Detailed Course Scheme

Bachelor of Science (Hons.)

Agriculture

Semester- II

(2023- 27)

DOC202306080039

RNB GLOBAL UNIVERSITY
RNB Global City, Ganganagar Road,
Bikaner, Rajasthan 334601

OVERVIEW

RNB Global University follows Semester System along with Choice Based Credit System as per latest guidelines of University Grants Commission (UGC). Accordingly, each academic year is divided into two semesters, **Odd (July-December) and Even (January-June).** Also, the university follows a system of continuous evaluation along with regular updating in course curricula and teaching pedagogy.

The Curriculum for B. Sc Agriculture program for (January - June) Even Semester 2024 along with examination pattern is as follows:

Course Scheme

Semester –II

S. No.	Course Code	Course Name	L	T	P	Credits
1.	20023800	Fundamentals of Genetics	2	0	0	2
2.	20023900	Fundamentals of Genetics Lab	0	0	2	1
3.	20024300	Fundamentals of Agricultural Economics	2	0	0	2
4.	20024800	Agricultural Microbiology	1	0	0	1
5.	20024900	Agricultural Microbiology Lab	0	0	2	1
6.	20025300	Fundamentals of Entomology	2	1	0	3
7.	20025400	Fundamentals of Entomology Lab	0	0	2	1
8.	20001800	Irrigation & Water Management	2	1	0	3
9.	20025600	Soil & water Conservation Engineering	1	0	0	1
10.	20012500	Soil & water Conservation Engineering Lab	0	0	2	1
11.	20025700	Fundamentals of Crop Physiology	1	0	0	1
12.	20013500	Fundamentals of Crop Physiology Lab	0	0	2	1
13.	20026200	Fundamentals of Plant Pathology	3	0	0	3
14.	20026300	Fundamentals of Plant Pathology Lab	0	0	2	1
15.	20026000	Fundamentals of Agricultural Extension Education	2	0	0	2
16.	20026100	Fundamentals of Agricultural Extension Education Lab	0	0	2	1

17.	20002300	Ability and Skill Enhancement - II	2	0	0	2
18.	99003300	Workshops & Seminars/ Human Values & SocialService/NCC/NSS	-	-	-	1
	Total		**18**	**2**	**14**	**28**

EVALUATION SCHEME - THEORY

The evaluation of the theory paper of B.Sc. Agriculture program would be based on Internal and External Assessments. Internal Assessment would consist of 50% of the marks (50 marks) and external assessment (in form of End Term Exam) would consist of remaining 50% marks (50 marks). Detailed scheme of Internal and External Assessments as follows:

Internal Assessment

The distribution of Internal Assessment Marks is as follows:

Type	Details	Marks
Mid Term	Two Mid-term Sessional of 15 marks each (15+15)	30
Marks obtained in various Tests, Assignments, Presentations, Quiz, Tutorials, etc.	Average of marks obtained	15
Attendance	75%+ : 5 marks	5
TOTAL	**50**	

External Assessment

Type	Marks
Theory	50

EVALUATION SCHEME - PRACTICAL

The evaluation of the practical paper of B.Sc. Agriculture program would be based on Internal and External Assessments. Internal Assessment would consist of 50% of the marks (50 marks) and external assessment (in form of End Term Exam) would consist of

remaining 50% marks (50 marks). Detailed scheme of Internal and External Assessment is as follows:

Internal Assessment

Type	Details	Marks
Marks obtained in various manuals, practical file, participation, any model prepared, output of practical	Average of marks obtained	45
Attendance	75%+ : 5 marks	5
TOTAL	**50**	

External Assessment

Type	Marks
Practical	50

EVALUATION SCHEME- WORKSHOPS & SEMINARS & NCC/NSS

1. NCC/NSS will be completed from Semester I – Semester IV. It will be evaluated internally by the institute. The credit for this will be given at the end of Semester.

2. The students have to join club/clubs with the active participation in different activities of club. The students would be continuously assessed from Semester-I to Semester-IV and credits and marks would be given after the end of Semester.

Vision of School of Agriculture is to be established as advanced studies and research and skill-based centre for students and scholars.

2. Mission

Mission of School of Agriculture is to cultivate a scholarly mindset and analytical abilities in students, as well as train them in agricultural sphere, to reach the profession's daunting needs by providing dynamic knowledge in the field of agriculture.

3. Program Educational Objectives (PEOs)

After successful completion of the program, the graduates will be

AGPEO 1: Able to apply concepts of basic and applied sciences to Agriculture

AGPEO 2: Able to design and develop interdisciplinary and innovative systems.

AGPEO 3: Able to inculcate effective communication skills, team work, ethics, leadership in preparation for a successful career in agriculture and R&D organizations.

4. Program Outcomes (POs)

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

PO1. Agriculture knowledge: Apply the knowledge of basic and applied sciences to agriculture, agriculture fundamentals and agriculture specialization to the solution of complex agriculture problems. Apply the knowledge of regenerative agriculture with a conservation and rehabilitation approach to food and farming systems.

PO2. Problem analysis: Identify, formulate, review research literature, and analyze complex agriculture problems reaching substantiated conclusions using first principles of basic and applied sciences. Understand rapid appraisal of agricultural innovation systems, a diagnostic tool that can guide the analysis of complex agricultural problems and innovation capacity of the agricultural system towards futuristic agriculture.

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

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

PO5. Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern agriculture and IT tools including prediction and modelling to complex agriculture activities with an understanding of the limitations. Learning use of GIS, IoT, Automation, Intelligent Systems in Farming & Agriculture development & trading.

PO6. The agriculture graduate and society: Apply reasoning informed by the contextual knowledge to assess social, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional agriculture practices. Recognize, analyze, and evaluate the critical human and social factors impacting agriculture. Understand the social dimensions of agriculture and its connections with food and environmental systems.

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

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

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

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

PO11. Project management and finance: Demonstrate knowledge and understanding of the agriculture and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments. Able to design, launch and run a new business, to create job and not to seek for job. Also capable with an effective mix of knowledge, skills, and personal attitudes to be employed initially and function successfully in the required roles.

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

5. Program Specific Outcomes (PSOs)

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

PSO 1. Clearly understand the concepts and applications in the field of agriculture. Apply the knowledge of crop cultivation, crop improvement, soil and crop management for sustainable organic agricultural production and development.

PSO 2. Associate the learning from the courses related to agriculture to arrive at solutions to real world problems. Analyze and identifying complex agricultural problems and formulating ethical solutions using the principles of agricultural science, and business.

PSO 3. Have the capability to comprehend the technological advancements in the usage of modern design tools to analyze and design subsystems/processes for a variety of applications. Develop innovative processes, products, and technologies to meet the challenges in agriculture and farming practices

PSO 4. Possess the skills to communicate in both oral and written forms, the work already done and the future plans with necessary road maps, demonstrating the practice of professional ethics and the concerns for social and environmental wellbeing.

Course	Course outcomes: - After completion of these courses students should be able to
7.1 Semester – II	
20023800 Fundamentals of Genetics	**CO1:** Make use of methods of inducing mutations & CIB technique, mutagenic agents and induction of mutation. **CO2:** Utilize the role of genetic technologies in industries related to biotechnology, pharmaceuticals, energy, and other fields. **CO3:** Analyse the mendelian principles and their significance in heredity and inheritance of Qualitative & Quantitative traits. **CO4:** Analyse the possible genotypes that could occur in an offspring, according to the genotype of the two parents with help of Probability and Chi-square test. **CO5:** Estimate the probability of trait transfer from one generation to next generation.
20023900 Fundamentals of Genetics Lab	**CO1:** Show mitosis and meiosis cell division, cell structure etc. **CO2:** Demonstrate microscope parts, models on DNA and RNA structures **CO3:** Solve the problems of monohybrid, dihybrid, trihybrid, test cross and back cross **CO4:** Analyse linkage and cross-over problems **CO5:** Interpret experiments on epistatic interactions including test cross and back cross
20024300 Fundamentals of Agricultural Economics	**CO1:** Explain the different concepts of Agricultural economics, nature of economics, human behaviour, goods and services, need, want, demand, etc. **CO2:** Illustrate the basic principles of economics and concepts of micro and macroeconomics. **CO3:** Summarize the elements that determine economic role of agriculture in national economy **CO4:** Classify the national income, concepts of national income accounting and approaches to measurement etc. **CO5:** Discuss the overall principles of agricultural economics
20024800 Agricultural Microbiology	**CO1:** Define prokaryotic and eukaryotic microbes, bio-fuel production and biodegradation of agro-waste. **CO2:** Explain the role of soil microorganisms in soil fertility and plant growth promotion. **CO3:** Explain about silage production, bio-fertilizers, bio pesticides. **CO4:** Develop experimental skills in soil microbiology which includes isolation of beneficial microorganisms from soil and their mass production. **CO5:** Elaborate the use of microbes and their culture techniques.
20024900 Agricultural Microbiology Lab	**CO1:** Name Different Laboratory equipment used in plant pathology and tell what is the work of these equipment. **CO2:** Explain the methods of Nutrient media preparation and sterilization of media. **CO3:** Utilize the methods of isolation and purification of culture media and experiment with *Rhizobium, Azotobacter and BGA*

	CO4: Analyse Different Microorganisms by staining and microbial examination. **CO5:** Measure or evaluate the microbial population in soil- bacteria, fungi and actinomycetes.
20025300 Fundamentals of Entomology	**CO1:** Define the entomology relate to agricultural pests. **CO2:** Classification of phylum Arthropoda up to classes. **CO3:** Identify the different insects based on morphology. **CO4:** Analyse the different insect populations relate to crop and environment. **CO5:** Choose the proper insect management practices.
20025400 Fundamentals of Entomology Lab	**CO1:** Label of collection and preserve insects including immature stages. **CO2:** Demonstrate of insect antennae, mouthparts and legs. **CO3:** Identify the insect larvae and pupae. **CO4:** Categorize the insects based on wing venation, types of wings and wing coupling apparatus **CO5:** Assess the loss of crop production due to insect attack.
20001800 Irrigation & Water Management	**CO1:** Select soil and water engineering concepts like measurement of land, surveying and levelling. **CO2:** Classify irrigation and it's different methods. **CO3:** Determine the irrigation water quality and its management including conjunctive use of water and water management of different crops. **CO4:** Discuss about agricultural drainage. **CO5:** Explain scheduling of irrigation based on different approaches.
20025600 Soil & water Conservation Engineering	**CO1:** Recall the soil and water conservation techniques and spell the terms like soil erosion, their causes and agents. **CO2:** Explain water erosion, its classification, their control and soil loss measurement techniques. **CO3:** Plan the mechanical measure for controlling soil and water erosion. **CO4:** Examine the degradation of soil's chemical and physical properties. **CO5:** Value the water harvesting techniques for water conservation.
20012500 Soil & water Conservation Engineering Lab	**CO1:** Define the general status of soil conservation in India and Rajasthan. **CO2:** Interpret the erosion index and estimate the soil loss. **CO3:** Build contour maps and experiment with numerical on designs of contour bunding. **CO4:** Analyse different methods of measurement of irrigation water. **CO5:** Compare irrigation efficiency of different methods of irrigation- Drip irrigation, sprinkler irrigation.
20025700 Fundamentals of Crop Physiology	**CO1:** Define the knowledge of physiological phenomenon in plant cells, absorption of water, transpiration, diffusion, osmosis, imbibitions, mineral nutrition of plants, plant growth and regulators. **CO2:** Explain Importance of growth Harmon in Agriculture.

	CO3: Develop the understanding about the mechanisms of various metabolic processes in plants - Photosynthesis, respiration, fat metabolism, plant growth, nutrient absorption, etc. **CO4:** Formulate the quantity of plant growth regulators. **CO5:** Discuss ability to identify C3, C4 and CAM plants, analyze the physical and chemical factors regulate plant growth, evaluate visual symptoms of nutrients deficiency in plants.
20013500 Fundamentals of Crop Physiology Lab	**CO1:** Define the structure and distribution of stomata **CO2:** Compare the different process and cycle of photosynthesis **CO3:** Compare the different process and cycle of respiration **CO4:** Model the plant cells **CO5:** Estimate the osmosis and plasmolysis process
20026200 Fundamentals of Plant Pathology	**CO1:** Name and identify different Diseases, nature of pathogens and different strategies for management of plant diseases. **CO2:** Outline concepts, nomenclature, classification and characters of pathogens **CO3:** Apply different principles and methods for plant disease management. **CO4:** Take a part in identification of diseases and marketing of relevant pesticides. **CO5:** Conclude methods to diagnose and manage a wide range of plant diseases.
20026300 Fundamentals of Plant Pathology Lab	**CO1:** Tell What are the different equipment's used in plant pathology lab and what is the work of these equipment's. **CO2:** Explain the methods of nutrient media preparation for microorganisms. **CO3:** Identify and isolate microorganisms from soil as well as from infected plant part. **CO4:** Examine symptoms of various diseases and test for Koch's postulate. **CO5:** Evaluate and identify Plant parasitic nematodes and extract plant parasitic nematode from soil.
20026000 Fundamentals of Agricultural Extension Education	**CO1:** Explain an understanding on the process, steps, principles, monitoring and evaluation involved in agricultural extension programme development for transfer of technology. **CO2:** Illustrate the skills about genesis of agricultural extension, extension efforts in pre and post-independence era along with specific agricultural programmes. **CO3:** Build new trends in agricultural extension like private extension, market led extension, expert systems, farmer led extension and cyber extension. **CO4:** Discover communication strategies using agricultural journalism for innovation, diffusion and adoption of agricultural technology. **CO5:** Decide when, where and to whom to use the appropriate extension teaching methods.
20026100 Fundamentals of Agricultural	**CO1:** What is university extension systems, how it has been functioning and introduction to various audio visual tools **CO2:** Explain the concepts of creating awareness and attention seeking

Extension Education Lab	**CO3:** Construct the Interview schedule for gathering data **CO4:** Perceive about rural community by visiting and interpreting them **CO5:** Create scripts for various mass media
20002300 - Ability and Skill Enhancement	**CO1:** Select the correct phonetic symbols for improving language **CO2:** Operate reading and writing skills in English **CO3:** Prepare listening and speaking skills in English **CO4:** Focus in understanding the ethics, virtues and values **CO5:** Aware about etiquettes and personal branding

7.2 Mapping: Semester – II

20023800	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	3		2	3		2	2	3	2	2
CO2	2	3	3	2		2	2		3	3	2	3
CO3	3	2			3	2	3	2	2		2	3
CO4	3	3	2	2	2		2		3	2	3	2
CO5	2	3	2	3		2	3	3	2			

20023900	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	1				1	3	3	3	2	1	1
CO2	2		1		3	3	1		2	2	2	3
CO3	3	3	3	3	3	2	3	2	2	3	3	2
CO4	2	3	3	3	3	2	2	3	1	2	2	2
CO5	1	3	3	3	1	2	1	2	2	1	2	2

20024300	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	2		2	2			2	2	2	3
CO2	3	3		2				2	2	2		2
CO3	3	3	2	2		2		2		2	2	
CO4	3	2			2		2	2			2	2
CO5	2	2	3	2	2	2	3	3	2	2		3

20024800	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	2	3		2		2	2	2	2	2
CO2	3	2	3	2	2			3	3		1	
CO3	2	3	2	3			2	3	3	2		2

CO4	3	2			3	2	3			2	2	3
CO5	2		3	3	3	3		3	3	3	3	3

20024900	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	2	3		2			2	3	2	2
CO2	2			2	2		3	3	3		1	
CO3	3	3	2				2	3	3	2		2
CO4	3	2	3	3	3	2				2	3	
CO5	2		3	3	3	3		3	3	3	3	3

20025300	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	3	3	2	1	2	2	2	1	3	2	1
CO2	3	2	2	3	2	3	2	2	2	3	2	2
CO3	3	3	3	2	3	3	3	1	1	3	3	1
CO4	2	2	2	2	2	3	1	2	1	3	3	2
CO5	3	3	1	3	3	3	1	2	3	1	3	1

20025400	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	2	3	3	3	1	2	2	2	1	3	2
CO2	3	1	3		2	2	3	2	2	2	3	2
CO3	2	3	3	3		3	3	3	1	1	3	3
CO4	2	2	2	3	3	2	3	1	2		3	3
CO5	3	3	2	3		3	3	1	2	3	1	3

20001800	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	3	3	3			2	2		3	2
CO2	3		3		2	2	3	2		2	3	2

CO3	3	3	3	3		3	3	3			3	3
CO4	2	2		3	3	2	3		2		3	3
CO5	3	3		3		3	3		2	3		3

20025600	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	3	2	3	2	3	3	2	2	2	3
CO2	3	3	2	3	3	3	3	2	3	2	2	3
CO3	3	3	2	2	3	2	3	3	3	2	2	3
CO4	2	1	1		1	3	2	1	3	2	2	3
CO5	3	2	3	3	2	3	1	2	2	3	3	2

20012500	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	3	3	3	3	3	2	3	2	3	2
CO2	2	3	2	3	2	3	2	3	2	3	3	2
CO3	3	3	3	2	3	2	3	2	3	2	2	3
CO4	3	3	2	3	3	3	2	3	2	3	3	3
CO5	2	2	3	2	3	2	3	2	3	2	3	3

20025700	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	2	2		2	2		2	2	3	3	
CO2	2	3	3	2		3	2		2	2	2	2
CO3	3	2		2	2	2	3		2		3	3
CO4	3	2	2	2	3		2	3	3		2	3
CO5	3	3	3	3		2	3	3	3	3		2

20013500	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1		3	2	2	2	3	2	2	2		2	3

CO2	3				3	1	3	3	2	1	3	2
CO3	2	2	2	2	2	2		2		2	2	
CO4	3	2	1	3		2	2	2	2	3		2
CO5	2	2	3	2	2		2		3		2	3

20026200	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	3	3	2	3	2	2	2	3	2	2
CO2	3	3	3	3	2	3	3	2	2	3	3	2
CO3	3	3	3	3	2	3	3	3	2	2	2	3
CO4	3	3	3	3	3	2	3	2	3	2	2	3
CO5	3	3	3	3	2	2	3	2	3	3	3	3

20026300	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	3	2	3	2	2	2	3	3	2	3	2
CO2	2	2	3	3	3	2	3	2	3	2	3	2
CO3	3	3	2	2	3	3	3	3	3	3	2	3
CO4	2	2	3	2	3	3	2	2	3	2	2	3
CO5	3	3	3	3	2	3	3	2	2	3	3	3

20026000	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	3		2	2		2	3	2		3
CO2	3	2	2	2	2	2		2	2	2	2	2
CO3	3	3	3	3	2	2	2				2	
CO4	3	3	2	2	2			2	2		2	2
CO5	2	2	2	3	2	3	2	3	2	2	3	3

20026100	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12

CO1	3		2	3	3	2	2	3			3	2
CO2	3	3			2			2	2	3		2
CO3	2		2			3	2			3	2	
CO4	3	3	2	3	3	3	3	3		3		3
CO5	2	3			2	3	2		3			3

20002300	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	3		3	3		3		3	3	2
CO2	3		2	3	2	2		2		3		2
CO3	3	3			2			3	3	3		2
CO4	3	3	3	2	2	2		2		3	2	2
CO5	3	3		3		3	3	3	2		2	2

CURRICULUM

Course Name: Fundamentals of Genetics

Course Code: 20023800

Course Outline:

Unit I

Pre and Post Mendelian concepts of heredity, Mendelian principles of heredity Architecture of chromosome; chromonemata, chromosome matrix, chromomeres, centromere, Secondary constriction and telomere; special types of chromosomes Chromosomal theory of inheritance- cell cycle and cell division- mitosis and meiosis Probability and Chi-square Dominance relationships, Epistatic interactions with example.

