their application in environmental problem solving. Interdisciplinary branches of environment and their scopes.

CO2: Concepts of natural resources, Food resources, mineral resources, Concept of non-Conventional energy resources, types and various applications of renewable resources and current potentials of energy resources.

CO3: Ecosystem Links between environmental components and their role and types of ecosystems.

CO4: Types of biodiversity, their values, depletion and conservation methods.

CO5: Basic Structure of atmosphere and their functions Current problems related issues context in solving environmental issues such as environmental health, food and agriculture, energy, waste and pollution, climate change, management, Basic knowledge about water recourses, current problems related issues, water borne diseases, technologies of water treatment.

CO6: Composition of solid waste, sources of generation, collection and disposal methods of solid waste, recycling, reuse of wastes.

CO7: Urban problems related to energy, Water conservation, rain water harvesting, watershed management. Environmental ethics: Issues and possible solutions, climate change, global warming, acid rain, ozone layer depletion.

CO8: Public awareness. Human Population and the Environment: population growth, variation among nations, population explosion, Family Welfare Programme. Environment and human health: Human Rights, Value Education, HIV/AIDS. Women and Child Welfare. Role of Information Technology in Environment and human health.

CO9: Meaning and nature of natural disasters, their types and effects and management.

AGE-222 Renewable Energy and Green Technology Course Outcomes-

CO1: To understand the role of renewable sources in agriculture sector.

CO2: To understand the bio fuel production and their applications in today's world. CO3: To understand and utilizing the solar energy in various aspects.

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AGE-322 Post-harvest Management and Value Addition of Fruits and Vegetables Course outcome-

Co.1- Understand the post-harvest technology of horticultural crops.

Co.2- Understand the value addition of horticulture crops.

Co.3-U the work space, tool and equipment design for PHT and value addition.

Co.4- study the various certification and accreditation i.e. FPO, ISO and other levelling.

Basic Science

BAS-111 Comprehension and Communication Skill in English Course Outcome (COs):

At the end of the course students will be able to understand:

CO1: Students will identify and explain their goals to the semester and also identify the needs of communication helps us meet. They will able to understand the common misconceptions about communication and the reasons, people use language.

CO2: Students can differentiate the action, interaction and transaction models of communication. They can define the process of both perception and listening. Students can recall the importance of listening effectively and can identify strategies for communicating the cultural awareness.

CO3: Students will able to introduce themselves to the class and begin getting to know one another and will apply communication strategies by preparing and participating in class discussion.

CO4: Students will prepare and present messages with the intent of persuading an audience. Students will able to analyze basic communication skills, intercultural communication skills, interpersonal communication skills and public- speaking skills.

CO5: Students can demonstrate critical and innovative thinking. Display competence in oral, written and visual communication. They can able to use current technology related to the communication field.

BAS-212 Intellectual Property Rights Course Outcomes:

1.Skill to understand the concept of intellectual property rights.

2.Develops procedural knowledge to Legal System and solving the problem relating to intellectual property rights.

3.Skill to pursue the professional programs in Company Secretaryship, Law, Business, Agriculture, International Affairs, Public Administration and Other fields.

4.Employability as the Compliance Officer, Public Relation Officer and Liaison Officer.

5.Establishment of Legal Consultancy and service provider.

Soil Science and Agricultural Chemistry

SSAC-111 Fundamentals of Soil Science Course Outcomes:

At the end of the course, Students will be able to understand:

CO1: To be able about physical and chemical properties of soil and their effect on plant's health.

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CO2: To aware the students about causes, effects and remedies to prevention and mitigation of soil pollution.

CO3: Knowledge about soil forming rocks and minerals, their weathering and soil forming processes and climatic factors affect them.

SSAC-121 Agricultural Microbiology (Course to be shared with Plant Pathology) Course Objectives

Course Outcome

CO1 Student will understand the basic microbial structure, function and study the comparative characteristics of prokaryotes and eukaryotes.

