B.S.C. I st Year minor
(Life Science)

B.Sc. I Year-Life Science

Part A Introduction			
Program: Certficate	Class:B.Sc	Year: 1st Year	Session: 2021 – 2022
Subject: Life Sciences			
1	Course Code	SLFSC2T	
2	Course Title	Environmental Biology, Genetics & Evolution	
3	Course Type (Core Course/Elective/Generic Elective/Vocational/.....)	CORE	
4	Pre-requisite (if any)	To study this course, a student musthave had the subject Biology in class 12/	
5	Course Learning outcomes (CLO)	After studying this course, students will be able to understand fundamental Genetics, Environmental biology and Evolution	
6	Credit Value (T+P)	4	
7	Total Marks	Max. Marks: 25+75	Min. Passing Marks:33

Part B- Content of the Course

Total No. of Lectures: 60

L-T-P:

Unit	Topics	No. of Lectures	No of Tutorial
1	Ecosystem:Concept, types-forest, grassland, ~~lentic, lotic, estuarine, marine~~ Aquatic, desert and wetlands. Structure and function, Components of ecosystem (Abiotic and Biotic), Ecological pyramids, Energy flow in ecosystem. Food chain, food web and trophic levels. Ecological adaptation in plants and animals, aquatic and desert adaptation.	12	

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3.12.21

	Ecological succession: Hydrosphere and Xerosphere.		
2	Environmental pollution: Sources, nature and effects of air, water, soil, noise, radioactive and nuclear pollution. Ozone layer depletion, acid rain. Global climate change. Biogeochemical cycles (Nitrogen, Carbon, Sulfur, phosphorus), Bio-fertilizers, Bio-pesticides.	12	
3	Mendelian laws of inheritance, Incomplete dominance, Co-dominance, epistasis, Complementary ratio and supplementary radio, Cytoplasmic inheritance, plastid and kappa particles. Linkage and crossing over (Coupling and repulsion hypothesis) Mechanism of sex determination (Chromosomal theory), sex linked inheritance.	12	
4	Structure of Chromosomes, Giant chromosome Polytene and Lampbrush Chromosome related disorders: Kleinfelter's syndrome, Turner's syndrome, Down's syndrome and Cri-du-chat syndrome Mutations- Spontaneous and induced, Chemical and Physical mutagens, Molecular basis of mutation.	12	
5	Theories of Organic evolution: Lamarckism and Neo Lamarckism, Darwinism and Neo Darwinism, Germplasm theory, Mutation theory. Gene pool, Random genetic drift, Hardy Weinberg law. Isolation and types of isolating mechanisms	12	

3/12/21

3/12/21

3.12.21

	(Pre mating and post mating concepts) Role of isolation in speciation, Instantaneous and gradual speciation		

Keywords/Tags: Genetics, Environment, Evolution

Part C-Learning Resources

Text Books, Reference Books, Other resources

Suggested Readings:

1. Cytogenetics: Darbeshwar Roy, Narosa Publishing House.
2. