Detailed Course Scheme

Bachelor of Science (Hons.)

Agriculture

Semester- II

(2024- 28)

DOC2410100007

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 2025 along with examination pattern is as follows:

Course Scheme

Semester –II

S. No.	Course Code	Course Category	Course Name	L	T	P	Credits
1.	SECA77003	SEC-III	Seed Production Technology Lab	0	0	4	2
2.	SECA77004	SEC-IV	Post-harvest processing technology Lab	0	0	4	2
3.	BSAC50150	AEC-4	Personality Development	1	0	0	1
4.	BSAC50151	AEC-5	Personality Development Lab	0	0	2	1
5.	BSAC57150	AEC-6	Environmental Studies and Disaster Management	2	0	0	2
6.	BSAC57151	AEC-7	Environmental Studies and Disaster Management Lab	0	0	2	1
7.	BSAC43150	DSCSO-2a	Soil Fertility Management	2	0	0	2
8.	BSAC43151	DSCSO-2b	Soil Fertility Management Lab	0	0	2	1
9.	BSAC44150	DSCEN-1a	Fundamentals of Entomology	2	0	0	2
10.	BSAC44151	DSCEN-1b	Fundamentals of Entomology Lab	0	0	2	1
11.	BSAC53200	DSCAP-1a	Livestock and poultry Management	1	0	0	1
12.	BSAC53201	DSCAP-1b	Livestock and poultry Management Lab	0	0	2	1
13.	BSAC47150	DSCPP-1a	Fundamentals of Plant Pathology	2	0	0	2
14.	BSAC47151	DSCPP-1b	Fundamentals of Plant Pathology Lab	0	0	2	1
15.	WHNN99151	AEC-8	National Service Scheme (NSS-II)	0	0	2	1
			Total	**10**	**0**	**22**	**21**

The student who wish to exit with UG-certificate after one year, has to undergo 10 weeks of internship programme (10 credits) after 1st Year.

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
Academic and course involvement		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
Academic and course involvement		5
TOTAL	**50**	

External Assessment

Type	Marks
Practical	50

1. Vision

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.

6. Course Outcomes (COs):

Course	Course outcomes: - After completion of these courses students should be able to
SECA77003 - Seed Production Technology Lab	**CO1:** Define seed production in major cereals: Wheat, Rice, Maize, Sorghum, Bajra and Ragi. **CO2:** Demonstrate seed sampling and testing: Physical purity, germination, viability, etc. **CO3:** Make use of seed certification: Procedure, Field inspection, Preparation of field inspection report. **CO4:** Examine seed and seedling vigour test. Genetic purity test: **CO5:** Recommend visit to seed production farms, seed testing laboratories and seed processing plant.
SECA77004 - Post-harvest processing technology Lab	**CO1:** Analyze the maturity stages of various horticultural produce and evaluate their physiological loss in weight and quality during post-harvest handling. **CO2:** Demonstrate the process of physico-chemical analysis of fruits and vegetables and apply grading techniques to ensure quality standards in horticultural produce. **CO3:** Design and implement post-harvest treatments and packaging methods for fruits, vegetables, plantation crops, and cut flowers to enhance shelf life and reduce spoilage. **CO4:** Construct food products such as squashes, jams, sauces, pickles, and dehydrated fruits and vegetables using standard processing and preservation techniques, and critique their quality based on sensory evaluation. **CO5:** Evaluate storage methods for horticultural produce and compare different market practices, packaging systems, and cold storage facilities for their efficiency in maintaining produce quality.
BSAC50150 - Personality Development	**CO1:** Analyze and Evaluate Personality Theories **CO2:** Apply and Assess Behavioral Models **CO3:** Develop Learning and Feedback Strategies **CO4:** Evaluate Motivation and Intelligence Theories **CO5:** Synthesize Teamwork Dynamics

BSAC50151 - Personality Development Lab	**CO1:** Identify and Explain Personality Dynamics **CO2:** Apply Learning Strategies **CO3:** Analyze Team and Group Dynamics **CO4:** Evaluate Leadership and Conflict Management Styles **CO5:** Develop Solutions through Case Studies
BSAC57150 - Environmental Studies and Disaster Management	**CO1:** Understand the multidisciplinary nature of environmental studies and analyze the interactions between Earth's spheres and natural resources. **CO2:** Explain the structure, functions, and types of ecosystems, emphasizing energy flow and biodiversity conservation strategies. **CO3:** Assess the causes, effects, and control measures for various types of environmental pollution and manage solid waste effectively. **CO4:** Evaluate social and legislative approaches to environmental issues, including conservation practices and sustainability efforts. **CO5:** Develop disaster management strategies by integrating ecological, social, and administrative frameworks for natural and man-made disasters.
BSAC57151 - Environmental Studies and Disaster Management Lab	**CO1:** Analyze the environmental impacts of natural disasters and design strategies for ecological monitoring and disaster management using field data. **CO2:** Evaluate water quality parameters such as pH, EC, TDS, acidity, alkalinity, and hardness through sampling and preservation techniques, and interpret results for environmental chemistry applications. **CO3:** Assess ecosystem dynamics and biodiversity by examining floral and faunal diversity in both polluted and unpolluted environments, fostering conservation strategies. **CO4:** Demonstrate practical knowledge in documenting and analyzing environmental resources like rivers, forests, and grasslands to understand their ecological and societal significance. **CO5:** Explore renewable energy technologies and assess their roles in pollution management and biodiversity preservation, promoting sustainable development practices.

BSAC43150 - Soil Fertility Management	**CO1:** Understand fundamental concepts of demonstrate knowledge of the history of soil fertility and plant nutrition, including the criteria for essential nutrients. **CO2:** Identify nutrient deficiencies of recognize and articulate the symptoms of nutrient deficiencies and toxicities in plants. **CO3:** Evaluate soil fertility, soil testing and fertility evaluations to assess nutrient availability and critical levels in soils. **CO4:** Apply principles of Integrated Nutrient Management by combining chemical and organic fertilizers effectively. **CO5:** Analyze the develop and recommend targeted fertilization strategies that enhance nutrient use efficiency (NUE) and promote sustainable agricultural practices
BSAC43151 - Soil Fertility Management Lab	**CO1:** Understand principles and functions of analytical instruments used for soil and plant nutrient analysis. **CO2:** Apply the calibration procedures for colorimeters and flame photometers to ensure accurate and reliable measurements. **CO3:** Estimate key soil nutrients, including alkaline hydrolysable nitrogen, extractable phosphorus, exchangeable potassium, calcium, magnesium, sulfur, and DTPA-extractable zinc. **CO4:** Evaluate nutrient levels in plants, specifically nitrogen, phosphorus, potassium, and sulfur. **CO5:** Analyze and interpret the results of soil and plant nutrient estimations to inform and improve nutrient management practices.
BSAC44150 - Fundamentals of Entomology	**CO1:** Learn to classify the phylum Arthropoda, focusing on the class Insecta and its key agricultural orders and families. **CO2:** Analyze the structure and function of insect body parts, including the cuticle and appendages, and their ecological significance. **CO3:** Understand the functions of various insect systems and their role in insect survival. **CO4:** Evaluate insect roles within ecosystems and classify pest categories affecting agriculture. **CO5:** Apply binomial nomenclature and grasp the importance of biological classification.