CO2 To know the various Physical and Chemical growth requirements of bacteria

CO3 Impart knowledge about production of beneficial bacteria.

SSAC-211 Environmental Studies and Disaster Management (to be shared with Soil Science & Agril. Chemistry)

At the end of the course, the student will be able to:

CO1: Appreciate concepts and methods from ecological and physical sciences and their application in environmental problem solving. Interdisciplinary branches of environment and their scopes.

CO2: Concepts of natural resources, Food resources, mineral resources, Concept of non-Conventional energy resources, types and various applications of renewable resources and current potentials of energy resources.

CO3: Ecosystem Links between environmental components and their role and types of ecosystems.

CO4: Types of biodiversity, their values, depletion and conservation methods.

CO5: Basic Structure of atmosphere and their functions Current problems related issues context in solving environmental issues such as environmental health, food and agriculture, energy, waste and pollution, climate change, management, Basic knowledge about water recourses, current problems related issues, water born diseases, technologies of water treatment.

CO6: Composition of solid waste, sources of generation, collection and disposal methods of solid waste, recycling, reuse of wastes.

CO7: Urban problems related to energy, Water conservation, rain water harvesting, watershed management. Environmental ethics: Issues and possible solutions, climate change, global warming, acid rain, ozone layer depletion.

CO8: Public awareness. Human Population and the Environment: population growth, variation among nations, population explosion, Family Welfare Programme. Environment and human health: Human Rights, Value Education, HIV/AIDS. Women and Child Welfare. Role of Information Technology in Environment and human health.

CO9: Meaning and nature of natural disasters, their types and effects and management.

SSAC-221 Problematic soils and their Management Course Outcomes:

CO1: To provide knowledge about waste land and problematic soils in India and management of the soils.

CO2: Knowledge of different reclamation and management practices for the development of the soils.

CO3: To Understand different factors responsible for saline, sodic and acidic soils and their properties.

SSAC-311 Manures, Fertilizers and Soil Fertility Management Course Outcome:

CO1: Knowledge of different manure and fertilizers used in different crops according to soil condition

CO2: To understand essentiality of plant nutrients and mechanism of nutrient transport to plant and factor affecting nutrient availability.

CO3: To be able about procedure of soil testing and establish soil testing laboratory in future as a entrepreneur.

Entomology

ENT-121 (Fundamentals of Entomology)

Course Outcome:

CO 1: To be able to identify morphological characteristics, feeding habit and habitat of agriculturally important insect-pest.

CO 2: To be able to apply concepts and analytical approaches in evolutionary biology, genetics and other areas of insect biology of the student's choice.

CO 3: To be able to categorize insects based on basic ecological, behavioural, morphological, physiological, or developmental attributes.

CO 4: To be able to examine insects deeply within a biological level of analysis and make strategies for successful pest management strategy.

CO 5: To be able to understand about different families and orders of class Insect a which cause economic losses for human beings.

ENT-311 (Pests of Crops and Stored Grains and Their Management) Course Outcome:

CO1: Familiarized with identification of different insect pest of field, horticulture, ornamentals, vegetables and stored grains at the field level.

CO 2: Understand how insects affect animal and Plant health and agricultural production, and be able to safely manipulate populations of beneficial and destructive species in habitats and in production agro-ecosystems with minimal environmental impact.

CO 3: To be able about the biology, diversity, distribution of insects, and their relationships to crop and the environment condition of a particular area.

CO 4: To understand identification of nature of damage and symptoms caused by the pest so suitable technique of pest management can be apply for effective control.

CO 5: Management of crop pest through Integrated Pest Management approach without side effect on plant, animal and environment health.

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ENT-321 (Management of Beneficial Insects) Course Outcomes:

CO 1: Students can adopt apiculture, sericulture and lac culture as an entrepreneur according to agro climatic zone.

