Detailed Course Scheme

Bachelor of Science (Hons.)

Agriculture

Semester- I

(2024- 28)

DOC202410100005

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 (July-December) Odd Semester 2024 along with examination pattern is as follows:

Course Scheme

Semester –I

S.No.	Course Code	Course Category	Course Name	L	T	P	Credits
1	ICFC99001		Deeksharambh (Induction cum Foundation course)	2 week (NG)Non-gradial			
2	SECA77001	SEC-I	Bio-fertilizer and Bio-pesticide Production	0	0	4	2
3	SECA77002	SEC-II	Mushroom Production Technology	0	0	4	2
4	AECA55001	AEC-1	Communication Skills	1	0	0	1
5	AECA55002	AEC-2	Communication Skills Lab	0	0	2	1
6	BSAC54100	DSC FO-1a	Introductory Agro forestry	1	0	0	1
7	BSAC54101	DSC FO-1b	Introductory Agro forestry Lab	0	0	2	1
8	BSAC50100	DSC AC-1	Rural Sociology and Educational Psychology	2	0	0	2
9	BSAC41100	DSC AG-1a	Fundamentals of Agronomy	2	0	0	2
10	BSAC41101	DSC AG-1b	Fundamentals of Agronomy Lab	0	0	2	1
11	BSAC43100	DSC SO-1a	Fundamentals of Soil Science	2	0	0	2
12	BSAC43101	DSC SO-1b	Fundamentals of Soil Science Lab	0	0	2	1

13	BSAC48100	DSC HO-1a	Fundamentals of Horticulture	2	0	0	2
14	BSAC48101	DSC HO-1b	Fundamentals of Horticulture Lab	0	0	2	1
15	WHNN99000		National Service Scheme (NSS-I)/ National Cadet Corps (NCC-I)	0	0	2	1
16.	BSAC55101	DSE RB-2	Introductory Biology*/	1	0	2	2 Non-gradial
	BSAC55102	DSE RM-3	Introductory Mathematics*	2	0	0	
		Total		**10**		**20**	**20**

* Remedial course: (Introductory Biology*/ Introductory Mathematics*: any one to be taken based on subject not learnt in 12th Standard)

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	One Mid-term Sessional	25
Marks obtained in various Tests, Assignments, Presentations, Quiz, Tutorials, etc.	Average of marks obtained	20
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.

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 Code and Course Name	After completion of these courses students should be able to
SECA77001 Bio-fertilizers and Bio-pesticides Production	**CO1:** Identify and explore the significance of botanicals and entomopathogenic entities through laboratory visits and field studies, enhancing practical knowledge of natural pest control mechanisms. **CO2:** Understand the techniques of isolation, purification, and production of bi-opesticides such as *Trichoderma*, *Pseudomonas*, *Bacillus*, and *Metarhizium*, and their role in sustainable pest control. **CO3:** Demonstrate proficiency in the isolation and mass production of arbuscular mycorrhizal (AM) fungi using wet sieving and sucrose gradient methods, contributing to the development of effective AM inoculants for agricultural use. **CO4:** Apply techniques for the isolation, purification, and mass production of bio-fertilizers such as *Azospirillum*, *Azotobacter*, *Rhizobium*, phosphorus-solubilizers, and cyanobacteria, fostering soil fertility and sustainable agriculture. **CO5:** Analyze the quality control procedures of bio-pesticides and ensure compliance with industry standards for effective biological control agents.
SECA77002 Mushroom Production Technology	**CO1:** Understand the current status, scope, and marketing of mushroom cultivation along with the nutritional and medicinal value of edible fungi. **CO2:** Apply techniques of spawn preparation, media formulation, tissue culture, and sub-culturing for culture maintenance. **CO3:** Analyze different cultivation techniques and crop management practices for major edible mushrooms. **CO4:** Evaluate mushroom farm design, composting methods, and casing preparation for commercial mushroom production. **CO5:** Create value-added mushroom products and assess their economic potential through market exposure.
AECA55001 Communication Skills	**CO1:** Understand the concept, nature, significance, and different models of the communication process, including verbal and non-verbal communication. **CO2:** Apply effective listening, speaking, reading, and writing skills to various forms of communication, such as précis writing, curriculum vitae, and summarizing. **CO3:** Analyze linguistic and non-linguistic barriers in communication to identify reasons behind communication gaps and miscommunication. **CO4:** Evaluate sentence structures, grammar rules, and the proper use of nouns, pronouns, adjectives, and other grammatical

	elements for accurate communication. **CO5:** Create clear and coherent sentences while avoiding common sentence faults, and improving vocabulary through innovative methods like analogy questions.
AECA55002 Communication Skills Lab	**CO1:** Deliver micro-presentations and impromptu presentations using appropriate stage manners, body language, and voice modulation techniques. **CO2:** Demonstrate skills in precis writing, summarizing, abstracting, and reading comprehension for both general and technical articles. **CO3:** Apply effective listening and note-taking strategies to enhance comprehension of general and technical content. **CO4:** Participate confidently in group discussions and public speaking exercises, using vocabulary-building techniques to improve articulation. **CO5:** Master interview techniques and the organization of events through practical exercises and real-time feedback.
BSAC54100 Introductory Agro forestry	**CO1:** Understand the definition, scope, and various types of agroforestry systems along with the role and selection of MPTS (Multipurpose Tree Species) in agroforestry practices. **CO2:** Assess the agroforestry models developed by ICAR-IGFRI and ICFRE, including the choice of tree species, their site factors, and their integration with horticulture and forage crops. **CO3:** Apply silvicultural techniques for tree species propagation, nursery management, regeneration methods, and field handling practices for sustainable agroforestry systems. **CO4:** Analyze the ecological aspects of tree-crop interactions, including nutrient recycling, competition, and the potential of traditional agroforestry systems for conserving agrobiodiversity in India. **CO5:** Evaluate the socio-economic aspects, soil and water conservation benefits, and design considerations for agroforestry systems, including windbreaks and shelterbelts.
BSAC54101 Introductory Agro forestry Lab	**CO1:** Identify key tree species used in agroforestry systems and evaluate tree growth using measurement techniques. **CO2:** Assess agroforestry models through exposure visits to prevailing systems and virtual visits of models developed by ICAR-IGFRI and ICFRE. **CO3:** Demonstrate practical skills in afforestation techniques such as pruning, coppicing, pollarding, and planting patterns for both natural and artificial regeneration. **CO4:** Analyze environmental factors affecting agroforestry systems and apply plant propagation methods, including pre-sowing

	seed treatment and nursery bed preparation. **CO5:** Design and conduct diagnostic surveys of agroforestry systems, and evaluate their effectiveness across different agro-climatic zones.
BSAC50100 Rural Sociology and Educational Psychology	**CO1:** Examine the role of psychology, intelligence, and personality in the teaching-learning process, and apply principles of learning to agricultural extension strategies. **CO2:** Understand the meaning, scope, and importance of Extension Education, Agricultural Extension, and rural sociology, and explain the interrelationship between rural sociology and agricultural extension. **CO3:** Apply leadership principles by identifying and training professional and lay leaders to enhance the effectiveness of agricultural extension activities. **CO4:** Analyze social stratification, cultural concepts, traditions, social values, and institutions in rural society and their impact on agricultural extension efforts. **CO5:** Evaluate the role of social groups, social organizations, and social control mechanisms in the implementation and success of agricultural extension programs.
BSAC41100 Fundamentals of Agronomy	**CO1:** Identify weeds and their control methods, understand agroclimatic zones, cropping systems, sustainable crop production practices, and factors affecting crop growth and development. **CO2:** Understand the definition, scope, and significance of Agronomy, along with its relation to other agricultural disciplines and factors affecting crop establishment. **CO3:** Apply water management techniques by understanding soil moisture constants, water resources, and their management in relation to crop production. **CO4:** Analyze different methods of sowing, tillage practices, and planting geometries, and evaluate their impact on crop growth, yield, and stand establishment. **CO5:** Evaluate the role of essential nutrients, manures, fertilizers, and Integrated Nutrient Management (INM) in crop production, including the preparation and use of organic manures and green manure.
BSAC41101 Fundamentals of Agronomy Lab	**CO1:** Identify various field crops, seeds, fertilizers, and pesticides used in different cropping systems and agro-climatic zones. **CO2:** Demonstrate the use of preparatory and inter tillage implements, including ploughing, puddling, and inter-cultivation techniques in field crops. **CO3:** Apply practical skills in seed germination testing, weed identification, and the proper timing and methods for applying