Unit II

Multiple alleles, pleiotropism and pseudoalleles, Sex determination and sex linkage, sex limited and sex influenced traits, Blood group genetics, Linkage and its estimation, crossing over mechanisms, chromosome mapping. Structural and numerical variations in chromosome andtheir implications Use of haploids, dihaploids and doubled haploids in Genetics.

Unit III

Mutation, classification, Methods of inducing mutations & CIB technique, mutagenic agents and induction of mutation Qualitative & Quantitative traits, Polygenes and continuous variations, multiple factor hypothesis, Cytoplasmic inheritance. Genetic disorders.

Unit IV

Nature, structure & replication of genetic material Protein synthesis, Transcription and translational mechanism of genetic material, Gene concept: Gene structure, function and regulation, Lac and Trp operons.

Suggested Readings

1. Gupta P.K.2004. Cytology, Genetics and evolution. Rastogi Publications, Meerut. (Hindi Edition)
2. Kaushik, M.P.2003. A text Book of Modern Botany. Prakash publications, Muzaffarnagar(UP)
3. Klug, W.W.And Cummings, M.R.2005.Concepts of genetics Pearson Education (Singapore) pvt.Ltd., Indian Branch, Pratapganj, New Delhi.
4. Singh, B.D. 2001.Kalyani Publishing House, New Delhi.
5. Strickberger, M.W.2001.Genetics. Prentice Hall of India. Pvt. Ltd., New Delhi.

6. Shekhawat, A.S.and Tripathi, B.K., 2009. A practical manual on Element of Genetics. Publish by College of Agriculture, Bikaner.

Course Name: Fundamentals of Genetics lab

Course Code: 20023900

Course Outline

1. Study of microscope.
2. Study of cell structure.
3. Mitosis and Meiosis cell division.
4. Experiments on monohybrid, dihybrid, trihybrid, test cross and back cross,
5. Experiments on epistatic interactions including test cross and back cross,
6. Practice on mitotic and meiotic cell division,
7. Experiments on probability and Chi-square test.
8. Determination of linkage and cross-over analysis (through two point test cross and three point test cross data).
9. Study on sex linked inheritance in Drosophila.
10. Study of models on DNA and RNA structures.

Course Name: Fundamentals of Agriculture Economics

Course Code: 20024300

Course Outline:

Unit I

Economics: Meaning, scope and subject matter, definitions, activities, approaches to economic analysis; micro and macro economics, positive and normative analysis. Nature of economic theory; rationality assumption, concept of equilibrium, economic laws as generalization of human behavior. Basic concepts: Goods and services, desire, want, demand, utility, cost and price, wealth, capital, income and welfare.

Agricultural economics: meaning, definition, characteristics of agriculture, importance and its role in economic development. Agricultural planning and development in the country.

Unit II

Demand: meaning, law of demand, demand schedule and demand curve, determinants, utility theory; law of diminishing marginal utility, equi-marginal utility principle. Consumer's equilibrium and derivation of demand curve, concept of consumer surplus. Elasticity of demand: concept and measurement of price elasticity, income elasticity and cross elasticity.

Production: process, creation of utility, factors of production, input output relationship. Laws of returns: Law of variable proportions and law of returns to scale. *Cost:* Cost concepts, short run and long run cost curves. Supply: Stock v/s supply, law of supply, supply schedule, supply curve, determinants of supply, elasticity of supply.

Unit III

Market structure: meaning and types of market, basic features of perfectly competitive and imperfect markets. Price determination under perfect competition; short run and long run equilibrium of firm and industry, shut down and break even points.

Distribution theory: meaning, factor market and pricing of factors of production. Concepts of rent, wage, interest and profit.

Unit IV

National income: Meaning and importance, circular flow, concepts of national income accounting and approaches to measurement, difficulties in measurement. Good and services tax (GST) - meaning, definition, advantage and disadvantages and its implication on Indian economy.

Tax*:* meaning, direct and indirect taxes, agricultural taxation.

Suggested Readings

1. K.K. Dewett and J.D. Verma (1986) Elementary Economic Theory, S.Chand& Company, New Delhi.
2. P.A. Samuelson & W.D. Nordhaus (1987) Economics, McGraw-Hill, Singapore.
3. S.K. Mishra and V.K. Puri (1996) Indian Economy, Himalaya Publishing House, New Delhi.
4. G.B. Jathar and S.G. Beri (1996) Elementary Principles of Economics, Oxford University Press (10th Edition), Delhi.
5. Berkeley Hill (1980) An Introduction to Economics for students of agriculture, Pergaman Press, Oxford.

Course Name: Agriculture Microbiology

Course Code: 20024800

Course Outline

Unit-I

Introduction. Microbial world: Prokaryotic and eukaryotic microbes. Bacteria: cell structure, chemoautotrophy, photo autotrophy, growth. Bacterial genetics: Genetic recombination transformation, conjugation and transduction, plasmids, transposon.
Role of microbes in soil fertility and crop production: Carbon, Nitrogen, Phosphorus and Sulphur cycles.

Unit-II

Biological nitrogen fixation- symbiotic, associative and asymbiotic.Azolla, blue green algae and mycorrhiza.Rhizosphere and phyllosphere.
Microbes in human welfare: silage production, biofertilizers, biopesticides, biofuel production and biodegradation of agro-waste.

Suggested Readings

1. Biswas, T.D. and Mukherjee, S.K. 1990. Text Book of Soil Sciences, Tata McGraw-Hill Publishing Company Limited, New Delhi.
2. Mukherjee, N. and Ghosh T. 1998. Agricultural Microbiology, Kalyani Publishers, New Delhi.
3. Pelczar, Jr. Michel J. Chan, E.C.S. and Krieg, Noel R. 1997. Microbiology. Tata McGraw -Hill Edition, 1993. India.
4. Rangaswami, G. and Bagyaraj, D.J. 2010. IInd ed. Agricultural Microbiology. Prentice Hall of India Pvt. Limited, New Delhi.
5. Rao, N.S. 2000. Soil Microbiology, Oxford & IBH Publishing Co. Pvt. Ltd., New Delhi.
6. Vishunavat, K. and Kolte, S.J. 2005. Essentials of Phytopathological Techniques.Kalyani Publishers, New Delhi
7. Prescott , 2014. Microbiology. McGraw Hill & Co.
8. R.P. Singh , 2013. Plant Pathology.Kalyani Publishers

Course Name: Agriculture Microbiology Lab

Course Code : 20024900

Practical

1. Introduction to microbiology laboratory and its equipments;
2. Microscope- parts, principles of microscopy, resolving power and numerical aperture.
3. Methods of sterilization.
4. Nutritional media and their preparations.
5. Enumeration of microbial population in soil- bacteria, fungi, actinomycetes.
6. Methods of isolation and purification of microbial cultures.
7. Isolation of Rhizobium from legume root nodule.
8. Isolation of Azotobacter from soil. Isolation of Azospirillum from roots.
9. Isolation of BGA. Staining
10. Microscopic examination of microbes.
11. Mehrotra, R.S. and Aggarawal, A. 2012. I2th ed. Plant Pathology. Tata McGraw Hill Publishing Co. Ltd., New Delhi

Course Name: Fundamentals of Entomology

Course Code: 20025300

Course Outline

Unit I

History of Entomology in India. Major points related to dominance of Insecta in Animal kingdom. Classification of phylum Arthropoda upto classes. Relationship of class Insecta with other classes of Arthropoda. Morphology: Structure and functions of insect cuticle and molting. Body segmentation. Structure of Head, thorax and abdomen. Structure and modifications of insect antennae, mouth parts, legs, Wing venation, modifications and wing coupling apparatus. Structure of male and female genital organ. Metamorphosis and diapause in insects. Types of larvae and pupae. Structure and functions of digestive, circulatory, excretory, respiratory, nervous, secretary (Endocrine) and reproductive system, in insects. Types of reproduction in insects. Major sensory organs like simple and compound eyes, chemoreceptor.

Unit II

Insect Ecology: Introduction, Environment and its components. Effect of abiotic factors– temperature, moisture, humidity, rainfall, light, atmospheric pressure and air currents. Effect of biotic factors – food competition, natural and environmental resistance.

Unit III

Categories of pests. Concept of IPM, Practices, scope and limitations of IPM. Classification of insecticides, toxicity of insecticides and formulations of insecticides. Chemical control-importance, hazards and limitations. Recent methods of pest control, repellents, antifeedants, hormones, attractants, gamma radiation. Insecticides Act 1968-Important provisions. Application techniques of spray fluids. Symptoms of poisoning, first aid and antidotes.