BSAC44151 - Fundamentals of Entomology Lab	**CO1:** Learn effective methods for collecting and preserving insects, including immature stages. **CO2:** Identify and describe external features of insects like grasshoppers and blister beetles, including antennae and mouthparts. **CO3:** Analyze wing venation, types of wings, and wing coupling mechanisms. **CO4:** Perform dissections to study the digestive systems of insects. **CO5:** Evaluate insecticides, pesticide appliances, and sampling techniques for assessing insect populations and damage.
BSAC53200 - Livestock and Poultry Management	**CO1:** Identify indigenous and exotic breeds of cattle, buffalo, sheep, goat and poultry. **CO2:** Discover the understanding about principles, planning, and technical approach for reproduction management in different farm animals. Introduce the diseases of livestock and poultry and its prevention (including vaccination schedule) and control of important diseases of livestock and poultry. **CO3:** Determine the ability to select different types of houses suited in specific climatic conditions for best management of calves, growing heifers and milch animals. **CO4:** Discuss digestive system of livestock and poultry, classification of feed stuffs, nutrients and their functions with animal diseases. **CO5:** Information about livestock in Indian agricultural concerns and future prospects
BSAC53201- Livestock and Poultry Management Lab	**CO1:** Classify the external body parts of different animals. **CO2:** Classify the different animals. **CO3:** Identification methods of farm animals and poultry. **CO4:** Survey of IDF and IPF to study breeds of livestock and poultry and daily routine farm operations and farm records. **CO5:** Estimate the economics yield of cattle, buffalo, sheep, goat, swine and poultry production.

BSAC47150-Fundamentals of Plant Pathology	**CO1:** Explain the concept of plant diseases, their causes, and the historical development of plant pathology with a focus on India. **CO2:** Classify plant diseases based on causal agents and analyze the processes of parasitism and pathogenesis, including the disease triangle and disease cycle. **CO3:** Identify and differentiate between the morphology, reproduction, and classification of fungi, bacteria, mollicutes, and other phytopathogenic organisms, including viruses and viroids. **CO4:** Illustrate methods of plant disease transmission and evaluate strategies for managing diseases using chemicals, host resistance, and cultural approaches as part of Integrated Disease Management (IDM). **CO5:** Develop sustainable disease management plans by integrating chemical, biological, and cultural methods to minimize the impact of plant pathogens on agriculture.
BSAC47151-Fundamentals of Plant Pathology Lab	**CO1:** Operate and maintain laboratory equipment, including microscopes, for the examination of plant disease symptoms and pathogens. **CO2:** Perform microscopic examinations of fungal and bacterial structures and diseased specimens to identify pathogenic characteristics. **CO3:** Execute staining techniques such as direct, indirect, and Gram staining for the identification and differentiation of bacterial pathogens. **CO4:** Prepare culture media, isolate, and purify plant pathogens like fungi, bacteria, and viruses for diagnostic and research purposes. **CO5:** Diagnose plant diseases using Koch's Postulates and evaluate fungicides by analyzing their characteristics, formulation, and application methods.
WHNN99151-National Service Scheme (NSS-II)	**CO1:** Explain the importance and role of youth leadership, including leadership types, traits, and qualities. **CO2:** Analyze life competencies and apply problem-solving and decision-making skills effectively. **CO3:** Demonstrate knowledge of health, hygiene, and first aid for promoting overall well-being. **CO4:** Develop an understanding of yoga and practice it as a tool for a healthy lifestyle. **CO5:** Evaluate youth development programs and design initiatives for addressing youth challenges.

7. CO PO Mapping

SECA77003	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	2		2	3		2	2	3	2	2
CO2	2	3	3	2		2	2		3	3	3	3
CO3	3	2		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		2	

SECA77004	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	3				2	3	3	3	2	3	2
CO2	2		2		3	3	2		2	2	2	3
CO3	3	3	3	3	3		3	2	2	3	3	2
CO4	2	3	3	3		2	2	3	3	2		2
CO5	2	3	3	3	3	2	2	2	2	2	2	2

BSAC50150	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

BSAC50151	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	2		3	3	2	3	3

BSAC57150	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		2	
CO3	3	3	2				2	2	3	2		2
CO4	3	2	3	3	3	2				2	3	
CO5	2		3	3	3	3		3	3	3	3	3

BSAC57151	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	3	3	2			2	2		3		3
CO2		2		3	2	3	2	2	2	3	2	2
CO3	3	3	3		3	3	3			3	3	
CO4	2		2	2	2	3	3	2		3	3	2
CO5	3	3	3	3	3	3		2	3		3	

BSAC43150	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	2	3	3	3		2	2	2		3	2
CO2	3		3		2	2	3	2	2	2	3	2
CO3	2	3	3	3		3	3	3			3	3
CO4	2	2	2	3	3	2	3		2		3	3
CO5	3	3	2	3		3	3		2	3		3

BSAC43151	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

BSAC44150	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					3	2		3	2	2	3
CO5	3	2	3	3	2	3	1	2	2	3	3	2

BSAC44151	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		3	2	3	2	3	2		3
CO4	3	3		3	3	3	2	3		3	3	3
CO5	2	2	3	2	3	2		2	3	2	3	3

BSAC53200	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

BSAC53201	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1		3	2	2	2	3	2	2	3		2	3
CO2	3				3		3	3	2		3	2
CO3	2	2	2	2	2	2		2		2	2	
CO4	3	2		3		2	2	2	2	3		2
CO5	2	2	3	2	2		2		3		2	3

BSAC47150	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	3	3	2	3	2	2	2	3		2
CO2	3	3	3		2	3	3	2	2	3	3	2
CO3	3	3	3	3	2	3	3	3	2	2		3
CO4	3	3	3	3	3	2		2	3	2	2	3
CO5	3	3	3	3	2		3	2		3	3	3

BSAC47151	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	3	2		2	2	2	3	3	2	3	2
CO2	2	2	3	3		2	3	2	3	2	3	2
CO3	3	3	2	2	3		3	3	3	3	2	3
CO4	2		3	2	3	3	2		3	2	2	3
CO5	3	3	3	3	2	3	3	2		3	3	3

WHNN99151	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		3	2			2	2	3		2
CO3	2		2			3	2	3		3	2	
CO4	3	3	2	3	2	3	3	3		3		3
CO5	2	3			2	3	2		3		2	3

8. Curriculum

Course Name: Seed Production Technology Lab

Course Code: SECA77003

Course Outline:

Seed production in major cereals: Wheat, Rice, Maize, Sorghum, Bajra and Ragi. Seed production in major pulses: Urd, Mung, Pigeonpea, Lentil, Gram, Field bean, pea. Seed production in major oilseeds: Soybean, Sunflower, Rapeseed, Groundnut and Mustard. Seed production in important vegetable crops Seed sampling and testing: Physical purity, germination, viability etc. Seed and seedling Vigour test. Genetic purity test: Grow out test and electrophoresis. Seed certification: Procedure, Field inspection, Preparation of field inspection report. Visit to seed production farms, seed testing laboratories and seed processing plant.

Course Name: Post-harvest processing technology Lab

Course Code: SECA77004

Course Outline:

Equipment used in food processing units, Precooling of horticultural crops, Physio-chemical analysis of fruits and vegetables, Practice in judging the maturity of various horticultural produce, Determination of physiological loss in weight and quality, Grading of horticultural produce, Post-harvest treatment of horticultural crops, Canning of fruits and vegetables, Packaging studies in fruits, vegetables, plantation crops and cut flowers by using different packaging materials, preparation of squash, Preparation of jam, Preparation of sauces, Preparation of pickles, Dehydration of fruits and vegetables, Methods of storage in horticultural produce, Visit to markets, packaging houses and cold storage units.