	manures and fertilizers. **CO4:** Calculate seed rates, plant populations, and fertilizer requirements for various crops through numerical exercises. **CO5:** Evaluate crop yield by studying yield-contributing characters and performing yield estimation techniques.
BSAC43100 Fundamentals of Soil Science	**CO1:** Identify major soils of India, their characteristics, and the pedogenic processes influencing soil profile development. **CO2:** Understand the pedological and edaphological concepts of soil, the processes of soil formation, and the composition of rocks and minerals. **CO3:** Apply the principles of soil reaction, buffering capacity, and the classification of soils using soil taxonomy and keys to soil orders. **CO4:** Analyze the properties and constitution of silicate clays, soil colloids, and their roles in ion exchange, cation and anion exchange capacity, and base saturation. **CO5:** Evaluate the physical properties of soil, including soil texture, structure, bulk density, particle density, consistency, soil air, water, temperature, and their influence on soil behavior.
BSAC43101 Fundamentals of Soil Science Lab	**CO1:** Identify and classify general properties of minerals, distinguishing between silicate and non-silicate minerals, and recognize the characteristics of igneous, sedimentary, and metamorphic rocks. **CO2:** Analyze soil texture using the feel method and mechanical analysis, and determine particle density, soil porosity, and soil color. **CO3:** Measure the infiltration rate of soil and assess soil pH and electrical conductivity to understand soil chemical properties and their implications for agricultural practices. **CO4:** Conduct a thorough study of a soil profile, including the collection and processing of soil samples for analytical purposes. **CO5:** Evaluate soil structure through aggregate analysis and determine soil moisture content, moisture constants, field capacity, and water-holding capacity
BSAC48100 Fundamentals of Horticulture	**CO1:** Understand the different branches, importance, and scope of horticulture, along with the botanical classification and the soil and climate requirements for horticultural crops. **CO2:** Apply various plant propagation methods and structures, addressing seed dormancy and germination while evaluating the merits and demerits of sexual and asexual propagation. **CO3:** Analyze the principles of orchard establishment, including training and pruning methods for fruit crops, and examine

	factors influencing juvenility and flower bud differentiation. **CO4:** Evaluate the processes of pollination, the roles of pollinizers and pollinators, and the significance of fertilization and parthenocarpy in horticultural crop production. **CO5:** Implement effective irrigation methods and fertilizer application strategies for horticultural crops, considering the importance of bio-regulators in enhancing crop growth and productivity.
BSAC48101 Fundamentals of Horticulture Lab	**CO1:** Identify and classify various fruit types and their nomenclature, along with the layout and design principles of an orchard. **CO2:** Demonstrate effective pit-making techniques and system of planting for fruit crops, and apply nursery raising techniques to ensure healthy plant development. **CO3:** Apply various plant propagation structures and methods, including seed propagation and the use of plant parts for propagation in horticultural crops. **CO4:** Practice training and pruning techniques for fruit crops, and prepare and apply appropriate fertilizer mixtures and plant growth regulators (PGRs) to enhance crop performance. **CO5:** Implement different irrigation systems, conduct maturity studies, and manage harvesting, grading, packaging, and storage of horticultural produce.
WHNN99000 National Service Scheme (NSS-I)/ National Cadet Corps (NCC-I)	**CO1:** Understand the aims, objectives, and organizational structure of NCC and NSS, including their significance in nation-building, cultural heritage, and social consciousness among students. **CO2:** Demonstrate skills in military drills, command and control, and social service activities, showcasing leadership traits and effective communication within both NCC and NSS contexts. **CO3:** Apply principles of health, hygiene, and disaster management in both NCC and NSS activities, promoting physical and mental well-being among peers and community members. **CO4:** Analyze community needs and mobilize resources through NSS activities, including conducting surveys, organizing camps, and collaborating with local agencies to foster social harmony and national integration. **CO5:** Evaluate the role of youth in social change and volunteerism, exploring issues and challenges faced by youth, and encouraging participation in civic duties and community service as informed citizens.
BSAC55101 Introductory Biology	**CO1:** Understand fundamental biological concepts, including the diversity and characteristics of life, the origin of life, and key principles of evolution and eugenics. **CO2:** Utilize binomial nomenclature and classification methods to

	categorize and identify living organisms, demonstrating a foundational knowledge of biological taxonomy. **CO3:** Analyze the morphology of flowering plants, focusing on the structures and modifications of roots, stems, leaves, flowers, and fruits, as well as inflorescence patterns. **CO4:** Examine the cellular and tissue-level structures in plants, including cell division processes and the internal anatomy of roots, stems, and leaves. **CO5:** Conduct practical investigations using specimens and slides to study and describe plant families such as Brassicaceae, Fabaceae, and Poaceae, while recognizing the role of animals in agricultural ecosystems.
BSAC55102 Introductory Mathematics	**CO1:** Understand fundamental concepts of algebra, including arithmetic, geometric, and harmonic progressions, and apply these concepts to solve related problems. **CO2:** Perform operations with matrices, including addition, subtraction, multiplication, and finding transposes and inverses up to the third order using the adjoint method, while evaluating properties of determinants. **CO3:** Differentiate functions using first principles and apply differentiation techniques to analyze growth rates, average costs, marginal costs, and marginal revenues, including the identification of increasing and decreasing functions. **CO4:** Utilize integral calculus methods to compute definite and indefinite integrals, including integration by substitution and integration by parts, while calculating the area under simple well-known curves. **CO5:** Develop and analyze mathematical models relevant to agricultural systems, classifying these models and fitting linear, quadratic, and exponential models to experimental data for practical applications.

7. CO PO Mapping

SECA77001	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1		2	3	2	2	3	2	2		2	2	2
CO2	2		2		2	2	3	2	2	1	3	2
CO3	2	2	2	2	2		2		3		2	3
CO4	3	2	1	3		2	2	2	2	2		2
CO5	2	2	2	2	2		2		3		2	3

SECA77002	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2		2		2	2	3	2	2	1	3	2
CO2	3		2		2	2	2	2	2	2	3	2
CO3	2	2	1	1	3	1		2		3	2	
CO4	3	2	2	3		2	2	2	2	2		2
CO5	2	2	2	2	2		2		3		2	3

AECA55001	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	2	3	2	2	3	2	1	3	3	1	3
CO2	3	2	2	2	2	2		2	2	3	2	3
CO3	1		1	2	1	3	3	3	2	3	3	3
CO4	2	2	2	2	3	3	1	3	2	3	3	3
CO5	3	2	3	2	2	2	2	2	3	2	3	3

AECA55002	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	1	2	3	2	2	3	1	1	3	3	1	3
CO2	3	2	2	2	2	2		2	2	3	2	3
CO3	1	1		1	1	3	1	3	2	3	3	3
CO4	2	2	2	2	3	3	1	3	2	3	3	3
CO5	2	2	3	2	2	2		2	3	2	3	3

BSAC54100	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	2	3	2	2	2	2	3	2	2	3
CO2	2	1	3	3	2	2	3	2	3	3	2	3
CO3	3	3	2	3	2	2	2	1	3	2	3	2
CO4	1	3	2	2	3	3	2	3	2	2	2	2
CO5	3	2	3	2	2	3	3	2	2	2	2	3

BSAC54101	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	1	3	3	3	2	2	3	2	2	3
CO2	1	1	3	3	2	2	3	2	3	3	2	3
CO3	3	3	2	3	2	2	2	1	3	2	3	2
CO4	2	3	2	2	3	3	2	3	3	3	2	2
CO5	1	2	3	2	2	3	3	2	2	2	2	3

BSAC50100	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	2	2		2		2	2	2		2
CO2	2	3	3	3			2	2		2		
CO3	3	3	2	2	2	2			2		3	3
CO4	3	2	3		2	2	2				2	
CO5	2	2		3	2			2		2	3	3

BSAC41100	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	3	2	2	3	2	3	3	2	3	3	2
CO2	3	3	2	3	2	3	2	2	3	3	3	2
CO3	3	2	3	2	2	2	3	3	3	2	3	3
CO4	2	2	3	3	3	3	3	3	2	2	2	2
CO5	2	3	3	2	2	3	2	2	2	3	3	2

BSAC41101	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	2	3	2	2	3	2	3	3	2	3
CO2	2	3	3	2	2	2	3	2	3	3	2	3
CO3	3	2	3	2	3	3	2	3	2	2	3	2
CO4	2	2	2	3	3	2	3	3	3	3	3	2
CO5	2	3	2	3	2	3	3	2	2	3	2	3

BSAC43100	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	2	2	3	2	2	2	2	3	2	2	3
CO2	3	1	3	3	2	2	3	2	3	3	2	3
CO3	2	3	2	2	3	2	2	1	2	3	3	2
CO4	3	3	2	3	3	2	2	3	3	2	2	3
CO5	3	2	3	2	2	3	3	2	2	2	2	2

BSAC43101	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	2	3	2	2	2	2	3	2	2	3
CO2	2	1	3	3	2	2	3	2	3	3	2	3
CO3	3	3	2	3	2	2	2	1	3	2	3	2
CO4	2	3	2	2	3	3	2	3	2	2	2	2
CO5	3	2	3	2	2	3	3	2	2	2	2	3

BSAC48100	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	3	2		2				2	2	2
CO2	2	3	2	3	2			2				2
CO3	3	2	3	3	2	2	2				2	
CO4	2	2	2					2				1
CO5	2	2	2	3	3	3	2	2		3		3

BSAC48101	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	3	1			2		2	1	3	2
CO2	3	2	3	2		3	2	3	2	2	3	2
CO3	1			3	3	2			2	3	2	
CO4	2	2	2	3	3	2	2	2	3	3	3	2
CO5	3	2	3	3	2	2	2	3		3	3	3

WHNN99000	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3		3		3		3	3	3	3	3
CO2	2	2	3	3	3	2		2		3	2	
CO3	2	3			1	2		3	2	3		3
CO4	3		2	2	3	2		3	2	3	2	3
CO5	3	3	3	3	3	3		3	3	3	3	3

BSAC55101	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

BSAC55102	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	2	2		2	3	2	2	2	2	1	3
CO2	3	3		2			1	2	1	2		3
CO3	3	2		3	3	2	2	3	3	3	3	
CO4	2	2	2	3	2	2	2	2	2	2		2
CO5	2	1	2		3	2	2	2	2	1	2	

8. Curriculum

Course Name: Deeksharambh

(Induction-cum-Foundation Course)-Non gradial

Course Code: ICFC99001

Course Outline

- Help for cultural integration of students from different backgrounds,
- Know about the operational framework of academic process in the University/College/Institute
- Instilling life and social skills,
- Social Awareness, Ethics and Values, Team Work, Leadership, Creativity, etc.
- Identify the traditional values and indigenous cultures along with diverse potentialities both in indigenous and developed scenario.
- Identify strength and weakness of the students in different core areas of the discipline.