Unit IV

Systematics: Taxonomy –importance, history and development and binomial nomenclature. Definitions of Biotype, Sub-species, Species, Genus, Family and Order. Classification of class Insecta upto Orders, basic groups of present day insects with special emphasis to orders and families of Agricultural importance like Orthoptera: Acrididae, Tettigonidae, Gryllidae, Gryllotalpidae; Dictyoptera: Mantidae, Blattidae; Odonata; Isoptera: Termitidae; Thysanoptera: Thripidae; Hemiptera: Pentatomidae, Coreidae, Cimicidae, Pyrrhocoridae, Lygaeidae, Cicadellidae, Delphacidae, Aphididae, Coccidae, Lophophidae, Aleurodidae, Pseudococcidae; Neuroptera: Chrysopidae; Lepidoptera: Pieridae, Papiloinidae, Noctuidae, Sphingidae, Pyralidae, Gelechiidae, Arctiidae, Saturnidae, Bombycidae; Coleoptera: Coccinellidae, Chrysomelidae, Cerambycidae, Curculionidae, Bruchidae, Scarabaeidae; Hymenoptera: Tenthridinidae, Apidae. Trichogrammatidae, lchneumonidae, Braconidae, Chalcididae; Diptera: Cecidomyiidae, Tachinidae, Agromyziidae, Culicidae, Muscidae, Tephritidae.

Course Name: Fundamentals of Entomology Lab

Course Code: 20025400

Course Outline

1. Methods of collection and preservation of insects including immature stages
2. External features of Grasshopper/Blister beetle
3. Types of insect antennae, mouthparts and legs
4. Wing venation, types of wings and wing coupling apparatus
5. Types of insect larvae and pupae
6. Dissection of digestive system in insects (Grasshopper)
7. Dissection of male and female reproductive systems in insects (Grasshopper)

8. Study of characters of orders Orthoptera, Dictyoptera, Odonata, Isoptera, Thysanoptera, Hemiptera, Lepidoptera, Neuroptera, Coleoptera, Hymenoptera, Diptera and their families of agricultural importance
9. Insecticides and their formulations
10. Pesticide appliances and their maintenance
11. Sampling techniques for estimation of insect population and damage

Suggested Readings:

1. Chapman .R.F.1981. Insect Structure and Function, ELBS Publishers New Delhi.
2. David B.V. and Ananthakrishnan .T.N. 2003. General and Applied Entomology, 2nd Ed. Mc graw Hill publishing Co. Ltd. New Delhi.
3. Mathur and Upadhyay, 2005. A Text Book of Entomology, Aman Publishing House, Meerut.
4. Pant. N.C. and Ghai, S. 1981. Insect Physiology and Anatomy, ICAR, New Delhi.
5. Richards O.W. and Davies R.G. 1977. Imm's General Text Book of Entomology, Vol. I & II. Chapman and Hall, London.
6. Snodgrass R.E .2001. Principles of Insect Morphology, CBS Publishers and Distributors, New Delhi.

Course Name: Irrigation and Water Management

Course Code: 20001800

Course Outline

Unit I

Irrigation: definition and objectives; Water resources and irrigation development in India and Rajasthan; Soil moisture constants and theories of soil water availability; Methods of soil moisture estimation; Evapo transpiration and crop water requirement; Scheduling of irrigation;

Unit-II

Methods of irrigation: surface, sprinkler and drip irrigation; Irrigation efficiency and water use efficiency, Irrigation water quality and its management including conjunctive use of water; Water management of different crops (rice, wheat, maize, groundnut, sugarcane, pearl millet, chickpea, mustard); Agricultural drainage.

Unit-III

Importance of water in crop production Soil Moisture constant Estimation of potential evapo-transpiration and consumptive useWater requirement of crops and factors affecting it Approaches of irrigation scheduling , . Systems and methods of irrigation – drip, sprinkler and mist Irrigation, Quantity and quality of irrigation, Measurement of irrigation water, Elementary idea of drainage on farms.

Suggested Readings:

1. Land and Water Management Engineering. 1982. Murthy V.V.N. Kalyani Pubhliers, New Delhi.
2. Irrigation: Theory and Practices.2012. Michael A.M. Vikas Publishing House Pvt. Ltd., New Delhi.
3. Principles of Agricultural. Engineering. Vol. II. 2012. Michael A.M. and T.P. Ojha. Jain Brothers, New Delhi.
4. Soil and Water Conservation Water Management. 2010. Mahnot, S.C., Singh P.K. and Chaplot, P.C.,. Apex Publication House, Udaipur.

Course Name: Soil & Water Conservation Engineering

Course Code: 20012400

Course Outline

Unit I

Introduction to Soil and Water Conservation, causes of soil erosion. Definition and agents of soil erosion, water erosion: Forms of water erosion. Gully classification and control measures. Soil loss estimation by universal Loss Soil Equation. Soil loss measurement techniques.

Unit II

Principles of erosion control: Introduction to contouring, strip cropping. Contour bund. Graded bund and bench terracing. Grassed water ways and their design. Water harvesting and its techniques. Wind erosion: mechanics of wind erosion, types of soil movement. Principles of wind erosion control and its control measures.

Course Name: Soil & Water Conservation Engineering Lab

Course Code: 20012500

Course Outline

1. Study of different types and forms of water erosion. Exercises on computation of rainfall erosivity index. Computation of soil erodibility index in soil loss estimation.
2. Determination of length of slope (LS) and cropping practice (CP) factors for soil loss estimation by USLE and MUSLE. Exercises on soil loss estimation/measuring techniques. Study of rainfall simulator for erosion assessment.
3. Estimation of sediment rate using Coshocton wheel sampler and multi slot devisor. Determination of sediment concentration through oven dry method.
4. Design and layout of contour bunds.
5. Design and layout of graded bunds.
6. Design and layout of broad base terraces.

7. Design and layout of bench terraces.
8. Design of vegetative waterways.
9. Exercises on rate of sedimentation and storage loss in tanks.
10. Computation of soil loss by wind erosion.
11. Design of shelterbelts and wind breaks for wind erosion control.
12. Visit to soil erosion sites and watershed project areas for studying erosion control and water conservation measures.

Course Name: Fundamentals of Crop Physiology

Course Code: 20025700

Course Outline

Unit I

Introduction to crop physiology and its importance in Agriculture; Plant cell: an Overview; Diffusion and osmosis; Absorption of water, transpiration and Stomatal Physiology; Mineral nutrition of Plants: Functions and deficiency symptoms of nutrients, nutrient uptake mechanisms; Photosynthesis: Light and Dark reactions, C3, C4 and CAM plants.

Unit II

Respiration: Glycolysis, TCA cycle and electron transport chain; Fat Metabolism: Fatty acid synthesis and Breakdown; Plant growth regulators: Physiological roles and agricultural uses, Physiological aspects of growth and development of major crops: Growth analysis, Role of Physiological growth parameters in crop productivity.

Course Name: Fundamentals of Crop Physiology Lab

Course Code: 20013500

Course Outline

1. Study of plant cells
2. Study of plant structure
3. Distribution of stomata, imbibitions, osmosis, plasmolysis
4. Measurement of root pressure
5. Rate of transpiration
6. Separation of photosynthetic pigments through paper chromatography
7. Rate of transpiration, photosynthesis, respiration
8. Tissue test for mineral nutrients, estimation of relative water content
9. Measurement of photosynthetic CO2 assimilation by Infra-Red Gas Analyzer (IRGA)

Course Name: Fundamentals of Plant Pathology

Course Code: 20013600

Course Outline

Unit I

Introduction: Importance of plant diseases, scope and objectives of Plant Pathology. History of Plant Pathology with special reference to Indian work. Terms and concepts in Plant Pathology. Pathogenesis. Causes / factors affecting disease development: disease triangle and tetrahedron and classification of plant diseases. Important plant pathogenic organisms, different groups: fungi, bacteria, fastidious vesicular bacteria, phytoplasmas, spiroplasmas, viruses, viroids, algae, protozoa, phanerogamic parasites and nematodes with examples of diseases caused by them. Diseases and symptoms due to abiotic causes.

Unit II

Fungi: general characters, definition of fungus, somatic structures, types of fungal thalli, fungal tissues, modifications of thallus, reproduction (asexual and sexual). Nomenclature, Binomial system of nomenclature, rules of nomenclature, classification of fungi. Key to divisions, sub-divisions, orders and classes.

Bacteria and mollicutes: general morphological characters. Basic methods of classification and reproduction.

Viruses: nature, structure, replication and transmission.Study of phanerogamic plant parasites.

Nematodes: General morphology and reproduction, classification, symptoms and nature of damage caused by plant nematodes (*Heterodera, Meloidogyne*, *Anguina, Radopholus* etc.)

Unit III

Growth and reproduction of plant pathogens. Liberation / dispersal and survival of plant pathogens. Types of parasitism and variability in plant pathogens. Pathogenesis. Role of enzymes, toxins and growth regulators in disease development. Defense mechanism in plants**.** Epidemiology: Factors affecting disease development. Principles and methods of plant disease management.Nature, chemical combination, classification, mode of action and formulations of fungicides and antibiotics.

Course Name: Fundamentals of Plant Pathology Lab

Course Code: 20013700

Course Outline

1.Acquaintance with various laboratory equipments and microscopy.
2. Collection and preservation of disease specimen.
3.Preparation of media, isolation and Koch's postulates.