Course Name: Personality Development

Course Code: BSAC50150

Course Outline:

Unit-I: Personality Definition, Nature of personality, theories of personality and its types. The humanistic approach - Maslow's self-actualization theory, shaping of personality, determinants of personality, Myers-Briggs Typology Indicator, Locus of control and performance, Type A and Type B Behaviours, personality and Organizational Behaviour.

Unit-II: Foundations of individual behavior and factors influencing individual behavior, Models of individual behavior, Perception and attributes and factors affecting

perception, Attribution theory and case studies on Perception and Attribution. Learning: Meaning and definition, theories and principles of learning, Learning and organizational behavior, Learning and training, learning feedback. Attitude and values, Intelligence- types of Intelligence, theories of intelligence, measurements of intelligence, factors influencing intelligence, intelligence and Organizational behavior, emotional intelligence. Motivation- theories and principles, Teamwork and group dynamics.

Suggested reading

1. Andrews, Sudhir. 1988. How to Succeed at Interviews. 21st (rep.) New Delhi. Tata McGraw- Hill.
2. Heller, Robert. 2002. Effective Leadership. Essential Manager series. Dk Publishing.
3. Hindle, Tim. 2003. Reducing Stress. Essential Manager series. Dk Publishing.
4. Lucas, Stephen. 2001. Art of Public Speaking. New Delhi. Tata - Mc-Graw Hill.
5. Mile, D.J. 2004. Power of Positive Thinking. Delhi. Rohan Book Company.
6. Pravesh Kumar. 2005. All about Self- Motivation. New Delhi. Goodwill Publishing House.
7. Smith, B. 2004. Body Language. Delhi: Rohan Book Company.
8. Shaffer, D. R. 2009. Social and Personality Development (6th Edition). Belmont, CA: Wadswor.

Course Name: Personality Development Lab

Course Code: BSAC50151

Course Outline:

BTI personality analysis, Learning Styles and Strategies, Motivational needs, Firo-B, Interpersonal Communication, Teamwork and team building, Group Dynamics, Win-win game, Conflict Management, Leadership styles, Case studies on Personality and Organizational Behavior.

Course Name: Environmental Studies and Disaster Management

Course Code: BSAC57150

Course Outline:

Unit-I: Introduction to Environment - Environmental studies: Definition, scope and importance - Multidisciplinary nature of environmental studies - Segments of Environment - Spheres of Earth - Lithosphere - Hydrosphere - Atmosphere - Different layers of atmosphere. Natural Resources: Classification - Forest resources. Water resources. Mineral resources Food resources. Energy resources. Land resources. Soil resources. Ecosystems: Concept of an ecosystem - Structure and function of an ecosystem - Energy flow in the ecosystem. Types of ecosystems. Biodiversity and its

conservation: Introduction, definition, types. Biogeographical classification of India. Importance and Value of biodiversity. Biodiversity hot spots. Threats and Conservation of biodiversity.

Unit-II: Environmental Pollution: Definition, cause, effects and control measures of: a. Air pollution. b. Water pollution. c. Soil pollution. d. Marine pollution. e. Noise pollution. f. Thermal pollution h. Light pollution. Solid Waste Management: Classification of solid wastes and management methods, Composting, Incineration, Pyrolysis, Biogas production, Causes, effects and control measures of urban and industrial wastes. Social Issues and the Environment: 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, nuclear accidents and holocaust. Environment Protection Act. Air (Prevention and Control of Pollution) Act. Water (Prevention and control of Pollution) Act. Wildlife Protection Act. Forest Conservation Act. Human Population and the Environment: Environment and human health: Human Rights, Value Education. Women and Child Welfare. Role of Information Technology in Environment and human health.

Unit-III: Disaster management: Disaster definition - Types - Natural Disasters - Floods, drought, cyclone, earthquakes, landslides, avalanches, volcanic eruptions, Heat and cold waves. Man Made Disasters: Nuclear disasters, chemical disasters, biological disasters, building fire, coal fire, forest fire, oil fire, road accidents, rail accidents, air accidents, sea accidents. International and National strategy for disaster reduction. Concept of disaster management, national disaster management framework; financial arrangements; role of NGOs, community-based organizations and media in disaster management. Central, state, district and local administration in disaster control; Armed forces in disaster response; Police and other organizations in disaster management.

Suggested Readings

1. De, A.K. 2010. Environmental chemistry. Published by New Age International Publishers, New Delhi. ISBN:13–978 81 224 2617 5. 384 pp
2. Dhar Chakrabarti, P.G. 2011. Disaster management - India's risk management policy frameworks and key challenges. Published by Centre for Social Markets (India), Bangalore. 36 pp.
3. Erach Bharucha, Text book for Environmental studies. University Grants Commission, New Delhi
4. Parthiban, K.T. Vennila, Prasanthrajan, S., Umesh, M. and Kanna, S. 2023. Forest, Environment, Biodiversity and Sustainable development. Narendra Publishing House, New Delhi, India. (In Press).
5. Prasanthrajan M. and Mahendran, P.P. 2008. A text book on Ecology and Environmental Science. ISBN 81-8321-104-6. Agrotech Publishing Academy, Udaipur - 313 002. First Edition: 2008
6. Prasanthrajan M. 2018. Objective environmental studies and disaster management. ISBN 9789387893825. Scientific publishers, Jodhpur, India. Pp. 146.
7. Sharma, P.D. 2009. Ecology and Environment, Rastogi Publications, Meerut, India

8. Tyler Miller and Scot Spoolman. 2009. Living in the Environment (Concepts, Connections, and Solutions). Brooks/cole, Cengage learning publication, Belmont, USA

Course Name: Environmental Studies and Disaster Management Lab

Course Code: BSAC57151

Course Outline:

Visit to a local area to document environmental assets river/forest/grassland/hill/mountain. Energy: Biogas production from organic wastes. Visit to wind mill / hydro power / solar power generation units. Biodiversity assessment in farming system. Floral and faunal diversity assessment in polluted and un polluted system. Visit to local polluted site - Urban/Rural/Industrial/Agricultural to study of common plants, insects and birds. Environmental sampling and preservation. Water quality analysis: pH, EC and TDS. Estimation of Acidity, Alkalinity. Estimation of water hardness. Estimation of DO and BOD in water samples. Estimation of COD in water samples. Enumeration of E. coli in water sample. Assessment of Suspended Particulate Matter (SPM). Study of simple ecosystem – Visit to pond/river/hills. Visit to areas affected by natural disaster.

Course Name: Soil Fertility Management

Course Code: BSAC43150

Course Outline:

Unit-I: History of soil fertility and plant nutrition. criteria of essentiality. role, deficiency and toxicity symptoms of essential plant nutrients, Mechanisms of nutrient transport to plants, factors affecting nutrient availability to plants. Chemistry of macro and micronutrients. Soil fertility evaluation, Soil testing. Critical levels of different nutrients in soil. Forms of nutrients in soil, plant analysis, rapid plant tissue tests. Indicator plants. Introduction and importance of manures and fertilizers. Fertilizer recommendation approaches.