CO 2: To understand commercial methods of rearing, equipment, seasonal management, insect- pest and disease and important species for commercial use of honey bee, silkworm and lac insect.

CO 3: Identification of different bio control agents (Predator, Parasite and Parasitoids) and their use for sustainable pest management.

CO 4: Learn about mass multiplication technique of biological control agents and established a bio control lab in future as an entrepreneur.

Agricultural Economics

AAE-121 (Fundamentals of Agricultural Economics) Course Outcome:

CO-1: Identify elements of business success in agriculture and food-processing as well as elements that determine economic role of agriculture in national economy.

CO-2: Propose methods of micro- and macroeconomic decision making in agriculture in different agro-ecological and agro-economic circumstances.

CO-3: Describe and explain models of production, supply and demand of agricultural and food products on national and international markets

CO-4 :Understand the concepts of consumer choice and how it affect the farm / ranch level agriculture firm.

CO-5: understand the macroeconomics aspects of the economy as they affect the agricultural sector.

CO-6: apply economics principles to understand the conduct and performance of the agricultural industry.

AAE-311 (Agricultural Finance and Co-Operation) Course Outcome:

CO-1: Explain the broad feature of Indian financial institutions with instruments to control credit in the country.

CO-2: Effectively narrate the kinds and components of money with its regulatory system. Be aware of the functions, objectives and limitations of commercial bank.

CO-3: Identify the existence and development of non- banking financial institutions, know the important role of mutual fund. LIC investment companies etc. Utilize and effectively participate in the development process.

CO-4: Understand the conditions of financial markets and its impact in the economy.

CO-5: Understand the macroeconomics aspects of the economy as they affect the agricultural sector.

CO-6: Apply economics principles to understand the conduct and performance of the agricultural industry.

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AAE-312 Entrepreneurship Development and Business Communication Course Outcomes:

CO1 Define basic terms, Analyse the business environment in order to identify business opportunities

CO2 , Identify the elements of success of entrepreneurial ventures

CO3 Consider the legal and financial conditions for starting a business venture,

CO4 Evaluate the effectiveness of different entrepreneurial strategies,

CO5 Specify the basic performance indicators of entrepreneurial activity,

CO6 Explain the importance of marketing and management in small businesses venture,

CO7 Interpret their own business plan.

AAE-321 (Farm Management, Production & Resource Economics) Course Outcome:

CO-1: The course contains a comprehensive treatment of the traditional agricultural production economics topics employing both detailed graphics and differential calculus.

CO-2: Focus on the neoclassical factor-product, factor-factor and product- product models, and is suitable for an advanced undergraduate or a beginning graduate –level course in static production economics.

CO-3: Understand limited resources available in the economy. Realize the need to exploit and utilize through development and improvement of production techniques.

CO-4: Make them aware of the availability of rich natural endowments to achieve sustainable agricultural development with this knowledge they can challenge the problems of unemployment inequality shortage of food productions, poverty and be useful to compete advanced agricultural economies.

CO-5: Gain knowledge of the causes of regional variations in productivity and production, social and economic inequality, size of land holdings and lack of quality inputs ets. And suggest appropriate measures for the whole economy.

Plant Pathology

PPA-121 Fundamentals of Plant Pathology Course outcome

CO1- Student will acquaint about concepts of plant pathogens, major disease-causing organisms and their etiology

CO2 - To provide specific knowledge about host pathogen interactions.

CO3 -Recognition of plant disease is the first step in doing something about them. CO4 - To give specific knowledge about environment and disease development.

PPA-211 Diseases of Field and Horticultural Crops and their Management-I Course Outcome

CO-1. Student will know the common pathogens of different diseases.

CO-2. Student acquire the knowledge about etiology, and symptoms of these diseases which helps in diagnosis of the diseases of field and horticultural crops

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CO-3. By knowing means of dispersal of these diseases suitable management methods can be applied.

CO-4. Eco-friendly and economically suitable management practices may be adopted.