The details of activities will be decided by the parent universities. The structure shall include, but not restricted to:

i. Discussions on operational framework of academic process in the University, as well as interactions with academic and research managers of the University
ii. Interaction with alumni, business leaders, perspective employers, outstanding achievers in related fields, and people with inspiring life experiences
iii. Group activities to identify the strength and weakness of students (with expert advice for their improvement) as well as to create a platform for students to learn from each other's life experiences
iv. Activities to enhance cultural Integration of students from differentbackgrounds.
v. Field visits to related fields/ establishments
vi. Sessions on personality development (instilling life and social skills, social awareness, ethics and values, team work, leadership, etc.) and communication skills

Course Name: Bio-fertilizers and Bio-pesticides Production

Course Code: SECA77001

Course Outline

Unit I

1. Isolation and purification of important biopestisides: trichoderma Pseudomonas, Bacillus, Metarhyziumetc. and its production.
2. Identification of important botanicals.
3. Visit to bio-pesticide laboratory in nearby area.
4. Field visit to explore naturally infected cadavers.
5. Identification of entomopathogenic entities in field condition.
6. Quality control of biopesticides.
7. Isolation and purification of Azospirillum, Azotobactor, Rhizobium, P-solubilizers and cyanobacteria.
8. Mass multiplication and inoculums production of biofertilizers.
9. Isolation of AM fungi- Wet sieving method and sucrose gradient method.
10. Mass production of AM inoculants.

Course Name: Mushroom Production Technology

Course Code: SECA77002

Course Outline

Unit I

1. Current status and scope of mushroom cultivation in India
2. Important features of edible fungi,
3. Nutritional and medicinal value of mushrooms,
4. Preparation of media for tissue culture preparation,
5. Sub-culturing for culture maintenance and its preservation,
6. Spawn preparation techniques,
7. Collection of wild mushroom flora of Rajasthan
8. Raw material formulations for *Agaricusbisporus* (button mushroom),
9. Composting (long method and short method),
10. Casing preparation,
11. Crop management practices,
12. Mushroom farm design and infrastructure required for commercial unit

13. Cultivation techniques of *Pleurotusflorida* (dhingri), *Lentunusedodes* (shiitake), *Calocybeindica* (milky) and *Volvoriellavolvacea* (paddy straw) mushrooms,
14. Marketing of mushrooms, Mushroom diseases and their control,
15. Preparation of value added products from mushrooms,
16. Economics of mushrooms,
17. Exposure visit to commercial farms.

Course Name: Communication Skills

Course Code: AECA55001

Course Outline

Unit I

Communication Process: The magic of effective communication; Building self-esteem and overcoming fears; Concept, nature and significance of communication process; Meaning, types and models of communication; Verbal and non-verbal communication; Linguistic and non-linguistic barriers to communication and reasons behind communication gap/ miscommunication.

Unit II

Basic Communication Skills: Listening, Speaking, Reading and Writing Skills; Precis writing/ Abstracting/Summarizing; Style of technical communication Curriculum vitae/resume writing; Innovative methods to enhance vocabulary, analogy questions.

Unit III

Structural and Functional Grammar: Sentence structure, modifiers, connecting words and verbal; phrases and clauses; Case: subjective case, possessive case; objective case; Correct usage of nouns, pronouns and antecedents, adjectives, adverbs and articles; Agreement of verb with the subject: tense, mood, voice; Writing effective sentences; Basic sentence faults.

Suggested readings

1. Allport, G. W.1937. Personality: A Psychological Interpretation. Holt, New York.
2. Brown Michele and Gyles Brandreth. 1994. How to Interview and be Inter-viewed. Sheldon Press, London.
3. Carnegie Dale. 1997. The Quick and Easy Way to Effective Speaking. Pocket Books, New York.
4. Francis Peter S J. 2012. Soft Skills and Professional Communication. Tata McGraw Hill, New Delhi.
5. Kumar S and Pushpa Lata. 2011. Communication Skills. Oxford University Press.
6. Neuliep James W. 2003. Intercultural Communication A Contextual Approach. Houghton Mifflin Co Boston.

7. Pease, Allan. 1998. Body Language. Sudha Publications, Delhi.
8. Raman M and Singh P. 2000. Business Communication. Oxford University Press.
9. Seely J. 2013. Oxford Guide to Effective Writing and Speaking. Oxford University Press.
10. Thomson A J and Martinet A V. 1977. A Practical English Grammar. Oxford University

Course Name: Communication Skills Lab

Course Code: AECA55002

Course Outline

Unit I

1. Listening and note taking;
2. Writing skills: precis writing, summarizing and abstracting;
3. Reading and comprehension (written and oral) of general and technical articles;
4. Micro-presentations and Impromptu
5. Presentations: Feedback on presentations;
6. Stage manners: grooming, body language, voice modulation, speed; Group discussions; Public speaking exercises; vocabulary building exercises;
7. Interview Techniques;
8. Organization of events.

Course Name: Introductory Agro forestry

Course Code: BSAC54100

Course Outline

Unit I

Agro-forestry: Definition and scope of Agroforestry system, Type of Agroforestry system, potential of Agroforestry in India, Prevailing agroforestry system in India; MPTS- definition, role of MPTS in agroforestry system, its selection for different agroforestry system, MPTS of India, Ecological aspects of Agroforestry system, tree - crop interaction - competition, nutrient recycling; Traditional Agroforestry as a viable choice to conserve Agro biodiversity of India. Management of Agro-forestry system; Role of agroforestry in soil and water conservation; windbreak; Shelterbelt-definition, objectives.; Socio- economic aspects of Agroforestry system; Design and Diagnostic study of agroforetry system;

Unit II

Silviculture: Definition and scope, Propagation of tree species, Regeneration by seed, coppice, root suckers, Transplanting, stump, branch cutting, rhizomes; Nursery bed preparation and management; Cultural practices for bare root and seedling, field handling of nursery stock; Management of tree species; Silviculture of important tree species, choice of species- site factors, root, crown and bole characteristics, phenology, nutritional and water requirement, ground operation, tending, harvesting utility etc. Horticulture and forage crops-based agroforestry models developed by ICAR-IGFRI; Agroforestry models developed by Indian council of Forestry Research and Education.

Suggested Readings

1. Dwivedi AP. 1992. Agroforestry- Principles and Practices. Oxford & IBH.
2. Negi, S.S. (1999). Agroforestry Handbook. International Book Distributer, Dehradun.
3. SP Singh (2010. Favourate Agroforestry Trees. Agrotech Publishing Academy, Udaipur.
4. Indian Society of Agronomy. 1989. Agroforestry System in India. Research and Development, New Delhi.
5. Pathak PS & Roy MM. 1994. Agroforestry System for Degraded Lands. Oxford & IBH.
6. Sen NL, Dadheech RC, Dashora LK &Rawat TS. 2004. Manual of Agroforestry and Social Forestry. Agrotech Publ.
7. Shah SA.1988. Forestry for People. ICAR.
8. Singh, Punjab, Pathak PS & Roy MM.1994. Agroforestry System for Sustainable Use. Oxford & IBH.
9. Singh SP. 1994. Handbook of Agroforestry. Agrotech Publ.
10. Tejwani KG.1994. Agroforestry in India. Oxford & IBH.

Course Name: Introductory Agro forestry Lab

Course Code: BSAC54101

Course Outline

1. Identification of tree-species.
2. Diameter measurements using calipers and tape, diameter
3. Measurements of forked, buttressed, fluted and leaning trees.
4. Height measurement of standing trees by shadow method.
5. Height measurement of standing trees by single pole method.

6. Height measurement of standing trees by hypsometer.
7. Volume measurement of logs using various formulae.
8. Nursery lay out, seed sowing, vegetative propagation techniques.
9. Forest plantations and their management.
10. Visits of nearby forest based industries.