Unit-II: Integrated nutrient management. Chemical fertilizers: classification, composition and properties of major fertilizers, secondary and micronutrient fertilizers, Complex fertilizers, Customized fertilizers, water soluble fertilizers nano fertilizers Soil amendments, Fertilizer Storage, Fertilizer Control Order. Methods of fertilizer recommendations to crops. Factor influencing nutrient use efficiency (NUE), methods of application under rainfed and irrigated conditions. STCR/RTNM/ IPNS, Carbon sequestration and Carbon Trading, Preparation and properties of major manures (FYM, Compost, Vermicompost, Green manuring, Oilcakes).

Suggested readings

1. Introductory Soil Science by Dilip Kumar Das, Kalyani Publishers
2. Soil Fertility and Nutrient Management by S. S. Singh, Kalyani Publishers
3. Soil Fertility and Fertilizers by Samual L. Tisdale, Werner L. Nelson and James D. Beaton, Macmillan Publishing Company, New York
4. The nature and Properties of Soils by Harry O. Buckman and Nyle C.

Course Name: Soil Fertility Management Lab

Course Code: BSAC43151

Course Outline:

Introduction of analytical instruments and their principles, calibration and applications of Colorimetry and flame photometry; Estimation of alkaline hydrolysable N in soils; Estimation of soil extractable P in soils; Estimation of exchangeable K in soils; Estimation of exchangeable Ca and Mg in soils; Estimation of soil extractable S in soils; Estimation of DTPA extractable Zn in soils; Estimation of N in plants; Estimation of P in plants; Estimation of K in plants; Estimation of S in plants.

Course Name: Fundamentals of Entomology

Course Code: BSAC44150

Course Outline:

Unit-I: History of Entomology in India. Major points related to dominance of Insects in Animal kingdom. Classification of phylum Arthropoda up to classes. Relationship of class Insects 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. 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.

Unit-II: Insect Ecology: Introduction, Environment and its components. Effect of abiotic factors and biotic factors. Categories of pests. Systematics: Taxonomy – importance, history and development and binomial nomenclature. Definitions of Biotype, Sub-species, Species, Genus, Family and Order.

Unit-III: Classification of class Insecta up to Orders, basic groups of present day insects with special emphasis to orders and families of Agricultural importance like Orthoptera: Acrididae, Tettigoniidae, 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.

Suggested readings

1. Fundamentals of Ecology - Eugene. P. Odum and Gray W. Barrett
2. Imm's General Text book of Entomology— O.W. Rechards and R.G. Davies
3. Introduction to the study of Insects –D. J. Borror and DeLong's

Course Name: Fundamentals of Entomology Lab

Course Code: BSAC44151

Course Outline:

Methods of collection and preservation of insects including immature stages; External features of Grasshopper/Blister beetle; Types of insect antennae, mouthparts and legs; Wing venation, types of wings and wing coupling apparatus. Types of insect larvae and pupae; Dissection of digestive system in insects (Grasshopper); Study of characters of orders Orthoptera, Dictyoptera, Odonata, Isoptera, Thysanoptera, Hemiptera, Lepidoptera, Neuroptera, Coleoptera, Hymenoptera, Diptera and their families of agricultural importance. Insecticides and their formulations. Pesticide appliances and their maintenance. Sampling techniques for estimation of insect population and damage.

Course Name: Livestock and Poultry Management

Course Code: BSAC53200

Course Outline:

Unit-I: Role of livestock in the national economy. Reproduction in farm animals and poultry. Housing principles, space requirements for different species of livestock and poultry. Management of calves, growing heifers and milch animals. Management of sheep, goat and swine. Incubation, hatching and brooding. Management of growers and layers. Important Indian and exotic breeds of cattle, buffalo, sheep, goat, swine and poultry. Improvement of farm animals and poultry. Digestion in livestock and poultry.

Unit-II: Classification of feedstuffs. Proximate principles of feed. Nutrients and their functions. Feed ingredients for ration for livestock and poultry. Feed supplements and feed additives. Feeding of livestock and poultry. Introduction of livestock and poultry diseases. Prevention (including vaccination schedule) and control of important diseases of livestock and poultry.

Suggested Readings

1. A Textbook of Animal Husbandry by G. C Banerjee
2. A text Book of Livestock Production management in Tropic by D. N. Verma

Course Name: Livestock and Poultry Management Lab

Course Code: BSAC53201

Course Outline:

External body parts of cattle, buffalo, sheep, goat, swine and poultry. Handling and restraining of livestock. Identification methods of farm animals and poultry. Visit to IDF and IPF to study breeds of livestock and poultry and daily routine farm operations and farm records. Judging of cattle, buffalo and poultry. Culling of livestock and poultry. Planning and layout of housing for different types of livestock. Computation of rations for livestock. Formulation of concentrate mixtures. Clean milk production, milking methods. Hatchery operations, incubation and hatching equipment. Management of chicks, growers and layers. Debeaking, dusting and vaccination. Economics of cattle, buffalo, sheep, goat, swine and poultry production.

Course Name: Fundamentals of Plant Pathology

Course Code: BSAC47150

Course Outline:

Introduction to Plant Pathology: Concept of disease in plants; Different terms used in Plant Pathology, History of Plant Pathology with special references to India; Causes of plant disease: Inanimate and animate causes; Classification of plant disease; Parasitism and pathogenesis; Development of disease in plants: Disease Triangle, Disease cycle; Fungi and their morphology, reproduction and classification of fungi; Bacteria: Morphology, reproduction classification of phytopathogenic bacteria; Other plant pathogens: Mollicutes; Flagellant protozoa; FVB; Green algae and parasitic higher plants; Viruses and viroids, virus transmission; Principles of Plant disease management: Disease management with chemicals, Host resistance, cultural and biological method of Integrated Disease Management (IDM).

Suggested readings

1. Agrios, G.N. 2010. Plant Pathology. Acad. Press.
2. Alexopoulos, Mims and Blackwel. Introductory Mycology.
3. Dhingra, O.D. and Sinclair, J.B. 1986. Basic Plant Pathology Methods. CRC Press, London, Tokyo.
4. Gibbs, A. and Harrison, B. 1976. Plant Virology - The Principles. Edward Arnold, London
5. Goto, M. 1990. Fundamentals of Plant Bacteriology. Academic Press, New York.
6. Hull R. 2002. Mathew's Plant Virology. 4th edn. Academic Press, New York.
7. Kamat, M. N. Introductory Plant Pathology. Prakash Pub, Jaipur.
8. Mehrotra, R.S. and Aggarwal, A. 2007. Plant Pathology. 7th edn. Tata Mc Graw Hill Publ. Co. Ltd.
9. Nene, Y.L. and Thapliyal, P.N. 1993. Fungicides in Plant Disease Control. 3rd Ed. Oxford & IBH, New Delhi.
10. Pathak, V. N. Essentials of Plant Pathology. Prakash Pub., Jaipur
11. Rajeev, K. and Mukherjee, R.C. 1996. Role of Plant Quarantine in IPM. Aditya Books.
12. Rhower, G.G. 1991. Regulatory Plant Pest Management. In: Handbook of Pest Management in Agriculture. 2nd edn. Vol. II. (Ed. David Pimental). CRC Press.
13. Singh R.S. 2008. Plant Diseases. 8 th Ed. Oxford & IBH. Pub. Co.
14. Singh R.S. 2013. Introduction to Principles of Plant Pathology. Oxford and IBH Pub. Co.
15. Verma, J.P. 1998. The Bacteria. Malhotra Publ. House, New Delhi.
16. Vyas SC. 1993. Handbook of Systemic Fungicides. Vols. I-III. Tata McGraw Hill, New Delhi.