PPA-321 Diseases of Field and Horticultural Crops and their Management-II Course Outcome

CO1.Student will know the common pathogens of different diseases.

CO2.Student acquire the knowledge about etiology, and symptoms of these diseases which helps in diagnosis of the diseases of field and horticultural crops.

CO3.By knowing means of dispersal of these diseases suitable management methods can be applied.

CO4.Eco-friendly and economically suitable management practices may be adopted.

Horticulture

HORT-111 (Fundamentals of Horticulture) Course Outcome:

CO1. - Students will be able to identify plant vegetative structure
CO2.- Students will understands basic principles, processes and plant propagation methods. CO3.- students will understands how to propagate plant, manage and harvest a variety of plant. CO4.-students will learn how horticulture relates to the economy and environments, both currently and in the future.

HORT-211 Production Technology for Vegetables and Spices Course outcome-

CO.1Students will understand practical knowledge on specialized production techniques of vegetables and spices.

CO.2-Students understand will Importance of vegetables & spices in human nutrition improved and national economy.

CO.3- Students will knowledge about quality requirement and production and techniques CO.4-Managing skill for solving field problems.

HORT-221 Production Technology for Ornamental Crops, MAP and Landscaping Course Outcomes-

CO.1- To evaluate natural herbal products from an economic perspective. Co.2-To use medicinal and aromatic herbs sustainably.

CO.3-To set up business related to medicinal, aromatic and landscaping.

CO.4-To develop effective ideas related to collecting, processing and marketing herbal natural sources.

HORT-222 Production Technology for Fruit and Plantation Crops Course outcome-

CO.1 -To know importance of different fruit crops and plantation crops.

CO.2- Students will understand canopy architecture for higher productivity in mango and grapes. CO.3-Students will understand package of practices for the major crops like mango, banana, guava, lemon, pineapple, coffee, coconut and rubber.

CO.4- To understanding the concept of high density planting in different fruit crops.

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HORT-221 Protected Cultivation and Secondary Agriculture- Course Outcome:

CO-1: To get knowledge about green house technology, types of green houses and construction of green houses.

CO-2: Course will give the knowledge of Green house equipments, materials of construction for traditional and low cost green houses.

CO-3: This course will help the students to learn about Irrigation systems used in greenhouses, shade net house in protected cultivation.

CO-4: By this course student get the of concepts of cleaning and grading Moisture measurement.

CO-5: Students will be able to understand the Material handling equipment, principle and working.

Agricultural Extension and Communication

AEC-112 Rural Sociology & Educational Psychology Course Outcomes:

CO1: Understand concept of rural sociology, its importance in agricultural extension, characteristics of Indian rural society.

CO2: Understand social groups, social stratification, culture, social values, social control and attitudes, leadership and training.

CO3: Understand concept of educational psychology, intelligence, personality, perceptions, emotions, frustration, motivation, teaching and learning

CO4: Acquaint with characteristics of rural society, village institutions and social organizations. Select lay leaders and train them.

CO5: Assess personality types, leadership types and emotions of human beings iv. Create a training situation under village conditions.

AEC-121 Fundamentals of Agricultural Extension Education Course outcomes-

At the end of the course, a student will be able to understand –

CO1: Education; Extension Programme planning Meaning, Process, Principles and Steps in Programme Development.

CO2: Extension systems in India: Extension efforts in Pre-independence era .

CO3: New trends in agriculture extension: privatization extension.

CO4: Monitoring and evaluation – concept and definition, monitoring, and evaluation of Extension programmes, Transfer of Technology- Concept and models.

AEC-211 Communication Skills and Personality Development Course Outcomes:

CO1: Students will analyze basic communication skills.

CO2: Students will analyze intercultural communication skills.

CO3: Students will analyze interpersonal communication skills.

CO4; Students will analyze public speaking communication skills.