Course Name: Rural Sociology and Educational Psychology

Course Code: BSAC50100

Course Outline

Unit I

Extension Education and Agricultural Extension: Meaning, definition, scope, and importance. Sociology and rural sociology: Meaning, definition, scope, importance of rural sociology in Agricultural Extension, and interrelationship between rural sociology and Agricultural Extension. Indian Rural Society: important characteristics, differences and relationship between rural and urban societies. Social Groups: Meaning, definition, classification, factors considered information and organization of groups, motivation in group formation and role of social groups in Agricultural Extension.

Unit II

Social Stratification: Meaning, definition, functions, basis for stratification, forms of social stratification- characteristics and- differences between class and caste system. Cultural concepts: culture, customs, folkways, mores, taboos, rituals. Traditions: Meaning, definition and their role in Agricultural Extension. Social Values and Attitudes: Meaning, definition, types and role of social values and attitudes in agricultural Extension. Social Institutions: Meaning, definition, major institutions in rural society, functions, and their role in agricultural Extension. Social Organizations: Meaning, definition, types of organizations and role of social organizations in agricultural Extension. Social Control: Meaning, definition, need of social control and means of social control. Social change: Meaning, definition, nature of social change, dimensions of social change and factors of social change.

Unit III

Leadership: Meaning, definition, classification, roles of leader, different methods of selection of professional and lay leaders. Training of Leaders: Meaning, definition, methods of training, Advantages and limitations in use of local leaders in Agricultural

Extension, Psychology and educational psychology: Meaning, definition, scope, and importance of educational psychology in Agricultural Extension. Intelligence: Meaning, definition, types, factors affecting intelligence and importance of intelligence in Agricultural Extension. Personality: Meaning, definition, types, factors influencing the personality and role of personality in agricultural Extension. Teaching: Learning process: Meaning and definition of teaching, learning, learning experience and learning situation, elements of learning situation and its characteristics. Principles of learning and their implication of teaching.

Suggested Readings

1. Chitambar, J.B. 1973. Introductory rural sociology. New York, John Wilex and Sons.
2. Desai, A.R. 1978. Rural sociology in India. Bombay, Popular Prakashan, 5th Rev. ed.
3. Doshi, S.L. 2007. Rural sociology. Rawat Publishers, Delhi.
4. Jayapalan, N. 2002. Rural sociology. Altanic Publishers, New Delhi.
5. Sharma, K.L. 1997. Rural society in India. Rawat Publishers, Delhi.
6. Bhatia, H.R. 1965. A Text Book of Educational Psychology, Asia Publishing House, New Delhi.
7. Pujari, D. 2002. Educational Psychology in Agriculture, Agrotech Publishing Academy, Udaipur (Raj.)
8. Bhushan, V. and Sachdeva, D.R. 2010. An introduction to Sociology, KitabMahal , New Delhi.
9. Rao, C.N.S. 2015. Sociology, S.Chand& Company, New Delhi.
10. Mondal, S. 2014. Text Book of Rural Sociology and Educational Psychology. Kalyani Publishers, New Delhi.
11. Sharma O. P. and Somani L. L. 2012. Fundamentals of Rural Sociology and Educational Psychology. Agrotech Pub. Co., Udaipur.

Course Name: Fundamental of Agronomy

Course Code: BSAC41100

Course Outline

Unit I

Agronomy and its scope: Definition, meaning and scope of Agronomy; art, science and business of crop production, relation of Agronomy with other disciplines of Agricultural Science, fields crops and classification, importance, ecology and ecosystem. Seeds and sowing: Definitions of crops, variety and seed. Factors affecting crop stands establishment: good quality seed, proper tillage, time of sowing seed rate, depth and method of sowing: broadcasting, drilling, dibbling, transplanting etc. Tillage and tilth: Definition, objectives, types, advantages and disadvantages of tillage including conservation tillage. Crop density and geometry: plant geometry and planting geometry, its effect on growth, yield.

Unit II

Crop nutrition: Definition of essential nutrients, criteria of essentiality, functional elements, classification of essential nutrients, role of macro and micro nutrients. Nutrient absorption, active and passive absorption of nutrients, forms of plant nutrients absorbed by plants, Combined /uncombined forms. Manures and fertilizers, nutrient use efficiency: Sources of nutrients: Inorganic (fertilizers), organic (manures) and bio-fertilizers; their classification and characteristics, method of preparation and role of organic manures in crop production. Integrated Nutrient Management (INM): Meaning, different approaches and advantages of INM. Green manure- role in crop production: Definition, objectives types of green manuring, desirable characteristics, advantages and limitations of green manuring. Water management: Water resources of the world, India and the state; Soil Moisture constants: gravitational water, capillary water, hygroscopic water, Soil moisture constants.

Unit III

Weeds: Definition, Importance and basics of classification of weeds and their control. Agroclimatic zones of India and the state, cropping systems: Factors affecting cropping systems, major cropping patterns and systems in the country. Sustainable crop production: Definition, importance and practices, natural resources and conservation pollution and pollutants, Allelopathy: Meaning and importance in crop production, Growth and development of crops: Definition, Meaning and factors affecting growth and development.

Course Name: Fundamental of Agronomy Lab

Course Code: BSAC41101

Course Outline

Unit-I

1. Identification of crops, seeds, fertilizers, pesticides and tillage implements.
2. Study of agro-climatic zones of India.
3. Identification of weeds in crops.
4. Methods of herbicide and fertilizer application.
5. Study of yield contributing characters and yield estimation.
6. Seed germination and viability test.
7. Numerical exercises on fertilizer requirement, plant population, herbicides and water requirement.
8. Use of tillage implements-reversible plough.
9. One way plough, harrow, leveler, seed drill.
10. Study of soil moisture measuring devices.

11. Measurement of field capacity, bulk density and infiltration rate.
12. Measurement of irrigation water.

Suggested Readings:

- De, Gopal Chandra 1989, Fundamentals of Agronomy. Oxford & IBH Publishing Co., New-Delhi
- ICAR 1989 Handbook of Agriculture, Indian Council of Agricultural Research, NewDelhi
- Michael, A.M. and Ojha, T.P. 1986. Principles of Agricultural Engineering, Vol.II Jain Brothers, New Delhi.
- Morachan, Y.B. 1986, Crop production and management, Oxford & IBH Publishing Co., New-Delhi.
- Porwal, B.L. and Sharma, D.D. 1991. Sashya Vigyan Ke Adhunic Siddhant (Hindi) Alka Publishers, Ajmer.
- Darashikoh – Nuskha Dar Fanni – Falahat (The Art of Agriculture). Translated from Persian to English by Razia Akbar (2000) with commentaries by K.L. Mehra, K.L. Chadhan, J.S. Kanwar and Y.L. Nene. Asian Agri- History Foundation, Secunderabad, Bull No. 3, pp : 136.
- Murithy, K, and Radha, V. 1995. Practical Manual on Agricultural Meteorology ,Kalyani Publishers, New-Delhi.

Course Name: Fundamentals of Soil Science

Course Code: BSAC43100

Course Outline

UnitI

Soil: Pedological and edaphalogical concepts. Rocks and minerals, weathering, Silicate clays: constitution and properties, sources of charge, ion exchange, cation and anion exchange capacity and base saturation (after buffering capacity), Soil formation, Soil organic matter, Pedogenic processes, Soil colloids: inorganic and organic, Properties of soil colloids and Ion exchange in soils, Soil profile, soil texture, soil structure. Bulk density and particle density, soil consistency, soil temperature, soil air, soil water. Soil reaction and buffering capacity. Soil taxonomy, keys to soil orders. Soils of India.

Suggested Readings

1. Sharma, N.L. & Singh, T.B. (1996) Soil Science (Hindi ed.) Rama pub. House, Barot Merrut(U.P).

2. Baver, L.D. Gardener, W.H. and gardener W.R.(1976) Soil Physics Wiley Eastern Ltd, New Delhi.
3. Biswas, T.D. and Mukherjee, S.K. (2006) Text book of soil science. Tata McGraw Hill publishing Co. Ltd, New Delhi.
4. Brady, N.C. and Weil, R.R. (2002) The nature and properties of soils, prentice hall of India Pvt. Ltd, M-97, Connaught Circus, New Delhi.
5. Das, D.K. (2002) Introductory Soil Science, Kalyani publisher, New Delhi.
6. Rai, M.M. (2002) Principal of Soil Science Mac Millan India Ltd, New Delhi
7. Mehra R.K. (2004) Text book of Soil Science, ICAR, New Delhi
8. ISSS (2002) Fundamentals of Soil Science, Div. of Soil Science, IARI, New Delhi
9. Chopra S.L. and Kanwar, J.S. (1991) Analytical Agricultural Chemistry, Kalyani publisher, Ludhiana.
10. Jackson, M.L. (1973) Soil chemical analysis, Prentice Hall of India, Pvt. Ltd New Delhi.

Course Name: Fundamentals of Soil Science Lab

Course Code:BSAC43101

Course Outline

Unit I

1. Study of soil profile in field.
2. Study of soil sampling tools,
3. Collection of representative soil sample, its processing and storage.
4. Study of soil forming rocks and minerals.
5. Determination of soil density, moisture content and porosity.
6. Determination of soil texture by feel and Bouyoucos Methods.
7. Studies of capillary rise phenomenon of water in soil column and water movement in soil.
8. Determination of soil pH and electrical conductivity.
9. Determination of cation exchange capacity of soil. Study of soil map.
10. Determination of soil colour.
11. Demonstration of heat transfer in soil.
12. Estimation of organic matter content of soil.