Course Name: Fundamentals of Plant Pathology Lab

Course Code: BSAC47151

Course Outline:

Study of the microscope; Acquaintance with laboratory material and equipment; Study of different plant disease symptoms; Microscopic examination of general structure of fungi; Simple staining of bacteria: Direct and indirect staining, Gram staining of bacteria; Microscopic examination of fungal diseased specimen; Microscopic examination of bacterial diseased specimen; Preparation of culture media; Isolation of plant pathogens: Fungi, bacteria and viruses; Purification of plant pathogens; Study on plant disease diagnosis: Koch's Postulates, Characteristics, formulation, methods of application and calculation on fungicides.

Course Name: National Service Scheme (NSS-II)

Course Code: WHNN99151

Course Outline:

- Importance and role of youth leadership
- Meaning, types and traits of leadership, qualities of good leaders; importance and roles of youth leadership, Life competencies
- Definition and importance of life competencies, problem-solving and decision-making
- Interpersonal communication. Youth development programs
- Development of youth programs and policy at the national level, state level and voluntary sector; youth-focused and youth-led organizations
- Health, hygiene and sanitation. Definition needs and scope of health education; role of food, nutrition, safe drinking water, water borne diseases and sanitation (Swachh Bharat Abhiyan) for health; national health programs and reproductive health. Youth health, lifestyle, HIV AIDS and first aid. Healthy lifestyles, HIV AIDS, drugs and substance abuse, home nursing and first aid. Youth and yoga. History, philosophy, concept, myths, and misconceptions about yoga; yoga traditions and its impacts, yoga as a tool for healthy lifestyle, preventive and curative method.

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.

9. Lesson Plan

SECA77003- Seed Production Technology Lab

Unit	Particulars	Class No.	Pedagogy of Class
Unit-I	Introduction to Seed Production	P-1	Practical
Unit-I	Seed Production in Major Cereals: Wheat	P-2	Practical
Unit-I	Seed Production in Major Cereals: Rice	P-3	Practical
Unit-I	Seed Production in Major Cereals: Maize	P-4,5	Practical
Unit-I	Seed Production in Major Cereals: Bajra and Ragi	P-6,7	Practical
Unit-I	Seed Production in Major Pulses: Urd Mung and Gram,	P-8,9	Practical
Unit-I	Seed Production in Major Pulses: Pigeon pea and Lentil,	P-10,11	Practical
Unit-I	Seed Production in Major Pulses: Field bean and Pea	P-12,13	Practical
Unit-I	Seed Production in Major Oilseeds: Soybean and Sunflower,	P-14,15	Practical
Unit-I	Seed Production in Major Oilseeds: Groundnut and Rapeseed & Mustard	P16, 17	Practical
Unit-I	Seed Production in Important Vegetables	P-18,19	Practical
Unit-I	Seed Sampling and Testing	P-20, 21	Practical
Unit-I	Seed and Seedling Vigour Test	P-22, 23	Practical
Unit-I	Genetic Purity Test	P-24	Practical
Unit-I	Grow Out Test and Electrophoresis	P-25, 26	Practical
Unit-I	Seed Certification	P-27	Practical
Unit-I	Field Trip Preparation	P-28	Practical
Unit-I	Visit to Seed Production Farms	P-29	Practical
Unit-I	Visit to Seed Processing Plant	P-30	Practical

SECA77004 - Post-Harvest processing technology Lab

Unit	Particulars	Class No.	Pedagogy of Class
Unit-I	Equipment used in food processing units	P-1	Practical
Unit-I	Precooling of horticultural crops	P-2	Practical
Unit-I	Physio-chemical analysis of fruits and vegetables.	P-3	Practical
Unit-I	Practice in judging the maturity of various horticultural produce	P-4	Practical
Unit-I	Practice in judging the maturity of various horticultural produce	P-5, 6	Practical
Unit-I	Determination of physiological loss in weight and quality.	P-7, 9	Practical
Unit-I	Determination of physiological loss in weight and quality.	P-10, 11	Practical
Unit-I	Grading of horticultural produce,	P-12, 13	Practical
Unit-I	post-harvest treatment of horticultural crops	P-14, 15	Practical
Unit-I	Canning of fruits and vegetables,	P-16, 17	Practical
Unit-I	Packaging studies in fruits, vegetables, plantation crops and cut flowers by using different packaging materials,	P-18, 19	Practical
Unit-I	preparation of squash,	P-20, 21	Practical
Unit-I	preparation of jam,	P-22, 23	Practical
Unit-I	preparation of sauces	P-24	Practical
Unit-I	preparation of pickles	P-25, 26	Practical
Unit-I	Dehydration of fruits and vegetables	P-27	Practical
Unit-I	Dehydration of fruits and vegetables	P-28	Practical
Unit-I	Methods of storage in horticultural produce.	P-29	Practical
Unit-I	Visit to markets, packaging houses and cold storage units.	P-30	Practical

BSAC50150 - Personality Development

Unit	Particulars	Class No.	Pedagogy of Class
Unit-I	Personality Definition, Nature of personality, Theories of personality and its types	C-1	Lecture
Unit-I	The humanistic approach - Maslow's self-actualization theory, shaping of personality	C-2	Lecture
Unit-I	Determinants of personality, Myers-Briggs Typology Indicator	C-3	Lecture
Unit-I	Locus of control and performance, Type A and Type B Behaviours, personality and Organizational Behaviour	C-4	Lecture
Unit-I	Clarification class	C-5	Clarification class
Unit-II	Foundations of individual behavior and factors influencing individual behavior	C-6	Lecture
Unit-II	Models of individual behavior, Perception and attributes and factors affecting perception	C-7	Lecture
Unit-II	Classroom assignment	C-8	Classroom assignment
Unit-II	Attribution theory and case studies on Perception and Attribution	C-9	Lecture
Unit-II	Learning: Meaning and definition, theories and principles of learning, Learning and organizational behavior	C-10	Lecture
Unit-II	Presentation	C-11	Presentation
Unit-II	Learning and training, learning feedback. Attitude and values, Intelligence- types of Intelligence, theories of intelligence, measurements of intelligence	C-12	Lecture
Unit-II	Factors influencing intelligence, intelligence and Organizational behavior, emotional intelligence	C-13	Lecture
Unit-II	Quiz	C-14	Quiz
Unit-II	Motivation- theories and principles, Teamwork and group dynamics.	C-15	Lecture
	Home Assignment		Home Assignment

BSAC50151 - Personality Development Lab

Unit	Particulars	Class No.	Pedagogy of Class
Unit-I	BTI personality analysis	P-1	Practical
Unit-I	Learning Styles and Strategies	P-2	Practical
Unit-I	Motivational needs, Firo-B	P-3	Practical
Unit-I	Interpersonal Communication	P-4	Practical
Unit-I	Teamwork and team building	P-6,7	Practical
Unit-I	Group Dynamics	P-8	Practical
Unit-I	Win-win game, Conflict Management	P-9,10	Practical
Unit-I	Leadership styles, Case studies on Personality and Organizational Behavior.	P-11,12	Practical
Unit-I	Leadership styles, Case studies on Personality and Organizational Behavior.	P-13	Practical
Unit-I	Leadership styles, Case studies on Personality and Organizational Behavior.	P-14,15	Practical