4. General study of different structures of fungi.
5. Study of symptoms of various plant diseases.
6.Study of representative fungal genera.
7. Staining and identification of plant pathogenic bacteria.
8. Transmission of plant viruses.
9. Study of phanerogamic plant parasites.
10. Study of morphological features and identification of plant parasitic nematodes.
11. Sampling and extraction of nematodes from soil and plant material, preparation of nematode mounting.
12. Study of fungicides and their formulations.
13. Methods of pesticide application and their safe use.
14. Calculation of fungicide sprays concentrations**.**

Suggested Readings:

1. Agrios GN. 2005. Plant Pathology. 5th Ed. Academic Press, New York. (Indian Ed.)
2. Mehrotra, R.S. and Aggarawal, A. 2007. Plant Pathology. Tata McGraw Hill Publishing Co. Ltd., New Delhi
3. Singh, R.S. 2005. 4th ed. Principles of Plant Pathology. Oxford & IBH, New Delhi.
4. Nene, Y.L. 2015. Fungicides in Plant Diseases Control. Oxford & IBH published Co. Pvt. Ltd., New Delhi
5. Vander plank, J.E. (2014) Host Pathogen Interactions in Plant Diseases. A.P.
6. Singh, R.P. 2013. Plant Pathology. Kalyani Publishers
7. Alexopoulos CJ, Mims CW & Blackwell M. 2000. Introductory Mycology.5th Ed. John Wiley & Sons, New York.
8. Dube, H.C. 2012. Mordern Plant Pathology, Agro Bios , India
9. Lakshman, H.C. 2014. Bio-fertilizers and Bio-pesticides. Pointer Publishers

Course Name: Fundamentals of Agriculture Extension Education

Course Code: 20026000

Course Outline

Unit I

Education: Meaning, definition & Types; Extension Education- meaning, definition, scope and process; objectives and principles of Extension Education; Extension Programme planning- Meaning, Process, Principles and Steps in Programme Development. Extension systems in India: extension efforts in pre-independence era (Sriniketan, Marthandam, Firka Development Scheme, Gurgaon Experiment, etc.) and post-independence era (Etawah Pilot Project, Nilokheri Experiment, etc.); various extension/ agriculture development programmes launched by ICAR/ Govt. of India (IADP, IAAP, HYVP, KVK, IVLP, ORP, ND,NATP, NAIP, etc.). New trends in agriculture

extension: privatization extension, cyber extension/ e-extension, market-led extension, farmer-led extension, expert systems, etc.

Unit II

Rural Development: concept, meaning, definition; various rural development programmes launched by Govt. of India. Community Dev.-meaning, definition, concept & principles, Philosophy of C.D. Rural Leadership: concept and definition, types of leaders in rural context; extension administration: meaning and concept, principles and functions. Monitoring and evaluation: concept and definition, monitoring and evaluation of extension programmes; transfer of technology: concept and models, capacity building of extension personnel.

Unit III

Extension teaching methods: meaning, classification, individual, group and mass contact methods, ICT Applications in TOT (New and Social Media), media mix strategies; communication: meaning and definition; Principles and Functions of Communication, models and barriers to communication. Agriculture journalism; diffusion and adoption of innovation: concept and meaning, process and stages of adoption, adopter categories.

Course Name: Fundamentals of Agriculture Extension Education lab

Course Code: 20026100

Course Outline

1. To get acquainted with university extension system
2. Group discussion- exercise
3. Handling and use of audio visual equipments and digital camera and LCD projector
4. Preparation and use of AV aids, preparation of extension literature – leaflet, booklet, folder, pamphlet news stories and success stories
5. Presentation skills exercise; micro teaching exercise
6. A visit to village to understand the problems being encountered by the villagers/ farmers
7. To study organization and functioning of DRDA and other development departments at district level
8. Visit to NGO and learning from their experience in rural development
9. Understanding PRA techniques and their application in village development planning
10. Exposure to mass media: visit to community radio and television studio for understanding the process of programme production
11. Script writing, writing for print and electronic media, developing script for radio and television

Suggested Readings:

1. Adivi Reddy, A., 2001, Extension Education, Sree Lakshmi press, Bapatla.
2. Dahama, O. P. and Bhatnagar, O. P., 1998, Education and Communication for Development, Oxford and IBH publishing Co. Pvt. Ltd., New Delhi.
3. Jalihal, K. A. and Veerabhadraiah, V., 2007, Fundamentals of Extension Education and Management in Extension, Concept publishing company, New Delhi.
4. Muthaiah Manoraharan, P. and Arunachalam, R., Agricultural Extension, Himalaya Publishing House (Mumbai).
5. Rathore, O. S. et al., 2012, Handbook of Extension Education, Agrotech Publishing Academy, Udaipur.
6. Ray, G. L., 1991 (1st Edition), Extension Communication and Management, Kalyani Publishers, Ludhiana {7th revised edition - 2010}.
7. Supe, S. V., 2013 (2nd Edition), A Text Book of Extension Education, Agrotech Publishing Academy, Udaipur.
8. Van Den Ban, A. W. and Hawkins, H. S., Agricultural Extension, S. K .Jain for CBS Publishers & Distributors, New Delhi.
9. Debabrata Das Gupta. Extension Education. Agrobios (India), Agro house behind Nasrani Cinema, Chaupasani Road, Jodhpur- 342402, Phone -0291-2642319, Fax-0291-2643993, Email- agrobios@sify.com
10. Sharma, O. P. & Somani, L. L. 2012. Dimension of Agricultural Extension, Agroteh Publishing Academy. Udaipur.

Course Name: Ability and Skill Enhancement - II

Course Code: 20002300

Course Outline - Final Assessment – Debate/Group Discussion

Unit I: Phonetics

Phonetic symbols and the International Phonetic Alphabets (IPA), The Description and Classification of Vowels (Monophthongs& Diphthong) Consonants, Phonetic Transcription & Phonology, Syllable, Stress & Intonations, and Reading aloud, recording audio clips.

Unit II: Vocabulary Building

Idioms and Phrases, Words Often Confused, One word Substitution, Word Formation: Prefix & Suffix.

Unit III: Ethics & Etiquettes

What are ethics, what are values, difference between ethics and morals, Business ethics, workplace ethics, what are virtues for e.g. civic virtues, etc. Human ethics and values- 5 core human values are: right conduct, living in peace, speaking the truth, loving and care,

and helping others. Etiquette awareness, Importance of First Impression, Personal Appearance & Professional presence, Personal Branding, Dressing Etiquette, Dining Etiquette.

Unit IV: Reading & Writing Skills
Reading Comprehension, News Reading, Picture Description, Paragraph Writing, News Writing.

Unit V : Listening & Speaking Skills
Public Speaking, Debate, Inspirational Movie Screening, Skit Performance.

Note: The review of Syllabus happens on periodic basis for the benefit of the students. In case there are changes in curriculum due to review, students would be intimated in writing.

7.3 Lesson Plan: Semester – II

20023800 Fundamentals of Genetics

Unit	Particulars	Class No.	Pedagogy of Class
Unit-1	Mendelian principles of heredity, Cell division – mitosis, Cell division – meiosis	C1	Lecture
Unit-1	Dominance relationships, gene interaction,	C2	Lecture
Unit-1	Epistatic gene interactions with examples and Epistatic gene interactions	C3	Lecture
Unit-2	Pleiotropism, pseudoalleles, Multiple alleles and Blood group genetics, Sex determination,	C4	Lecture
Unit-2	Sex limited, sex influenced and sex linked traits, Sex linkage	C5	Lecture
Unit-3	Linkage and its estimation, Crossing over, Mutation, and Mutagenic agents	C6	Lecture
Unit-3	Multiple factor hypothesis, Cytoplasmic inheritance, Genetic disorders,	C7	Lecture
Unit-4	Nature, structure and types of genetic material	C8	Lecture
Unit-4	Replication of genetic material, Genetic code & Protein synthesis	C9	Lecture
Unit-4	Gene concept and Gene regulation, operon concept, Lac and Trp operons	C10	Lecture
Unit-4	Transcription	C11	Lecture
Unit-4	Translational mechanism of genetic material,	C12	Lecture
Unit 1-4	Class Room Assignment	C13	Class Room Assignment
Unit 1-5	Class Room Assignment	C14	Class Room Assignment
Unit 1-6	Class Room Assignment	C15	Class Room Assignment

20023900 Fundamentals of Genetics Lab

Unit	Particulars	Class No.	Pedagogy of Class
Unit-1	Study of microscope.	P1	Practical
Unit-2	Study of cell structure.	P2	Practical
Unit-3	Mitosis and Meiosis cell division.	P3	Practical
Unit-4	Experiments on dihybrid	P4	Practical
Unit-5	Practice on mitotic and meiotic cell division,	P5	Practical
Unit-6	Determination of Chromosome map and interference	P6	Practical
Unit-7	Study of models on DNA and RNA structures.	P7	Practical

20024300 Fundamentals of Agricultural Economics

Unit	Particulars	Class No.	Pedagogy of Class
1	Meaning and scope of agri economics	C1	Lecture
1	Definition activity and approach	C2	Lecture
1	Positive and Normative economics Nature of economic theories	C3	Lecture
1	Classification of Agri Credit and credit analysis	C4	Lecture
1	Concept of equilibrium, Goods and services	C5	Lecture
1	Concept of desire want and demand	C6	Lecture
1	Agri economics definition characteristics importance	C7	Lecture
1	Economic development	C8	Lecture
1	Agri planning and development in country	C9	Lecture
II	Demand meaning schedule and curve	C10	Lecture
II	Demand meaning schedule and curve	C11	Lecture
II	Elasticity of demand	C12	Lecture
II	Elasticity of demand	C13	Lecture
II	Utility analysis	C14	Lecture
II	Utility analysis	C15	Lecture
II	Production meaning factors law	C16	Lecture
II	Cost Meaning types and behaviour	C17	Lecture
II	Cost Meaning types and behaviour	C18	Lecture
II	Law of supply elasticity and concept	C19	Lecture
II	Law of supply elasticity and concept	C20	Lecture
II	Law of supply elasticity and concept	C21	Lecture
III	Market meaning, structure and types	C22	Lecture
III	Price determination under perfect competition market	C23	Lecture
III	Price determination under perfect competition market	C24	Lecture