Course Name: Fundamentals of Horticulture

Course Code: BSAC48100

Course Outline:

Unit I

Horticulture: Its different branches, importance and scope, Horticulture and botanical classification, soil and climate for horticultural crops. Plant propagation : methods and propagation structures, seed dormancy and seed germination, Merits and demerits of sexual and asexual propagation Stock-scion relationship.

Unit II

Principles of orchard establishment, principles and methods of training and pruning of fruit crops, Juvenility and flower bud differentiation, unfruitfulness in horticultural crops, pollination, pollinizers and pollinators, fertilization and parthenocarpy, importance of bio regulators in horticultural crops, irrigation and its methods, Fertilizer application in horticultural crops.

Suggested Readings

1. Bose. T.K., Kabir.J.,Das.P. andJoy.P.P.(2000)Tropical Horticulture. NayaProkash. Calcutta.
2. Singh, Amar (1986) Fruit Physiology and Production. Kalyani Publishers, New Delhi.
3. Singh. S.P. (1997) Commercial Fruits. Kalyani Publishers, New Delhi.
4. Mitra. S.K., Bose. T.K. and RathoreD.S. (1991) Temperate Fruits. Horticulture & Allied Publishers, Calcutta.
5. Parthasvathy. V. A. Chattopadhyay. P.K. and Bose.T.K. (2006).Plantation Crpos.NayaProkash, Kolkatta.
6. Bal. J.S. (1997) Fruit Growing. Kalyani Publisher, New Delhi.
7. Chandra, Atul and Chandra, Anju. Production and Post-harvest technology of Fruits. NBS Publisher & Distributers, Bikaner.

Course Name: Fundamentals of Horticulture Lab

Course Code: BSAC48101

Course Outline

1. Identification of garden tools.
2. Identification of horticultural crops.
3. Preparation of seed bed/nursery bed.
4. Practice of sexual and asexual methods of propagation including micro-propagation.
5. Layout and planting of orchard.

6. Training and pruning of fruit trees.
7. Preparation of potting mixture.
8. Fertilizer application in different crops.
9. Visits to commercial nurseries/orchard.

Course Name: National Cadet Corps (NCC-1), National Service Scheme (NSS-2)

Course Code: WHNN99000

Course Outline

National Cadet Corps- As per government guidelines, for getting B and C certificate in NCC, minimum years of requirement is 2 and 3 years along with 1-2 annual camps

- Aims, objectives, organization of NCC and NCC song. DG's cardinals of discipline.
- Drill- aim, general words of command, attention, stands at ease, stand easy and turning.
- Sizing, numbering, forming in three ranks, open and close order march, and dressing.
- Saluting at the halt, getting on parade, dismissing, and falling out.
- Marching, length of pace, and time of marching in quick/slow time and halt. Side pace, pace forward and to the rear. Turning on the march and wheeling. Saluting on the march.
- Marking time, forward march, and halt. Changing step, formation of squad and squad drill.
- Command and control, organization, badges of rank, honors, and awards
- Nation Building- cultural heritage, religions, traditions, and customs of India. National integration. Values and ethics, perception, communication, motivation, decision making, discipline and duties of good citizens. Leadership traits, types of leadership. Character/ personality development. Civil defense organization, types of emergencies, firefighting, protection. Maintenance of essential services, disaster management, aid during development projects.
- Basics of social service, weaker sections of society and their needs, NGO's and their contribution, contribution of youth towards social welfare and family planning.
- Structure and function of human body, diet and exercise, hygiene and sanitation. Preventable diseases including AIDS, safe blood donation, first aid, physical and mental health. Adventure activities. Basic principles of ecology, environmental conservation, pollution and its control.

National Service Scheme (NSS)

Evoking social consciousness among students through various activities viz., working together, constructive, and creative social work, to be skillful in executing democratic leadership, developing skill in programme, to be able to seek self-employment, reducing gap between educated and uneducated, increasing awareness and desire to help sections of society.

All the activities related to the National Service Scheme are distributed under four different courses viz., National Service Scheme I, National Service Scheme II, National Service Scheme III and National Service Scheme IV; each having one credit load.

The entire four courses should be offered continuously for two years. A student enrolled in NSS course should put in at least 60 hours of social work in different activities in a semester other than five regular one-day camp in a year and one special camp for duration of 7 days at any semester break period in the two years. Different activities will include orientation lectures and practical works. Activities directed by the Central and State Government have to be performed by all the volunteers of NSS as per direction.

Introduction and Basic Components of NSS

- Orientation: history, objectives, principles, symbol, badge; regular programs under NSS
- Organizational structure of NSS, Code of conduct for NSS volunteers, points to be considered by NSS volunteers' awareness about health.
- NSS program activities: Concept of regular activities, special camping, day camps, basis of adoption of village/slums, conducting survey, analyzing guiding financial patterns of scheme, youth program/ schemes of GOI, coordination with different agencies and maintenance of diary. Understanding youth. Definition, profile, categories, issues and challenges of youth; and opportunities for youth who is agent of the social change.
- Community mobilization: Mapping of community stakeholders, designing the message as per problems and their culture; identifying methods of mobilization involving youth-adult partnership. Social harmony and national integration
- Indian history and culture, role of youth in nation building, conflict resolution and peacebuilding. Volunteerism and shramdaan. Indian tradition of volunteerism, its need, importance, motivation, and constraints; shaman as part of volunteerism
- Citizenship, constitution, and human rights: Basic features of constitution of India, fundamental rights and duties, human rights, consumer awareness and rights and rights to information. Family and society. Concept of family, community (PRIs and other community based organizations) and society

Course Name: Introductory Biology

Course Code: BSAC55101

Course Outline

Unit I

Introduction to the living world, diversity and characteristics of life, origin of life, Evolution and Eugenics. Binomial nomenclature and classification Cell and cell division.

Unit II

Morphology of flowing plants. Seed and seed germination. Plant systematic- viz; Brassicaceae, Fabaceae and Poaceae. Role of animals in agriculture.

1.Morphology of flowering plants – root, stem and leaf and their modifications.
2. Inflorescence
3. Flower and fruits.
4. Cell, tissues.
5. Cell division.
6. Internal structure of root, stem and leaf.
7. Study of specimens and slides.
8. Description of plants - Brassicaceae, Fabaceae and Poaceae.

Suggested Readings:

1. Bendre, A. and Kumar, A. 2012. A Text Book of Practical Botany. Vol. I and II. RastogiPubliation, Meerut.
2. Kaushik, M. P. 2003. Modern Text Book of Botany. Prakash Publication, Muzaffer Nagar, UP.
3. Pandey, B. P. 2001. Plant Anatomy. S. Chand & Company Ltd., New Delhi.
4. Rastogi, V. B. Oragnic Evolution. Rastogi Publication, Meerut.
5. Saxena and Sarabhai.1989. Text Book of Botany. Rastogi Publication, Meerut.

Course Name: Introductory Mathematics
Course Code: BSAC55102

Course Outline

Unit I

Theory: Algebra: Progressions- Arithmetic, Geometric and Harmonic Progressions. Matrices: Definition of Matrices, Addition, Subtraction, Multiplication, Transpose and Inverse up to 3rd order by adjoint method, Properties of determinants up to 3rd order and their evaluation. Differential Calculus: Definition - Differentiation of function using first principle, Derivatives of sum, difference, product and quotient of two functions, Methods, Increasing and Decreasing Functions. Application of Differentiation- Growth rate, Average Cost, and Marginal cost, Marginal Cost, Marginal Revenue. Partial differentiation: Homogeneous function, Euler's theorem, Maxima and Minima of the functions of the form y = f (x) and y = f (x1, x2).

Unit II

Integral Calculus: Integration -Definite and Indefinite Integrals-Methods- Integration by substitution, Integration by parts. Area under simple well-known curves. Mathematical Models: Agricultural systems - Mathematical models - classification of mathematical models- Fitting of Linear, quadratic and exponential models to experimental data.