BSAC57150 - Environmental Studies and Disaster Management

Unit	Particulars	Class No.	Pedagogy of Class
Unit-I	Introduction to Environmental Studies: Definition, Scope, and Importance	C-1	Lecture
Unit-I	Multidisciplinary Nature of Environmental Studies	C-2	Lecture
Unit-I	Segments of Environment: Lithosphere, Hydrosphere, Atmosphere, and Layers of Atmosphere	C-3	Lecture
Unit-I	Natural Resources: Classification and Overview of Forest and Water Resources	C-4	Lecture
Unit-I	Natural Resources: Mineral, Food, Energy, Land, and Soil Resources	C-5	Lecture
Unit-I	Ecosystems: Concept, Structure, and Function	C-6	Lecture
Unit-I	Clarification Class	C-7	Clarification Class
Unit-I	Energy Flow in Ecosystems and Types of Ecosystems	C-8	Lecture
Unit-I	Biodiversity: Introduction, Definition, and Types	C-9	Lecture
Unit-I	Biogeographical Classification of India and Biodiversity Hotspots	C-10	Lecture
Unit-I	Importance, Value, Threats, and Conservation of Biodiversity	C-11	Lecture
Unit-I	Class room Assignment 1	C-12	Class room Assignment
Unit-II	Environmental Pollution: Definition, Causes, Effects, and Control Measures for Air Pollution	C-13	Lecture
Unit-II	Environmental Pollution: Water, Soil, and Marine Pollution	C-14	Lecture
Unit-II	Environmental Pollution: Noise, Thermal, and Light Pollution	C-15	Lecture
Unit-II	Clarification Class 2	C-16	Clarification Class
Unit-II	Solid Waste Management: Classification of solid wastes and management methods, composting, incineration, pyrolysis, biogas production, cause and effects and control measures of urban and & Industrial Waste	C-17	Lecture
Unit-II	Social Issues and Environment: Urban Energy Problems, Water Conservation, and Rainwater Harvesting, watershed management	C-18	Lecture
	Home Assignment		Home Assignment
Unit-II	Environmental Ethics: Issues, Solutions, and Global Environmental Challenges (Climate Change, Global Warming, etc.)	C-19	Lecture
Unit-II	Environmental Protection Acts: Air, Water, Wildlife, and Forest Conservation Acts	C-20	Lecture

Unit-II	Classroom Assignment	C-21	Classroom Assignment
Unit-II	Human Population and the Environment: Human Health, Human Rights, and Value Education	C-22	Lecture
Unit-II	Women and Child Welfare; Role of IT in Environment and Human Health	C-23	Lecture
Unit-II	Presentation	C-24	Presentation
Unit-III	Disaster Management: Introduction to Disasters and Types of Natural Disasters	C-25	Lecture
Unit-III	Quiz	C-26	Quiz
Unit-III	Man-Made Disasters: Causes, Types, and Management Strategies	C-27	Lecture
Unit-III	Disaster Management: National Framework and Role of Organizations (NGOs, Media, Armed Forces)	C-28	Lecture
Unit-III	Disaster Management: Administrative Levels and Strategies for Disaster Response	C-29	Lecture
Unit-III	Presentation	C-30	Presentation
	Home Assignment		Home Assignment

BSAC57151 - Environmental Studies and Disaster Management Lab

Unit	Particulars	Class No.	Pedagogy of Class
Unit-I	Visit to a local area to document environmental assets (river/forest/grassland/hill/mountain).	P-1	Practical
Unit-I	Study of biogas production from organic wastes.	P-2	Practical
Unit-I	Visit to windmill, hydro-power, or solar power generation units to understand energy systems.	P-3	Practical
Unit-I	Biodiversity assessment in a farming system.	P-4	Practical
Unit-I	Assessment of floral and faunal diversity in polluted and unpolluted systems.	P-5	Practical
Unit-I	Visit to a local polluted site (urban/rural/industrial/agricultural) to study common plants, insects, and birds.	P-6	Practical
Unit-I	Environmental sampling and preservation techniques.	P-7	Practical
Unit-I	Water quality analysis: Measurement of pH, Electrical Conductivity (EC), and Total Dissolved Solids (TDS).	P-8	Practical
Unit-I	Estimation of acidity and alkalinity in water samples.	P-9	Practical
Unit-I	Estimation of water hardness.	P-10	Practical
Unit-I	Measurement of Dissolved Oxygen (DO) and Biochemical Oxygen Demand (BOD) in water samples.	P-11	Practical
Unit-I	Estimation of Chemical Oxygen Demand (COD) in water samples.	P-12	Practical
Unit-I	Enumeration of *E. coli* in water samples.	P-13	Practical
Unit-I	Assessment of Suspended Particulate Matter (SPM) in the environment.	P-14	Practical
Unit-I	Study of a simple ecosystem through a visit to a pond, river, hills, or an area affected by natural disaster.	P-15	Practical

BSAC43150 - Soil Fertility Management

Unit	Particulars	Class No.	Pedagogy of Class
Unit-I	History of soil fertility and plant nutrition	C-1	Lecture
Unit-I	Criteria of essentiality	C-2	Lecture
Unit-I	Role, deficiency and toxicity symptoms of essential plant nutrients	C-3	Lecture
Unit-I	Mechanisms of nutrient transport to plants	C-4	Lecture
Unit-I	Classroom Assignment-I	C-5	Classroom Assignment
Unit-I	Factors affecting nutrient availability to plants.	C-6	Lecture
Unit-I	Chemistry of macro and micronutrients.	C-7	Lecture
Unit-I	Presentation	C-8	Presentation
Unit-I	Soil fertility evaluation,	C-9	Lecture
Unit-I	Soil testing.	C-10	Lecture
Unit-I	Quiz-I	C-11	Quiz
Unit-I	Critical levels of different nutrients in soil.	C-12	Lecture
Unit-I	Clarification class	C-13	Clarification class
	Home Assignment-I		Home Assignment
Unit-I	Forms of nutrients in soil, plant analysis, rapid lant tissue tests.	C-14	Lecture
Unit-I	Indicator plants.	C-15	Lecture
Unit-I	Introduction and importance of manures and fertilizers.	C-16	Lecture
Unit-I	Fertilizer recommendation approaches.	C-17	Lecture
Unit-I	Presentation	C-18	Presentation
Unit-II	Integrated nutrient management.	C-19	Lecture
Unit-II	Chemical fertilizers: classification, composition and properties of major fertilizers, secondary and micronutrient fertilizers,	C-20	Lecture
Unit-II	Classroom Assignment-II	C-21	Classroom Assignment
Unit-II	Complex fertilizers, Custom- ised fertilisers, water soluble fertilizers nano fertilizers Soil amendments,	C-22	Lecture
Unit-II	Fertilizer Storage, Fertiliz- er Control Order.	C-23	Lecture
Unit-II	Methods of fertilizer recommendations to crops.	C-24	Lecture
Unit-II	Factor influencing nutrient use efficiency (NUE), methods of application under rainfed and irrigated conditions	C-25	Lecture
	Home Assignment-II		Home Assignment
Unit-II	TCR/RTNM/ IPNS, Carbon sequestration and Carbon Trading	C-26	Lecture
Unit-II	Preparation and properties of major manures (FYM, Compost, Vermicompost, Green manuring,	C-27	Lecture