III	Clarification class	C25	Clarification class
III	Distribution theory and pricing	C25	Lecture
IV	National Income	C27	Lecture
IV	GST meaning and implementation	C28	Lecture
IV	Direct Tax meaning and Indian economy	C29	Lecture
IV	Clarification class	C30	Lecture

20024800 Agricultural Microbiology

Unit	Particulars	Class No.	Pedagogy of Class
Unit I	Scope and applications of microbiology	C1	Lecture
Unit I	Applications of agricultural microbiology	C2	Lecture
Unit II	importance of microbes in human welfare	C3	Lecture
Unit II	Biodegradation of agro-waste	C4	Lecture
Unit II	roles of microbes in biofuel production	C5	Lecture
Unit II	Importance of biofertilizers	C6	Lecture
	Clarification Class-1	C7	Clarification Class
Unit-II	Microbes in production of biopesticides	C8	Lecture
Unit-II	Microbes in silage production	C9	Lecture
Unit-II	Biological nitrogen fixation	C10	Lecture
Unit-II	Symbiotic and asymbiotic nitrogen fixation	C11	Lecture
	Clarification Class-2	C12	Clarification Class
	Guest Lecture	C13	Guest lecture
	Quiz-1	C14	Quiz
Unit-II	Role of Azolla in BNF	C15	Lecture
Unit-II	Structure and importance of mycorrhiza	C16	Lecture
Unit-II	Rhizosphere	C17	Lecture
Unit-II	Phyllosphere	C18	Lecture
	Clarification Class-3	C19	Clarification Class
	Webinar-1	C20	Webinar
	Home Assignment-1		Take Home Assignments
	Class Room Assignment 1	C21	Class Room Assignment
	Presentation-1	C22-C23	Presentation

	Quiz-2	C24	Quiz
Unit-I	Prokaryotes and Eukaryotes organisms	C25	Lecture
Unit-I	Bacterial cell wall structure	C26	Lecture
Unit-I	Mode of bacterial nutrition	C27	Lecture
Unit-I	Mode of bacterial reproduction	C28	Lecture
Unit-I	Different biogeochemical Cycles	C29	Lecture
	Clarification Class-4	C30	Clarification Class

20024900 Agricultural Microbiology Lab

S. No.	Particulars	Class No.	Pedagogy of Class
1	Introduction to microbiology laboratory and its equipments	P1-P2	Practical
2	Microscope- parts, principles of microscopy, resolving power and numerical aperture.	P3-P4	Practical
3	Methods of sterilization	P5-P6	Practical
4	Nutritional media and their preparations	P7-P8	Practical
5	Methods of isolation and purification of microbial cultures	P9-P10	Practical
6	Isolation of Azotobacter from soil. Isolation of Azospirillum from roots	P9-P11	Practical- 5
7	Enumeration of microbial population in soil- bacteria, fungi, actinomycetes	P9-P12	Practical- 5

20025300 Fundamentals of Entomology

Unit	Particulars	Class No.	Pedagogy of Class
UNIT-I	History of Entomology in India. Major points related to dominance of Insecta in Animal kingdom	C-1	Lecture
Unit-I	Classification of phylum Arthropoda upto classes. Relationship of class Insecta with other classes of Arthropoda. Morphology: Structure and functions of insect cuticle and molting	C-2	Lecture
Unit-I	Body segmentation. Structure of Head, thorax and abdomen. Structure and modifications of insect antennae, mouth parts, legs, Wing venation, modifications and wing coupling apparatus	C-3	Lecture
Unit-I	Structure of male and female genital organ. Metamorphosis and diapause in insects. Types of larvae and pupae	C-4	Lecture
Unit-I	Structure and functions of digestive, circulatory, excretory, respiratory, nervous, secretary (Endocrine) and reproductive system in insects	C-5	Lecture
Unit-I	Types of reproduction in insects. Major sensory organs like simple and compound eyes, chemoreceptor	C-6	Lecture
	Clarification class	C-7	Clarification Class
Unit-II	Insect Ecology: Introduction, Effect of abiotic factors–temperature, moisture, humidity, rainfall, light, atmospheric pressure and air currents	C-8	Lecture
Unit-II	Environment and its components	C-9	Lecture
	Class assignment	C-10	Class assignment
Unit-II	Effect of abiotic factors– temperature, moisture, humidity, rainfall, light, atmospheric pressure and air currents	C-11	Lecture
Unit-II	Effect of abiotic factors–humidity, rainfall, light	C-12	Lecture

Unit-II	Effect of abiotic factors–atmospheric pressure and air currents	C-13	Lecture
Unit-II	Effect of biotic factors – food competition, natural and environmental resistance	C-14	Lecture
Unit-III	Categories of pests	C-15	Lecture
Unit-III	Concept of IPM, Practices, scope and limitations of IPM	C-16	Lecture
Unit-III	Classification of insecticides, toxicity of insecticides and formulations of insecticides	C-17	Lecture
Unit-III	Chemical control-importance, hazards and limitations	C-18	Lecture
Unit-III	Recent methods of pest control, repellents, antifeedants, hormones, attractants, gamma radiation	C-19	Lecture
Unit-III	Insecticides Act 1968-Important provisions. Application techniques of spray fluids. Symptoms of poisoning, first aid and antidotes	C-20	Lecture
Unit-IV	Systematics: Taxonomy –importance, history and development and binomial nomenclature. Definitions of Biotype, Sub-species, Species, Genus, Family and Order. Classification of class Insecta upto Orders, basic groups of present day insects with special emphasis to orders and families of Agricultural importance	C-21	Lecture
Unit-IV	Orthoptera: Acrididae, Tettigonidae, Gryllidae, Gryllotalpidae; Dictyoptera: Mantidae, Blattidae; Odonata; Isoptera: Termitidae; Thysanoptera: Thripidae; Hemiptera: Pentatomidae, Coreidae, Cimicidae, Pyrrhocoridae, Lygaeidae, Cicadellidae, Delphacidae, Aphididae, Coccidae, Lophophidae, Aleurodidae, Pseudococcidae; Neuroptera: Chrysopidae	C-22	Lecture
	Quiz	C-23	Quiz

Unit-IV	Lepidoptera:Pieridae, Papiloinidae, Noctuidae, Sphingidae, Pyralidae, Gelechiidae, Arctiidae, Saturnidae, Bombycidae	C-24	Lecture
Unit-IV	Coleoptera: Coccinellidae, Chrysomelidae, Cerambycidae, Curculionidae, Bruchidae, Scarabaeidae; Hymenoptera: Tenthridinidae, Apidae. Trichogrammatidae, lchneumonidae, Braconidae, Chalcididae	C-25	Lecture
Unit-IV	Diptera: Cecidomyiidae, Tachinidae, Agromyziidae, Culicidae, Muscidae, Tephritidae	C-26	Lecture
	Clarification class	C-27	Clarification Class
	Quiz	C-28	Quiz
	Class room assignment-II	C-29	Class Assignment
	Presentation	C-30	Presentation

20025400 – Fundamentals of Entomology Lab

S. No.	Particulars	Class No.	Pedagogy of Class
1	Methods of collection and preservation of insects including immature stages	P1	Practical
2	External features of Grasshopper/Blister beetle	P2	Practical
3	Types of insect antennae, mouthparts and legs	P3	Practical
4	Wing venation, types of wings and wing coupling apparatus	P4	Practical
5	Types of insect larvae and pupae	P5	Practical
6	Dissection of digestive system in insects (Grasshopper)	P6	Practical
7	Dissection of male and female reproductive systems in insects (Grasshopper)	P7	Practical
8	Study of characters of orders Orthoptera, Dictyoptera and their families of agricultural importance	P8	Practical
9	Study of characters of Odonata, Isoptera, Thysanoptera and their families of agricultural importance	P9	Practical
10	Study of characters of Hemiptera, Lepidoptera and their families of agricultural importance	P10	Practical
11	Study of characters of Neuroptera, Coleoptera, and their families of agricultural importance	P11	Practical
12	Study of characters of Hymenoptera, Diptera and their families of agricultural importance	P12	Practical
13	Insecticides and their formulations	P13	Practical
14	Pesticide appliances and their maintenance	P14	Practical
15	Sampling techniques for estimation of insect population and damage	P15	Practical

20001800 – Irrigation & Water Management

Unit	Particulars	Class No.	Pedagogy of Class
UNIT-I	Irrigation: definition and objectives	C-1	Lecture
Unit-I	Water resources and irrigation development in India and Rajasthan	C-2	Lecture
Unit-I	Soil moisture constants and theories of soil water availability	C-3	Lecture
Unit-I	Methods of soil moisture estimation	C-4	Lecture
Unit-I	Methods of soil moisture estimation	C-5	Lecture
Unit-I	Evapo transpiration and crop water requirement	C-6	Lecture
Unit-I	Scheduling of irrigation	C-7	Lecture
Unit-I	Scheduling of irrigation	C-8	Lecture
Unit-I	Scheduling of irrigation	C-9	Lecture
Unit-I	Clarification class	C-10	Clarification Class
Unit-II	Methods of irrigation: surface, sprinkler and drip irrigation	C-11	Lecture
Unit-II	Methods of irrigation: surface, sprinkler and drip irrigation	C-12	Lecture
	Guest Lecture	C-13	Guest lecture
Unit-II	Irrigation efficiency and water use efficiency	C-14	Lecture
Unit-II	Irrigation water quality and its management including conjunctive use of water	C-15	Lecture
Unit-II	Irrigation water quality and its management including conjunctive use of water	C-16	Lecture
Unit-II	Assignment-1	C-17	Class Assignment
Unit-II	Water management of different crops (rice, wheat, maize, groundnut, sugarcane, pearl millet, chickpea, mustard)	C-18	Lecture
Unit-II	Water management of different crops (rice, wheat, maize, groundnut, sugarcane, pearl millet, chickpea, mustard)	C-19	Lecture
Unit-II	Quiz	C-20	Quiz