Suggested Readings:

1. KrishiGanita by Gokhroo and Jain
2. Differential Calculus by Gokhroo.
3. Integral Calculus by Gokhroo.

9. Lesson Plans

SECA77001 Bio-fertilizers and Bio-pesticides Production

Unit	Particulars	Class No.	Pedagogy of Class
Unit-I	Isolation and purification of important bio-pesticides: *trichoderma* and its production.	P1	Practical
Unit-I	Isolation and purification of important bio-pesticides: trichoderma and its production.	P2	Practical
Unit-I	Isolation and purification of important bio-pesticides: Pseudomonas and its production.	P3	Practical
Unit-I	Isolation and purification of important bio-pesticides: Pseudomonas and its production.	P4	Practical
Unit-I	Isolation and purification of important bio-pesticides: Bacillus and its production.	P5	Practical
Unit-I	Isolation and purification of important bio-pesticides: Bacillus and its production.	P6	Practical
Unit-I	Isolation and purification of important bio-pesticides: Bacillus and its production.	P7	Practical
Unit-I	Isolation and purification of important bio-pesticides: Metarhyziumetc. and its production.	P8	Practical
Unit-I	Isolation and purification of important bio-pesticides: Metarhyziumetc. and its production.	P9	Practical
Unit-I	Isolation and purification of important bio-pesticides: Metarhyziumetc. and its production.	P10	Practical
Unit-I	Identification of important botanicals.	P11	Practical
Unit-I	Identification of important botanicals.	P12	Practical
Unit-I	Visit to bio-pesticide laboratory in nearby area.	P13	Practical
Unit-I	Visit to bio-pesticide laboratory in nearby area.	P14	Practical
Unit-I	Field visit to explore naturally infected cadavers.	P15	Practical
Unit-I	Field visit to explore naturally infected cadavers.	P16	Practical
Unit-I	Identification of entomopathogenic entities in field condition.	P17	Practical
Unit-I	Identification of entomopathogenic entities in field condition.	P18	Practical
Unit-I	Identification of entomopathogenic entities in field condition.	P19	Practical
Unit-I	Quality control of biopesticides.	P20	Practical
Unit-I	Quality control of biopesticides.	P21	Practical
Unit-I	Isolation and purification of *Azospirillum*, *Azotobactor, Rhizobium,*	P22	Practical
Unit-I	Isolation and purification of *Azospirillum,*	P23	Practical

	Azotobactor, Rhizobium,		
Unit-I	Isolation and purification of P-solubilizers and cyanobacteria.	P24	Practical
Unit-I	Isolation and purification of P-solubilizers and cyanobacteria.	P25	Practical
Unit-I	Mass multiplication and inoculums production of bio-fertilizers.	P26	Practical
Unit-I	Mass multiplication and inoculums production of bio-fertilizers.	P27	Practical
Unit-I	Isolation of AM fungi- Wet sieving method and sucrose gradient method.	P28	Practical
Unit-I	Isolation of AM fungi- Wet sieving method and sucrose gradient method.	P29	Practical
Unit-I	Mass production of AM inoculants.	P30	Practical

SECA77002 Mushroom Production Technology

Unit	Particulars	Class No.	Pedagogy of Class
Unit-I	Current status and scope of mushroom cultivation in India and Punjab.	P1	Practical
Unit-I	Important features of edible fungi	P2	Practical
Unit-I	Nutritional and medicinal value of mushrooms	P3	Practical
Unit-I	Preparation of media	P4	Practical
Unit-I	Tissue culture preparation	P5	Practical
Unit-I	Sub-culturing for culture maintenance and its preservation	P6	Practical
Unit-I	Spawn preparation techniques	P7	Practical
Unit-I	Collection of wild mushroom flora of Rajasthan	P8-P9	Practical
Unit-I	Raw material formulations for Agaricusbisporus (button mushroom)	P10-P11	Practical
Unit-I	Composting (long method and short method) and Casing preparation	P12-P13	Practical
Unit-I	Crop management practices	P14-P15	Practical
Unit-I	Mushroom farm design and infrastructure mapping for commercial unit	P16	Practical
Unit-I	Cultivation techniques of Pleurotusflorida (dhingri) mushrooms	P17-P18	Practical
Unit-I	Cultivation techniques of Lentunusedodes (shiitake) mushrooms	P19-P20	Practical
Unit-I	Cultivation techniques of Calocybeindica (milky) mushrooms	P21-P22	Practical
Unit-I	Cultivation techniques of Volvoriellavolvacea (paddy straw) mushrooms	P23	Practical
Unit-I	Marketing of mushrooms	P24	Practical
Unit-I	Mushroom diseases and their control	P25	Practical
Unit-I	Mushroom insect pest and their control	P26	Practical
Unit-I	Mushroom abiotic stress and their control	P27	Practical
Unit-I	Preparation of value added products from mushrooms	P28	Practical
Unit-I	Economics of mushrooms	P29	Practical
Unit-I	Exposure visit to commercial farms	P30	Practical

AECA55001 Communication Skills

Unit	Particulars	Class No.	Pedagogy of Class
UNIT-I	Communication meaning, concept and Process, Types of Communication	C-1	Lecture
Unit-I	Models of Communication	C-2	Lecture
Unit-I	Barriers to Communication, Miscommunication	C-3	Lecture
Unit-I	Clarification class	C-4	Clarification class
Unit-I	Listening and note taking	C-5	Lecture
Unit-I	Writing Skills: Précis Writing	C-6	Lecture
Unit-II	Writing Skills: Summarizing/Abstracting the paragraph	C-7	Lecture
Unit-II	Resume Writing, CV Writing	C-8	Lecture
Unit-II	Quiz based on Vocabulary Building Exercises	C-9	Quiz
Unit-III	Sentence Structure	C-10	Lecture
Unit-III	Correct Usage of Grammar	C-11	Lecture
Unit-III	Subject-Verb Agreement	C-12	Lecture
Unit-III	Clarification class	C-13	Clarification Class
	Class room assignment-I	C-14	Class Assignment
	Presentation	C-15	Presentation

AECA55002 Communication Skills (Lab)

Unit	Particulars	Class No.	Pedagogy of Class
Unit-1	Listening and note taking	P1	Practical
Unit-1	Writing Skills: Précis Writing	P2	Practical
Unit-1	Writing Skills: Summarizing the paragraph	P3	Practical
Unit-1	Writing Skills: Abstract writing	P4	Practical
Unit-1	Reading Comprehension: General Article	P5	Practical
Unit-1	Reading Comprehension: Technical Writing	P6	Practical
Unit-1	Micro Presentation, Impromptu Presentation	P7	Practical
Unit-1	Stage Manners	P8	Practical
Unit-1	Group Discussions	P9	Practical
Unit-1	Group Discussions	P10	Practical
Unit-1	Public Speaking Exercises	P11	Practical
Unit-1	Public Speaking Exercises	P12	Practical
Unit-1	Vocabulary Building Exercises	P13	Practical
Unit-1	Interview Techniques	P14	Practical
Unit-1	Organization of the Events	P15	Practical

BSAC54100 – Introductory Agro forestry

Unit	Particulars	Class No.	Pedagogy of Class
UNIT-I	Introduction to Forestry	C-1	Lecture
Unit-I	Types of Agroforestry Systems	C-2	Lecture
Unit-I	Potential of Agroforestry in India	C-3	Lecture
Unit-I	MPTS and Their Role in Agroforestry	C-4	Lecture
Unit-I	Ecological Aspects of Agroforestry and Traditional Agroforestry Practices	C-5	Lecture
Unit-I	Soil and Water Conservation through Agroforestry	C-6	
	Clarification Class	C-7	Clarification Class
Unit-II	Introduction to Silviculture	C-8	Lecture
Unit-II	Propagation and Regeneration of Tree Species	C-9	Lecture
Unit-II	Nursery Management and Cultural Practices	C-10	Lecture
Unit-II	Management of Tree Species	C-11	Lecture
Unit-II	Agroforestry Models and Applications	C-12	Lecture
Unit-II	Clarification Class	C-13	Clarification Class
	Presentation	C-14	Presentation
	Class Assignment	C-15	Class Assignment
	Home Assignment		Home Assignment

BSAC54101 – Introductory Agro forestryLab

Unit	Particulars	Class No.	Pedagogy of Class
Unit-I	Identification of Tree Species in Agroforestry	P1	Practical
Unit-I	Study of Tree Growth Measurement	P2	Practical
Unit-I	Study of Environmental Parameters Affecting Agroforestry System	P3	Practical
Unit-I	Plant Propagation Methods	P4	Practical
Unit-I	Pre-sowing Seed Treatment	P5	Practical
Unit-I	Preparation of Nursery Bed Exercise	P6	Practical
Unit-I	Practicing Propagation Techniques for Trees	P7	Practical
Unit-I	Afforestation Methods	P8	Practical
Unit-I	Practical Training on Pruning, Coppicing, and Pollarding	P9	Practical
Unit-I	Planting Patterns and Designs for Plantation	P10	Practical
Unit-I	Natural and Artificial Regeneration	P11	Practical
Unit-I	Design and Diagnostic Survey of Agroforestry System	P12	Practical
Unit-I	Evaluation of Agroforestry Systems in Different Agro Climatic Zones	P13	Practical
Unit-I	Exposure Visit to Prevailing Agroforestry Systems	P14	Practical
Unit-I	Virtual Visit to Agroforestry Models Developed by ICAR-IGFRI, ICFRE	P15	Practical