	Oilcakes).		
Unit-II	Preparation and properties of major manures (FYM, Compost, Vermicompost, Green manuring, Oilcakes).	C-28	Lecture
Unit-II	Quiz-II	C-29	Quiz
Unit-II	Clarification class	C-30	Clarification class

BSAC43151 - Soil Fertility Management- Lab

Unit	Particulars	Class No.	Pedagogy of Class
Unit-I	Introduction of analytical instruments and their principles	P-1, 2	Practical
Unit-I	Calibration and applications of Colorimetry and flame photometry	P-3, 4	Practical
Unit-I	Estimation of alkaline hydrolysable N in soils	P-5	Practical
Unit-I	Estimation of soil extractable P in soils	P-6	Practical
Unit-I	Estimation of exchangeable K in soils	P-7	Practical
Unit-I	Estimation of exchangeable Ca and Mg in soils	P-8, 9	Practical
Unit-I	Estimation of soil extractable S in soils	P-10	Practical
Unit-I	Estimation of DTPA extractable Zn in soils	P-11	Practical
Unit-I	Estimation of N in plants; Estimation of P in plants	P-12	Practical
Unit-I	Estimation of K in plants	P-13	Practical
Unit-I	Estimation of S in plants	P-14	Practical
Unit-I	Estimation of S in plants	P-15	Practical

BSAC44150 - 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 up to classes.	C-2	Lecture
Unit-I	Relationship of class Insecta with other classes of Arthropoda. Morphology: Structure and functions of insect cuticle and molting.	C-3	Lecture
Unit-I	Quiz	C-4	Quiz
Unit-I	Body segmentation. Structure of Head, thorax andabdomen.	C -5	Lecture
Unit-I	Clarification class	C-6	Clarification Class
Unit-I	Structure and modifications of insect antennae, mouth parts.	C-7	Lecture
Unit-I	Structure and modifications of insect legs, Wing venation, modifications and wing coupling apparatus.	C-8	Lecture
Unit-I	Metamorphosis and diapause in insects. Types of larvae and pupae.	C-9	Lecture
Unit-I	Classroom assignment I	C-10	Classroom assignment
Unit-I	Structure and functions of digestive, circulatory system in insects.	C-11	Lecture
Unit-I	Structure and functions of excretory, respiratory system in insects.	C-12	Lecture
Unit-I	Structure and functions of nervous, secretary (Endocrine) and reproductive system in insects.	C-13	Lecture
	Home Assignment		Home Assignment
Unit-I	Types of reproduction in insects. Major sensory organs like simple and compound eyes,chemoreceptor.	C-14	Lecture
Unit-II	Insect Ecology: Introduction, Environment and its components.	C-15	Lecture
Unit-II	Environment and its components.	C-16	Lecture
Unit-II	Presentation	C-17	Presentation
Unit-II	Effect of abiotic factors and biotic factors	C-18	Lecture
Unit-II	Categories of pests, Definitions of Biotype, Sub-species,Species, Genus, Family and Order.	C-19	Lecture
Unit-II	Quiz	C-20	Quiz

Unit-III	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-III	Orthoptera: Acrididae, Tettigonidae, Gryllidae, Gryllotalpidae; Neuroptera: Chrysopidae.	C-22	Lecture
	Home Assignment		Home Assignment
Unit-III	Dictyoptera: Mantidae, Blattidae; Odonata; Isoptera: Termitidae; Thysanoptera: Thripidae.	C-23	Lecture
Unit-III	Hemiptera: Pentatomidae, Coreidae, Cimicidae, Pyrrhocoridae, Lygaeidae, Cicadellidae, Delphacidae, Aphididae, Coccidae, Lophophidae, Aleurodidae, Pseudococcidae.	C-24	Lecture
Unit-III	Clarification class	C-25	Clarification Class
Unit-III	Neuroptera: Chrysopidae; Lepidoptera:Pieridae, Papiloinidae, Noctuidae, Sphingidae, Pyralidae, Gelechiidae, Arctiidae,Saturnidae, Bombycidae.	C-26	Lecture
Unit-III	Coleoptera: Coccinellidae, Chrysomelidae, Cerambycidae, Curculionidae, Bruchidae, Scarabaeidae;	C-27	Lecture
Unit-III	Hymenoptera: Tenthridinidae, Apidae. Trichogrammatidae, lchneumonidae, Braconidae, Chalcididae.	C-28	Lecture
Unit-III	Diptera: Cecidomyiidae, Tachinidae, Agromyziidae,Culicidae, Muscidae, Tephritidae.	C-29	Lecture
Unit-III	Class room assignment II	C-30	Classroom Assignment

BSAC44151- Fundamentals of Entomology Lab

Unit	Particulars	Class No.	Pedagogy of Class
Unit-I	Methods of collection and preservation of insects including immature stages	P-1	Practical
Unit-I	External features of Grasshopper/Blister beetle	P-2	Practical
Unit-I	Types of insect antennae, mouthparts and legs Wing venation	P-3	Practical
Unit-I	Types of wings and wing coupling apparatus	P-4	Practical
Unit-I	Types of insect larvae and pupae	P-5	Practical
Unit-I	Dissection of digestive system in insects (Grasshopper);	P-6	Practical
Unit-I	Study of characters of orders Orthoptera, Dictyoptera and their families of agricultural importance.	P-7	Practical
Unit-I	Study of characters of orders Odonata, Isoptera, and their families of agricultural importance.	P-8	Practical
Unit-I	Study of characters of orders Thysanoptera, Hemiptera, and their families of agricultural importance.	P-9	Practical
Unit-I	Study of characters of orders Lepidoptera, Neuroptera and their families of agricultural importance.	P-10	Practical
Unit-I	Study of characters of orders Coleoptera and their families of agricultural importance.	P-11	Practical
Unit-I	Study of characters of order Hymenoptera and their families of agricultural importance.	P-12	Practical
Unit-I	Study of characters of orders Diptera and their families of agricultural importance.	P-13	Practical
Unit-I	Insecticides and their formulations. Pesticide appliances and their maintenance. Sampling techniques for estimation of insect population and damage.	P-14, 15	Practical

BSAC53200 - Livestock and poultry Management

Unit	Particulars	Class No.	Pedagogy of Class
Unit-I	Role of the livestock in national economy	C-1	Lecture
Unit-I	Reproduction in farm animals and poultry	C-2	Lecture
Unit-I	Housing principles, space requirements for different species of livestock and poultry	C-3	Lecture
Unit-I	Management of calves, growing heifers and milch animals	C-4	Lecture
Unit-I	Management of sheep, goat and swine	C-5	Lecture
Unit-I	Classroom assignment	C-6	Classroom assignment
Unit-I	Incubation, hatching and brooding. Management of growers and layers	C-7	Lecture
	Home Assignment		Home Assignment
Unit-I	Important Indian and exotic breeds of cattle, buffalo, sheep, goat, swine and poultry.	C-8	Lecture
Unit-I	Improvement of farm animals and poultry & Digestion in livestock and poultry	C-9	Lecture
Unit-I	Clarification class	C-10	Clarification class
Unit-II	Classification of feedstuffs & Proximate principles of feed	C-11	Lecture
Unit-II	Nutrients and their functions. Feed ingredients for ration for livestock and poultry, Feed supplements and feed additives. Feeding of livestock and poultry.	C-12	Lecture
Unit-II	Quiz	C-13	Quiz
Unit-II	Introduction of livestock and poultry diseases. Prevention (including vaccination schedule) and control of important diseases of livestock and poultry.	C-14	Lecture
Unit-II	Presentation	C-15	Presentation