Unit-II	Agricultural drainage	C-21	Lecture
Unit-II	Agricultural drainage	C-22	Lecture
Unit-II	Clarification class	C-23	Lecture
Unit-III	Importance of water in crop production	C-24	Lecture
Unit-III	Soil Moisture constant	C-25	Guest lecture
Unit-III	Soil Moisture constant	C-26	Lecture
Unit-III	Assignment-2	C-27	Class Assignment
Unit-III	Estimation of potential evapo-transpiration and consumptive use	C-28	Lecture
Unit-III	Estimation of potential evapo-transpiration and consumptive use	C-29	Lecture
Unit-III	Home assignment		Home Assignments
Unit-III	Water requirement of crops and factors affecting it	C-30	Lecture
Unit-III	Approaches of irrigation scheduling	C-31	Lecture
Unit-III	Approaches of irrigation scheduling	C-32	Lecture
Unit-III	Quiz	C-33	Quiz
Unit-III	Systems and methods of irrigation – drip, sprinkler and mist Irrigation	C-34	Lecture
Unit-III	Systems and methods of irrigation – drip, sprinkler and mist Irrigation	C-35	Lecture
Unit-III	Webinar	C-36	Webinar
Unit-III	Quantity and quality of irrigation	C-37	Lecture
	Guest Lecture	C-38	Guest lecture
Unit-III	Home assignment		Home Assignments
Unit-III	Measurement of irrigation water	C-39	Lecture
Unit-III	Measurement of irrigation water	C-40	Lecture
Unit-III	Elementary idea of drainage on farms	C-41	Lecture
Unit-III	Elementary idea of drainage on farms	C-42	Lecture
Unit-III	Clarification class	C-43	Clarification Class

Unit-III	Webinar	C-44	Webinar
Unit-III	Presentation	C-45	Presentation

20025600 – Soil & water Conservation Engineering

Unit	Particulars	Class No.	Pedagogy of Class
UNIT-I	Introduction to soil and water conservation	C-1	Lecture
UNIT-I	Definition and Causes of soil erosion	C-2	Lecture
UNIT-I	Agents of soil erosion	C-3	Lecture
	Clarification class	C-4	Clarification Class
UNIT-I	Introduction and forms of water erosion	C-5	Lecture
UNIT-I	Types of water erosion	C-6	Lecture
UNIT-I	Gully erosion and classification of gullies	C-7	Lecture
	Clarification class	C-8	Clarification Class
	Class room assignment	C-9	Class Room Assignment
UNIT-I	Universal soil loss equation	C-10	Lecture
UNIT-I	Soil loss measurement techniques	C-11	Lecture
	Presentation	C-12	Presentation
	Home assignment	C-12	Home assignment
UNIT-II	Principals of erosion control	C-13	Lecture
UNIT-II	Introduction of contouring and its design	C-14	Lecture
	Class room assignment	C-15	Class Room Assignment
UNIT-II	Introduction of strip cropping and its design	C-16	Lecture
UNIT-II	Introduction of contour bunds and its design	C-17	Lecture
	Home assignment	C-17	Home assignment
UNIT-II	Introduction of graded bunds and its design	C-18	Lecture

UNIT-II	Introduction of bench terraces and its design	C-19	Lecture
	Clarification class	C-20	Clarification Class
	Home assignment	C-20	Home assignment
UNIT-II	Introduction of grassed waterways and its design	C-21	Lecture
UNIT-II	Water harvesting and its techniques	C-22	Lecture
	Class room assignment	C-23	Class Room Assignment
UNIT-II	Wind erosion and its mechanics	C-24	Lecture
UNIT-II	Types of soil movement	C-25	Lecture
UNIT-II	Principals of wind erosion control	C-26	Lecture
UNIT-II	Measures of wind erosion control	C-27	Lecture
	Clarification class	C-28	Clarification Class
	Quiz	C-29	Quiz
	Presentation	C-30	Presentation

20012500 – Soil & water Conservation Engineering Lab

S. No.	Particulars	Class No.	Pedagogy of Class
1	Study of different types and forms of water erosion	P-1	Practical
2	Computation on rainfall erosivity index	P-2	Practical
3	Computation on rainfall erodibility index	P-3	Practical
4	Determination of LS and CP for soil loss estimation through USLE and MUSLE	P-4	Practical
5	Soil loss estimation techniques	P-5	Practical
6	Study of rainfall simulator for erosion estimation	P-6	Practical
7	Estimation of soil loss through cohoshton wheel sampler and multy slot devisor	P-7	Practical
8	Determination of sediment concentration through oven dry method	P-8	Practical
9	Design and layout of contour bunds	P-9	Practical
10	Design and layout of graded bunds	P-10	Practical
11	Design and layout of broad base terraces	P-11	Practical
12	Design and layout of bench terraces, Design and layout of vegetative waterways	P-12,13	Practical
13	Exercise on rate of sedimentation and storage loss in tanks, Computation of soil loss through wind erosion	P-14,15	Practical
14	Design of wind breaks and shelterbelts	P-16	Practical
15	Visit of soil erosion sites and water shed project to know the measures of soil conservation	P-17	Practical

20025700– Fundamentals of Crop Physiology

Unit	Particulars	Class No.	Pedagogy of Class
Unit-1	Introduction to crop physiology and its importance in Agriculture	C1	Lecture
Unit-1	Plant cell: an Overview	C2	Lecture
Unit-1	Diffusion and osmosis	C3	Lecture
Unit-1	Absorption of water	C4	Lecture
Unit-1	Transpiration and Stomatal Physiology	C5	Lecture
Unit-1	Clarification Class	C6	Clarification Class
Unit-1	Mineral nutrition of Plants	C7	Lecture
Unit-1	Functions and deficiency symptoms of nutrients, nutrient uptake mechanisms	C8	Lecture
Unit-1	Photosynthesis	C9	Lecture
Unit-1	Light and Dark reactions	C10	Lecture
Unit-1	C3 Cycle	C11	Lecture
Unit-1	Clarification Class	C12	Clarification Class
Unit-1	C4 Cycle	C13	Lecture
Unit-1	CAM Cycle	C14	Lecture
Unit-1	Respiration	C15	Lecture
Unit-1	Glycolysis	C16	Lecture
Unit-1	TCA cycle and electron transport chain	C17	Lecture
Unit-1	Clarification Class	C18	Clarification Class
Unit-1	Fat Metabolism: Fatty acid synthesis and Breakdown	C19	Lecture
Unit-1	Plant growth regulators	C20	Lecture
Unit-1	Physiological roles and agricultural uses	C21	Lecture
Unit-1	Physiological aspects of growth and development of major crops: Growth analysis	C22	Lecture

Unit-1	Role of Physiological growth parameters in crop productivity	C23	Lecture
Unit-1	Clarification Class	C24	Clarification Class
Unit-1	Class Room Assignment	C25	Class Room Assignment
Unit-1	Class Room Assignment	C26	Class Room Assignment
Unit-1	Class Room Assignment	C27	Class Room Assignment
Unit-1	Presentation	C28	Presentation
Unit-1	Presentation	C29	Presentation
Unit-1	Quiz	C30	Quiz

20013500 – Fundamentals of Crop Physiology Lab

S. No.	Particulars	Class No.	Pedagogy of Class
1	Structure & Function of Plant Cell	P1	Practical
2	Structure and distribution of stomata	P2	Practical
3	Demonstration of imbibitions, osmosis and plasmolysis	P3	Practical
4	Measurement of root pressure	P4	Practical
5	Measurement of transpiration by different methods	P5	Practical
6	Separation of photosynthetic pigments through paper chromatography	P6	Practical
7	Separation of photosynthetic pigments through paper chromatography	P7	Practical
8	Measurement of respiration by using Ganong's respirometer.	P8	Practical
9	Measurement of respiration by using Ganong's respirometer.	P9	Practical
10	Tissue tests for mineral nutrients	P10	Practical
11	Tissue tests for mineral nutrients	P11	Practical
12	Estimation of relative water content (RWC)	P12	Practical
13	Estimation of relative water content (RWC)	P13	Practical

20026200 – Fundamentals of Plant Pathology

Unit	Particulars	Class No.	Pedagogy of Class
1	Introduction to the science of phytopathology	C-1	Lecture
1	Objectives and Scope of Plant Pathology	C-2	Lecture
1	Historical Background	C-3	Lecture
2	Classification of plant diseases	C-4	Lecture
2	Symptoms, Signs, and related Terminology	C-5	Lecture
2	Symptoms, Signs, and related Terminology	C-6	Lecture
1	Clarification Class I	C-7	Clarification Class
3	Quiz	C-8	Lecture
3	Parasitic causes of plant diseases (fungi) their characteristics and classification	C-9	Lecture
3	Plasmodiophoromycetes	C-10	Lecture
3	Oomycetes and Ascomycetes	C-11	Lecture
3	Basideomycetes	C-12	Lecture
3	Class Room Assignment I	C-13	Class Assignment
3	Deuteromyctes; Leaf spot, Blight	C-14	Lecture
3	Deuteromycetes; Wilt and Rots	C-15	Lecture
3	Nematodal Diseases	C-16	Lecture
	Presentation I	C-17	Presentation
3	Bacterial Diseases	C-18	Lecture
3	Virusal Diseases	C-19	Lecture
3	Phytoplasma, Protozoa, Algal Diseases	C-20	Lecture
	Take Home Assignments I		Home Assignments
3	Flowering parasitic plants	C-21	Lecture
3	Classroom Assignment II	C-22	Class Assignment