BSAC50100: Rural Sociology and Educational Psychology

Unit	Particulars	Class No.	Pedagogy of Class
Unit I	Extension Education and Agricultural Extension: Meaning, definition, scope, and importance	C1	Lecture
Unit I	Sociology and rural sociology: Meaning, definition, scope, importance of rural sociology in Agricultural Extension, and interrelationship between rural sociology and Agricultural Extension	C2-C3	Lecture
Unit I	Indian Rural Society: important characteristics, differences and relationship between rural and urban societies	C4-C5	Lecture
Unit I	Social Groups: Meaning, definition, classification, factors considered information and organization of groups, motivation in group formation and role of social groups in Agricultural Extension	C6-C7	Lecture
	Clarification class	C8	Clarificationclass
Unit II	Social Stratification: Meaning, definition, functions, basis for stratification, forms of social stratification- characteristics and- differences between class and caste system	C9-C10	Lecture
Unit II	Cultural concepts: culture, customs, folkways, mores, taboos, rituals and Traditions: Meaning, definition and their role in Agricultural Extension	C11-C12	Lecture
	Classroom Assignment -I	C13	Classroom Assignment
Unit II	Social Values and Attitudes: Meaning, definition, types and role of social values and attitudes in agricultural Extension	C14	Lecture
Unit II	Social Institutions: Meaning, definition, major institutions in rural society, functions, and their role in agricultural Extension	C15	Lecture
Unit II	Social Organizations: Meaning, definition, types of organizations and role of social organizations in agricultural Extension	C16	Lecture
Unit II	Social Control: Meaning, definition, need of social control and means of social control	C17	Lecture
Unit II	Social change: Meaning, definition, nature of	C18	Lecture

	social change, dimensions of social change and factors of social change.		
	Clarification class	C19	Clarificationclass
	Classroom Assignment -II	C20	Classroom Assignment
	Presentation	C21-C22	Presentation
	Home Assignment		Home Assignment
Unit III	Leadership: Meaning, definition, classification, roles of leader, different methods of selection of professional and lay leaders. Training of Leaders: Meaning, definition, methods of training, Advantages and limitations in use of local leaders in Agricultural Extension	C23-C24	Lecture
Unit III	Psychology and educational psychology: Meaning, definition, scope, and importance of educational psychology in Agricultural Extension	C25	Lecture
Unit III	Intelligence: Meaning, definition, types, factors affecting intelligence and importance of intelligence in Agricultural Extension	C26	Lecture
Unit III	Personality: Meaning, definition, types, factors influencing the personality and role of personality in agricultural Extension	C27	Lecture
Unit III	Teaching: Learning process: Meaning and definition of teaching, learning, learning experience and learning situation, elements of learning situation and its characteristics. Principles of learning and their implication of teaching.	C28-C29	Lecture
	Clarification class	C30	Clarificationclass

BSAC41100 Fundamentals of Agronomy

Unit	Particulars	Class No.	Pedagogy of Class
Unit-I	Agronomy and its scope: Definition, meaning and scope of Agronomy; art, science and business of crop production	C1	Lecture
Unit-I	Relation of Agronomy with other disciplines of Agricultural Science, fields crops and classification, importance, ecology and ecosystem	C2	Lecture
Unit-I	Seeds and sowing: Definitions of crops, variety and seed	C3	Lecture
Unit-I	Factors affecting crop stands establishment: good quality seed, proper tillage, time of sowing seed rate, depth and method of sowing: broadcasting, drilling, dibbling, transplanting etc	C4	Lecture
	Classroom Assignment	C5	Classroom Assignment
Unit-I	Tillage and tilth: Definition, objectives, types, advantages and disadvantages of tillage including conservation tillage	C6	Lecture
Unit-I	Crop density and geometry: plant geometry and planting geometry, its effect on growth, yield	C7	Lecture
	Clarification class	C8	Clarification class
Unit-II	Crop nutrition: Definition of essential nutrients, criteria of essentiality, functional elements, classification of essential nutrients, role of macro and micro nutrients	C9-C10	Lecture
	Home Assignment		Home Assignment
Unit-II	Nutrient absorption, active and passive absorption of nutrients, forms of plant nutrients absorbed by plants, Combined /uncombined forms	C11-C12	Lecture
Unit-II	Manures and fertilizers, nutrient use efficiency: Sources of nutrients: Inorganic (fertilizers), organic (manures) and bio-fertilizers their classification and characteristics, method of preparation and role of organic manures in crop production	C13-C14	Lecture
Unit-II	Integrated Nutrient Management (INM): Meaning, different approaches and advantages of INM	C15- C16	Lecture
	Classroom Assignment	C17	Classroom Assignment

Unit-II	Green manure- role in crop production: Definition, objectives types of green manuring, desirable characteristics, advantages and limitations of green manuring	C18	Lecture
Unit-II	Water management: Water resources of the world, India and the state; Soil Moisture constants: gravitational water, capillary water, hygroscopic water, Soil moisture constants	C19	Lecture
	Clarification class	C20	Clarification class
	Presentation	C21	Presentation
Unit-III	Weeds: Definition, Importance and basics of classification of weeds and their control Agroclimatic zones of India and the state	C22-C23	Lecture
Unit-III	cropping systems: Factors affecting cropping systems, major cropping patterns and systems in the country	C24	Lecture
Unit-III	Sustainable crop production: Definition, importance and practices, natural resources and conservation pollution and pollutants	C25	Lecture
	Quiz	C26	Quiz
Unit-III	Allelopathy: Meaning and importance in crop production, Growth and development of crops: Definition, Meaning and factors affecting growth and development	C27- C28	Lecture
	Clarification Class	C29	Clarification Class
	Presentation	C30	Presentation

BSAC41101 Fundamentals of Agronomy Lab

Unit	Particulars	Class No.	Pedagogy of Class
Unit-I	A visit to Instructional Crop farm and study on field crops	P1	Practical
Unit-I	Identification of crops, seeds, fertilizers, pesticides	P2	Practical
Unit-I	Crops and cropping systems in different Agro-climatic zones of the state	P3	Practical
Unit-I	Study of some preparatory tillage implements	P4	Practical
Unit-I	Study of inter tillage implements	P5	Practical
Unit-I	Practice of ploughing / puddling	P6	Practical
Unit-I	Study and practice of inter cultivation in field crops	P7	Practical
Unit-I	Numerical exercises on calculation of seed, plant population and fertilizer requirement	P8	Practical
Unit-I	Numerical exercises on calculation of seed, plant population and fertilizer requirement	P9	Practical
Unit-I	Study of yield contributing characters and yield estimation of crops	P10	Practical
Unit-I	Study of yield contributing characters and yield estimation of crops	P11	Practical
Unit-I	Identification of weeds in different crops	P12	Practical
Unit-I	Seed germination and viability test of seed	P13	Practical
Unit-I	Practice on time and method of application of manures and fertilizers	P14	Practical
Unit-I	Practice on time and method of application of manures and fertilizers	P15	Practical

BSAC43100–Fundamentals of Soil Science

Unit	Particulars	Class No.	Pedagogy of Class
UNIT-I	Introduction to Pedological and Edaphological Concepts	C-1	Lecture
Unit-I	Rocks and Minerals: Classification and Identification	C-2	Lecture
Unit-I	Weathering Processes and Their Effects	C-3	Lecture
Unit-I	Silicate Clays: Constitution and Properties	C-4	Lecture
Unit-I	Sources of Charge in Soils	C-5	Lecture
Unit-I	Ion Exchange: Concepts and Mechanisms	C-6	Lecture
	Clarification class	C-7	Clarification Class
Unit-I	Cation Exchange Capacity (CEC) and Anion Exchange Capacity	C-8	Lecture
Unit-I	Base Saturation and Buffering Capacity	C-9	Lecture
	Class room assignment-I	C-10	Class assignment
Unit-I	Soil Formation Processes	C-11	Lecture
Unit-I	Soil Organic Matter: Importance and Characteristics	C-12	Lecture
Unit-I	Pedogenic Processes: Types and Functions	C-13	Lecture
Unit-I	Soil Colloids: Inorganic vs Organic	C-14	Lecture
Unit-I	Properties of Soil Colloids	C-15	Lecture
Unit-I	Ion Exchange in Soils: Practical Applications	C-16	Lecture
Unit-I	Understanding Soil Profile and Its Importance	C-17	Lecture
Unit-I	Soil Texture: Types and Determination	C-18	Lecture
Unit-I	Soil Structure: Formation and Types	C-19	Lecture
	Clarification class	C-20	Lecture
Unit-I	Bulk Density vs. Particle Density	C-21	Lecture
Unit-I	Soil Consistency: Properties and Testing	C-22	Lecture
	Quiz	C-23	Quiz
Unit-I	Soil Temperature, Air, and Water Relations	C-24	Lecture
Unit-I	Soil Reaction: pH and Buffering Capacity	C-25	Lecture
Unit-I	Soil Taxonomy: Keys to Soil Orders	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

BSAC43101– Fundamentals of Soil Science Lab

Unit	Particulars	Class No.	Pedagogy of Class
Unit-I	Introduction to General Properties of Minerals	P1	Practical
Unit-I	Study of Silicate and Non-Silicate Minerals	P2	Practical
Unit-I	Study of Igneous Rocks: Characteristics and Identification	P3	Practical
Unit-I	Study of Sedimentary Rocks: Formation and Types	P4	Practical
Unit-I	Study of Metamorphic Rocks: Properties and Identification	P5	Practical
Unit-I	Study of Soil Profile: Field Observation	P6	Practical
Unit-I	Collection and Processing of Soil for Analysis	P7	Practical
Unit-I	Study of Soil Texture: Feel Method	P8	Practical
Unit-I	Mechanical Analysis of Soil	P9	Practical
Unit-I	Determination of Particle Density and Soil Porosity	P10	Practical
Unit-I	Determination of Soil Color	P11	Practical
Unit-I	Study of Soil Structure and Aggregate Analysis	P12	Practical
Unit-I	Determination of Soil Moisture	P13	Practical
Unit-I	Determination of Soil Moisture Constants (Field Capacity, etc.)	P14	Practical
Unit-I	Study of Infiltration Rate of Soil	P15	Practical