BSAC53201 - Livestock and poultry Management Lab

Unit	Particulars	Class No.	Pedagogy of Class
Unit-I	External body parts of cattle and buffalo	P-1	Practical
Unit-I	External body parts of sheep and goat	P-2	Practical
Unit-I	External body parts of swine	P-3	Practical
Unit-I	External body parts of poultry	P-4	Practical
Unit-I	Handling and restraining of farm animals	P-5	Practical
Unit-I	Identification methods of animals and poultry	P-6	Practical
Unit-I	Visit of IDF and IPF farm to know about the breeds of animals and poultry including the study of farm records	P-7	Practical
Unit-I	Judging of cattle & Buffalo	P-8	Practical
Unit-I	Judging of poultry	P-9	Practical
Unit-I	Culling of livestock and poultry	P-10	Practical
Unit-I	Planning and layout of housing for different types of livestock and Computation of ration for animals	P-11	Practical
Unit-I	Formulation of concentrate mixture, clean milk production, Methods of milking	P-12	Practical
Unit-I	Hatchery operations, incubation and hatching equipment.	P-13	Practical
Unit-I	Management of chicks, growers, layers and Debeaking, dusting and vaccination.	P-14	Practical
Unit-I	Economics of cattle, buffalo, sheep, goat, swine and poultry production	P-15	Practical

BSAC47150 - Fundamentals of Plant Pathology

Unit	Particulars	Class No.	Pedagogy of Class
Unit-I	Introduction to Plant Pathology: Concept of disease in plants;	C -1	Lecture
Unit-I	Different terms used in Plant Pathology, History of Plant Pathology with special references to India;	C -2	Lecture
Unit-I	Quiz	C -3	Quiz
Unit-I	Different terms used in Plant Pathology, History of Plant Pathology with special references to India;	C -4	Lecture
	Home Assignment		Home Assignment
Unit-I	Causes of plant disease: Inanimate and animate causes;	C -5	Lecture
Unit-I	Causes of plant disease: Inanimate and animate causes;	C -6	Lecture
Unit-I	Classification of plant disease;	C -7	Lecture
Unit-I	Classification of plant disease;	C -8	Lecture
Unit-I	Clarification Class	C -9	Clarification Class
Unit-I	Parasitism and pathogenesis;	C -10	Lecture
Unit-I	Development of disease in plants: Disease Triangle, Disease cycle;	C -11	Lecture
Unit-I	Fungi and their morphology, reproduction and classification of fungi;	C -12	Lecture
Unit-I	Class room assignment I	C -13	Class room assignment
Unit-I	Fungi and their morphology, reproduction and classification of fungi;	C -14	Lecture
Unit-I	Bacteria: Morphology, reproduction classification of phytopathogenic bacteria;	C -15	Lecture
Unit-I	Bacteria: Morphology, reproduction classification of phytopathogenic bacteria;	C -16	Lecture
	Home Assignment		Home Assignment
Unit-I	Other plant pathogens: Mollicutes;	C -17	Lecture

Unit-I	Other plant pathogens: Mollicutes;	C -18	Lecture
Unit-I	Flagellant protozoa;	C -19	Lecture
Unit-I	Flagellant protozoa;	C -20	Lecture
Unit-I	Presentation	C -21	Presentation
Unit-I	FVB; Green algae and parasitic higher plants; Viruses and viroids, virus transmission;	C -22	Lecture
Unit-I	FVB; Green algae and parasitic higher plants; Viruses and viroids, virus transmission;	C -23	Lecture
Unit-I	Principles of Plant disease management:	C -24	Lecture
Unit-I	Principles of Plant disease management:	C -25	Clarification Class
Unit-I	Disease management with chemicals, Host resistance, cultural and biological method of Integrated Disease Management (IDM).	C -26	Lecture
Unit-I	Quiz	C -27	Quiz
Unit-I	FVB; Green algae and parasitic higher plants; Viruses and viroids, virus transmission;	C -28	Lecture
Unit-I	FVB; Green algae and parasitic higher plants; Viruses and viroids, virus transmission;	C -29	Lecture
Unit-I	Class Assignment II	C -30	Class Assignment

BSAC47151 - Fundamentals of Plant Pathology Lab

Unit	Particulars	Class No.	Pedagogy of Class
Unit-I	Study of the microscope;	P-1	Practical
Unit-I	Acquaintance with laboratory material and equipment;	P-2	Practical
Unit-I	Study of different plant disease symptoms;	P-3	Practical
Unit-I	Microscopic examination of general structure of fungi;	P-4	Practical
Unit-I	Simple staining of bacteria: Direct and indirect staining, Gram staining of bacteria;	P-5	Practical
Unit-I	Microscopic examination of fungal diseased specimen;	P-6	Practical
Unit-I	Microscopic examination of fungal diseased specimen;	P-7	Practical
Unit-I	Microscopic examination of bacterial diseased specimen;	P-8	Practical
Unit-I	Microscopic examination of bacterial diseased specimen;	P-9	Practical
Unit-I	Preparation of culture media;	P-10	Practical
Unit-I	Isolation of plant pathogens: Fungi, bacteria and viruses;	P-11	Practical
Unit-I	Isolation of plant pathogens: Fungi, bacteria and viruses;	P-12	Practical
Unit-I	Purification of plant pathogens;	P-13	Practical
Unit-I	Study on plant disease diagnosis: Koch's Postulates, Characteristics, formulation, methods of application and calculation on fungicides.	P-14	Practical
Unit-I	Study on plant disease diagnosis: Koch's Postulates, Characteristics, formulation, methods of application and calculation on fungicides.	P-15	Practical

WHNN99151 - National Service Scheme (NSS-II)

Unit	Particulars	Class No.	Pedagogy of Class
Unit-I	Importance and Role of Youth Leadership	P-1	Practical
Unit-I	Meaning, Types, and Traits of Leadership	P-2	Practical
Unit-I	Qualities of Good Leaders	P-3	Practical
Unit-I	Importance and Roles of Youth Leadership	P-4	Practical
Unit-I	Life Competencies	P-5	Practical
Unit-I	Interpersonal Communication	P-6	Practical
Unit-I	Youth Development Programs	P-7	Practical
Unit-I	Youth-focused and Youth-led Organizations	P-8	Practical
Unit-I	Health, Hygiene, and Sanitation	P-9	Practical
Unit-I	National Health Programs	P-10	Practical
Unit-I	Youth Health and Lifestyle	P-11	Practical
Unit-I	Home Nursing and First Aid	P-12	Practical
Unit-I	Youth and Yoga: Concepts and Myths	P-13	Practical
Unit-I	Yoga Traditions and Health Benefits	P-14	Practical
Unit-I	Summary and Evaluation	P-15	Practical

Note:

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

The student who wish to exit with UG-certificate after one year, has to undergo 10 weeks of internship programme (10 credits) after 1st Year.

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