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AEC-312 Entrepreneurship Development and Business Communication Course Outcomes:

CO1: Define basic terms,

CO2: Analyse the business environment in order to identify business opportunities,

CO3: Identify the elements of success of entrepreneurial ventures,

CO4: Consider the legal and financial conditions for starting a business venture,

CO5: Evaluate the effectiveness of different entrepreneurial strategies,

CO6: Specify the basic performance indicators of entrepreneurial activity,

CO7: Explain the importance of marketing and management in small businesses venture,

CO8: Interpret their own business plan.

Agricultural Biotechnology

AGB-111 (Fundamentals of Plant Biochemistry and Biotechnology) Course Outcome:

At the end of the course, a student will be able to understand –

CO1. Role of cell organelles and their functions

CO2. Functions of biomolecules and their utility in cell CO3. Identify the deficiency symptoms of biomolecules CO4. Synthesis pathways of biomolecules and regulations CO5. Identification of biomolecules in given sample

CO.6 Application of plant tissue culture in crop improvement CO.7 Tackled the problems in convention breeding

CO.8 Plant tissue culture is a area of entrepreneurship.

Animal Production

AAP-211 (Livestock and Poultry Management) Course Outcome:

CO-1: Develop and evaluate animal production and management systems by integrating knowledge of animal genetics, nutrition, reproduction, and other relevant disciplines and applying scientific and quantitative reasoning to solve real-world challenges.

CO-2: Locate, critically evaluate, and apply information from scholarly animal science literature and other sources to expand personal understanding and knowledge of animal sciences, providing a foundation for lifelong learning.

CO-3: Create and interpret graphs, tables and diagrams illustrating scientific data and concepts, and understand basic concepts relating to the design and analysis of research in the animal sciences.

CO-4: Communicate effectively about animal sciences to a range of audiences, both orally and in writing, using appropriate traditional and emerging media.

CO-5: Engage actively and effectively in discussion of complex issues relevant to the animal sciences by understanding and appreciating:

a. the importance of animals to the health and well-being of society;

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b. economic, environmental, animal welfare, and societal impacts of animal production and management systems at the global and local level;

c. varied ethical perspectives on animal practices;

d. the role of science in informing debates.

CO-6: Appreciate the breadth and depth of professional opportunities in animal sciences relating to:The keeping of animals for food and fiber production and other purposes (e.g., companionship, research and teaching, biotechnology, sports, species conservation);The application of scientific principles to animal breeding, reproduction, feeding, growth and development, health management, housing, handling, and end – product safety and quality.

Remedial Courses

UGR-111 Agricultural Heritage Course Outcomes:

CO1. Ancient Agricultural Practices & Its relevant to modern agriculture practices.

CO2 Traditional Technical Knowledge.

CO3 Our Journey (Developments) in Agriculture and Vision for the Future.

UGR-112 Introductory Biology (New) Course Outcome

1. The student will be able to read, understand, and critically interpret the primary biological literature in his/her area of interest.

2. The student will be able to design, conduct, analyze, and communicate (in writing and orally) biological research.

3. The student will recognize and be able to apply basic ethical principles to basic and applied biological/biomedical practice and will understand the role of biological/biomedical science, scientists, and practitioners in society.

4. The student will be able to explain the process of organic evolution and its underlying principles and mechanisms.

5. The student will be able to explain the fundamental biological processes of metabolism, homeostasis, reproduction, development, and genetics, and the relationships between form and function of biological structures at the molecular, cellular, organismal, population, and ecosystem levels of the biological hierarchy.

6. The student will be able to explain the importance of biodiversity at the genetic, organismal, community, and global scales.

UGR-113 Elementary Mathematics Course Outcome

CO1. Demonstrate competency in the areas that comprise the core of the mathematics major CO2. Demonstrate the ability to understand and write mathematical proofs CO3. Be able to use appropriate technologies to solve mathematical problems CO4. Be able to construct appropriate mathematical models to solve a variety of practical problems

CO5. Obtain a full-time position in a related field or placement.

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