BSAC48100 Fundamentals of Horticulture

Unit	Particulars	Class No.	Pedagogy of Class
Unit-I	Definition and branches of horticulture - Importance and scope of horticulture	C1	Lecture
Unit-I	Horticultural and Botanical Classification	C2	Lecture
Unit-I	soil and climate for horticultural crops	C3	Lecture
Unit-I	Plant propagation : methods and propagation structures	C4-C7	Lecture
	Clarification class	C8	Clarification class
	Classroom Assignment-I	C9	Classroom Assignment
Unit-I	Seed dormancy	C10	Lecture
Unit-I	Seed germination	C11	Lecture
	Quiz-I	C12	Quiz
Unit-I	Merits and demerits of sexual and asexual propagation	C13	Lecture
Unit-I	Stock-scion relationship	C14	Lecture
	Clarification class	C15	Clarification class
	Home Assignment-I		Home Assignment
Unit-I	Principles of orchard establishment	C16	Lecture
Unit-I	Principles and methods of training and pruning of fruit crops	C17-C18	Lecture
Unit-I	Juvenility and flower bud differentiation	C19	Lecture
	Presentation	C20	Presentation
Unit-I	Unfruitfulness in horticultural crops	C21	Lecture
	Classroom Assignment-II	C22	Classroom Assignment
Unit-I	Pollination, pollinizers and pollinators, fertilization and parthenocarpy	C23	Lecture
Unit-I	Importance of bio regulators in horticultural crops	C24-C25	Lecture
	Home Assignment-II		Home Assignment
Unit-I	Irrigation and its methods	C26-C27	Lecture
	Quiz-II	C28	Quiz
Unit-I	Fertilizer application in horticultural crops	C29	Lecture
	Clarification class	C30	Clarification class

BSAC48101 Fundamentals of Horticulture Lab

Unit	Particulars	Class No.	Pedagogy of Class
Unit-I	Identification and nomenclature of fruit,	P1	Practical
Unit-I	Layout of an orchard, pit making	P2	Practical
Unit-I	System of planting	P3	Practical
Unit-I	Nursery raising techniques of fruit crops	P4	Practical
Unit-I	Understanding of plant propagation structures	P5	Practical
Unit-I	Propagation through seeds and plant parts,	P6	Practical
Unit-I	Propagation techniques for horticultural crops	P7	Practical
Unit-I	Container, potting mixture, potting and repotting	P8	Practical
Unit-I	Training and pruning methods on fruit crops	P9	Practical
Unit-I	Preparation of fertilizer mixture and application	P10	Practical
Unit-I	Preparation and application of PGR	P11	Practical
Unit-I	Layout of different irrigation systems,	P12	Practical
Unit-I	Maturity studies	P13	Practical
Unit-I	Harvesting, grading, packaging and storage	P14- P15	Practical

WHNN99000 National Service Scheme (NSS-I)

Unit	Particulars	Class No.	Pedagogy of Class
Unit-I	Orientation: History, Objectives, Principles, Symbol, Badge	P1	Practical
Unit-I	Regular Programs under NSS	P2	Practical
Unit-I	Organizational Structure of NSS	P3	Practical
Unit-I	Code of Conduct for NSS Volunteers	P4	Practical
Unit-I	Health Awareness for NSS Volunteers	P5	Practical
Unit-I	NSS Program Activities: Regular Activities	P6	Practical
Unit-I	NSS Program Activities: Special Camping and Day Camps	P7	Practical
Unit-I	Adoption of Villages/Slums and Conducting Surveys	P8	Practical
Unit-I	Youth Programs and Schemes of GOI	P9	Practical
Unit-I	Understanding Youth: Definition, Profile, Issues, and Challenges	P10	Practical
Unit-I	Community Mobilization: Stakeholder Mapping	P11	Practical
Unit-I	Designing Messages for Community Mobilization	P12	Practical
Unit-I	Indian History and Culture: Role of Youth in Nation Building	P13	Practical
Unit-I	Volunteerism and Shramdaan: Indian Tradition	P14	Practical
Unit-I	Citizenship, Constitution, and Human Rights	P15	Practical

BSAC55101 Introductory Biology

Unit	Particulars	Class No.	Pedagogy of Class
Unit-I	Introduction to the living world	C1	Lecture
Unit-I	Diversity and characteristics of life	C2	Lecture
Unit-I	origin of life	C3	Lecture
Unit-I	Evolution	C4	Lecture
Unit-I	Eugenics	C5	Lecture
Unit-I	Binomial nomenclature and classification	C6	Lecture
Unit-I	Cell and cell division	C7	Lecture
Unit-I	Morphology of flowing plants	C8	Lecture
Unit-I	Seed and seed germination	C9	Lecture
Unit-I	Plant systematic, Brassicaceae	C10	Lecture
Unit-I	Fabaceae and Poaceae	C11	Lecture
Unit-I	Role of animals in agriculture	C12	Lecture
	Class Room Assignment	C13	Class Room Assignment
	Presentation	C14	Presentation
	Take Home Assignment		Take Home Assignment
	Clarification Class	C15	Clarification Class

BSAC55101 Introductory Biology Lab

Unit	Particulars	Class No.	Pedagogy of Class
Unit-I	Morphology of flowering plants – root and its modifications	P1	Practical
Unit-I	Morphology of flowering plants – stem and its modifications	P2	Practical
Unit-I	Morphology of flowering plants – leaf and its modifications	P3	Practical
Unit-I	Morphology of flowering plants - inflorescence	P4	Practical
Unit-I	Morphology of flowering plants – flower	P5	Practical
Unit-I	Morphology of flowering plants – fruits	P6	Practical
Unit-I	Cell, tissues	P7	Practical
Unit-I	Cell division	P8	Practical
Unit-I	Internal structure of root	P9	Practical
Unit-I	Internal structure of stem	P10	Practical
Unit-I	Internal structure of leaf	P11	Practical
Unit-I	Study of specimens and slides	P12	Practical
Unit-I	Description of plants – Brassicaceae	P13	Practical
Unit-I	Description of plants - Fabaceae	P14	Practical
Unit-I	Description of plants – Poaceae	P15	Practical

BSAC55102 Introductory Mathematics

Unit	Particulars	Class No.	Pedagogy of Class
UNIT-I	Algebra: Progressions-	C-1	Lecture
Unit-I	Arithmetic, Geometric and Harmonic Progressions. Matrices:	C-2	Lecture
Unit-I	Arithmetic, Geometric and Harmonic Progressions. Matrices:	C-3	Lecture
Unit-I	Definition of Matrices, Addition, Subtraction, Multiplication,	C-4	Lecture
Unit-I	Transpose and Inverse up to 3rd order by adjoint method, Properties of determinants up to 3rd order and their evaluation.	C-5	Lecture
Unit-I	Transpose and Inverse up to 3rd order by adjoint method, Properties of determinants up to 3rd order and their evaluation.	C-6	Lecture
Unit-I	Transpose and Inverse up to 3rd order by adjoint method, Properties of determinants up to 3rd order and their evaluation.	C-7	Lecture
Unit-I	Differential Calculus: Definition -	C-8	Lecture
Unit-I	Differentiation of function using the first principle	C-9	Lecture
	Classroom Assignment	C-10	Class assignment
Unit-I	Derivatives of sum, difference,	C-11	Lecture
Unit-I	Product and quotient of two functions,	C-12	Lecture
Unit-I	Application of Differentiation	C-13	Lecture
Unit-I	Growth rate, Average Cost, and Marginal cost, Marginal Cost, Marginal Revenue. Partial differentiation: Homogeneous function, Euler'	C-14	Lecture
Unit-II	Growth rate, Average Cost, and Marginal cost, Marginal Cost, Marginal Revenue. Partial differentiation: Homogeneous function, Euler'	C-15	Lecture
	Presentation	C-16	Presentation
Unit-II	Theorem, Maxima and Minima of the functions of the form $y = f(x)$ and $y = f(x1, x2)$.	C-17	Lecture
	Clarification class	C-18	Clarification class
	Quiz	C-19	Quiz
Unit-II	Integral Calculus: Integration	C-20	Lecture
Unit-II	Definite and Indefinite Integrals-Methods	C-21	Lecture
Unit-II	Integration by substitution,	C-22	Lecture
Unit-II	Integration by parts. Area under simple well-known curves.	C-23	Lecture
Unit-II	Integration by parts. Area under simple well-	C-24	Lecture

	known curves.		
Unit-II	Mathematical Models: Agricultural systems	C-25	Lecture
	Take Home Assignment		Take Home Assignment
Unit-II	Mathematical models - classification of mathematical models-	C-26- C-27	Lecture
Unit-II	Fitting of Linear	C-28	Lecture
Unit-II	Quadratic and exponential models to experimental data.	C-29	Lecture
	Clarification class	C-30	Presentation

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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