3	Clarification Class II	C-23	Clarification Class
4	Non-parasitic causes of plant diseases	C-24	Lecture
4	Non-parasitic causes of plant diseases	C-25	Lecture
4	Infection process I	C-26	Lecture
4	Infection process II	C-27	Lecture
	Take Home Assignments II		Home Assignments
4	Survival of plant pathogens.	C-28	Lecture
4	Dispersal of Plant Pathogens	C-29	Lecture
5	Plant disease epidemiology	C-30	Lecture
	Presentation II	C-31	Presentation
5	Disease forecasting	C-32	Lecture
5	Disease Assessment	C-33	Lecture
5	Clarification Class III	C-34	Clarification Class
6	Disease management; Principles	C-35	Webinar
6	Home Assignment-III		Home Assignments
6	Regulatory Methods and Cultural Practices	C-36	Lecture
6	Physical Methods	C-37	Lecture
6	Biological control	C-38	Lecture
6	Production of Resistant Variety	C-39	Lecture
7	Integrated Plant Disease Management	C-40	Lecture
8	Fungicides classification based on chemical nature	C-41	Lecture
8	Commonly used Fungicides	C-42	Lecture
8	Bactericides and Nematicides	C-43	Lecture
8	Classroom Assignment III	C-44	Class Assignment
8	Clarification Class IV	C-45	Clarification Class

20026300 – Fundamentals of Plant Pathology Lab

S. No.	Particulars	Class No.	Pedagogy of Class
1	General Plant Pathological Laboratory Equipments	P1-P2	Practical
2	Plant Pathological Field Equipments	P3-P4	Practical
3	Diseases Caused by Plasmodiophoromycota, Chytridiomycota, zygomycota and Oomycota	P5-P6	Practical
4	Diseases Caused by Basidiomycota - Smuts, rust	P7-P8	Practical
5	Diseases Caused by Ascomycota - Powdery mildews, wilt and root rots	P9-P10	Practical
6	Diseases Caused by Ascomycota –Stem, leaf and fruit diseases, Post Harvest Diseases of Fruits and Vegetables	P11-P12	Practical
7	Bacterial Plant Diseases, Viral Diseases of Horticultural Plants, Parasitic Algae and Flowering Plants	P13-P14	Practical
8	Culture Media and Sterilization	P15-P16	Practical
9	Isolation of Fungal and Bacterial Plant Pathogens	P17-P18	Practical
10	Fungicidal Solutions, Slurries and Pastes, and their Applications	P19-P20	Practical

20026000 – Fundamentals of Agricultural Extension Education

Unit	Particulars	Class No.	Pedagogy of Class
UNIT-I	Education: Meaning, Definition & Types	C1	Lecture
UNIT-I	Extension Education- Meaning, Definition, Scope & Process	C2	Lecture
UNIT-I	Extension Programme Planning- Meaning, Process, Principles & Steps in Programme Development	C3	Lecture
UNIT-I	Clarification Class	C4	Clarification Class
UNIT-I	Extension System in India: Extension efforts in Pre-independence era (Sriniketan, Marthandam, Firka Development Scheme, Gurgaon Experiment.)	C5	Lecture
UNIT-I	Post-Independence era (Etawah Pilot Project, Nilokheri Experiment)	C6	Lecture
UNIT-I	Various Extension/Agriculture development programmes launched by ICAR/Govt. of India-IADP, IAAP.	C7	Lecture
UNIT-I	HYVP, KVK, IVLP, ORP, NDP	C8	lecture
UNIT-I	NARP, ATIC, RKVY, Pradhan Mantri fasal bima yojna, soil health Card, NRLM	C9	lecture
UNIT-I	Clarification Class	C10	Clarification Class
UNIT-I	New Trends in Agriculture extension, privatization extension	C11	Lecture
UNIT-I	Presentation	C12	Presentation
UNIT-I	Cyber extension/e-extension	C13	Lecture
UNIT-I	market-led extension,	C14	Lecture
UNIT-II	Rural development: Concept, Meaning & definition	C15	Lecture
UNIT-II	Webinar	C16	Webinar
UNIT-II	various rural development programmes launched by Govt. of India. Community Dev.-meaning, definition, concept & principles,	C17	Lecture

UNIT-II	Philosophy of C.D. Rural Leadership: concept and definition, types of leaders in rural context;	C18	Lecture
UNIT-II	Class Room Assignment	C19	Class Room Assignment
UNIT-II	extension administration: meaning and concept, principles and functions.	C20	Lecture
UNIT-II	Monitoring and evaluation: concept and definition, monitoring and evaluation of extension programmes; transfer of technology: concept and models, capacity building of extension personnel;	C21	Lecture
UNIT-II	extension teaching methods: meaning, classification, individual, group and mass contact methods, ICT Applications in TOT (New and Social Media), media mix strategies;	C22	Lecture
UNIT-II	Presentation	C23	Presentation
UNIT-II	Class Room Assignment	C24	Class Assignment
UNIT-II	Clarification Class	C25	Clarification Class
UNIT-II	communication: meaning and definition;	C26	Lecture
UNIT-II	Principles and Functions of Communication, models and barriers to communication.	C27	Lecture
UNIT-II		C28	Lecture
UNIT-II	Agriculture journalism; diffusion and adoption of innovation: concept and meaning, process and stages of adoption, adopter categories.	C29	Lecture
UNIT-II	Clarification Class	C30	Clarification Class

20026100 – Fundamentals of Agriculture Extension Education Lab

S. No.	Particulars	Class No.	Pedagogy of Class
1	To get acquainted with university extension system	P1	Practical
2	Group discussion- exercise	P2	Practical
3	Handling and use of audio visual equipments and digital camera and LCD projector	P3	Practical
4	Preparation and use of AV aids, preparation of extension literature – leaflet, booklet, folder, pamphlet news stories and success stories	P4	Practical
5	Presentation skills exercise; micro teaching exercise	P5	Practical
6	A visit to village to understand the problems being encountered by the villagers/ farmers	P6	Practical
7	To study organization and functioning of DRDA and other development departments at district level	P7	Practical
8	To study organization and functioning of DRDA and other development departments at district level	P8	Practical
9	Visit to NGO and learning from their experience in rural development	P9	Practical
10	Understanding PRA techniques and their application in village development planning	P10	Practical
11	Understanding PRA techniques and their application in village development planning	P11	Practical
12	Exposure to mass media: visit to community radio and television studio for understanding the process of programme production	P12	Practical
13	Exposure to mass media: visit to community radio and television studio for understanding the process of programme production	P13	Practical
14	Script writing, writing for print and electronic media, developing script for radio and television	P14	Practical
15	Script writing, writing for print and electronic media, developing script for radio and television	P15	Practical

20002300 – Ability and Skill Enhancement

Unit	Particulars	Class No.	Pedagogy of Class
UNIT I	Phonetic symbols and the International Phonetic Alphabets (IPA)	C-1	Lecture
UNIT I	Phonetic symbols and the International Phonetic Alphabets (IPA)	C-2	Lecture
UNIT I	The Description and Classification of Vowels (Monophthongs & Diphthong) Consonants,	C-3	Lecture
UNIT I	Syllable, Stress &Intonations	C-4	Lecture
UNIT I	Reading aloud, recording audio clips.	C-5	Lecture
UNIT I	Reading aloud, recording audio clips.	C-6	Lecture
	Clarification Class-1	C-7	Clarification Class -1
	Class Room Assignment No .1	C-8	Class Assignment
UNIT II	Idioms and Phrases	C-9	Lecture
UNIT II	Presentation	C-10	Presentation
UNIT II	Words Often Confused	C-11	Lecture
	Take Home Assignment -1		Home Assignments
UNITII	One word Substitution Word Formation Prefix and Suffix	C-12	Lecture
UNIT II	Clarification Class -2	C-13	Clarification Class
UNIT II	Guest Lecture	C-14	Guest Lecture
UNIT II	Class Room Assignment No .2	C-15	Class Assignment
UNIT III	What are ethics, what are values, difference between ethics and moral	C-16	Lecture
UNIT III	Webinar	C-17	Webinar
UNIT III	Business ethics, workplace ethics, what are virtues for e.g. civic virtues, etc./Moot court workshop	C-18	Lecture
UNIT III	QUIZ	C-19	Quiz

UNIT III	Human ethics 5 core human values are: right conduct, living in peace, speaking the truth, loving and care, and helping others. /Moot Court workshop	C-20	Lecture
UNIT III	Seminar	C-21	Seminar
UNIT III	Etiquettes awareness importance of First Impression Personal Appearance & Professional presence, Personal Branding, Dressing Etiquette	C-22	Activity
UNIT III	Dining Etiquettes/first impression	C-23	Activity
	Clarification Class -3	C-24	Clarification Class
Unit IV	Reading Comprehension	C-25	Lecture
UNIT IV	News Reading, News Writing	C-26	Activity
UNIT IV	Picture Description, Paragraph Writing	C-27	Lecture
UNIT IV	Public Speaking/Debate/listening	C-28	Activity
UNIT IV	Presentation -2	C-29	Activity
UNIT IV	Inspirational Movie Screening, Skit Performance.	C-30	Activity

Note:

This is a tentative lesson plan. The same may change from faculty to faculty as per the teaching pedagogy adopted by the faculty.

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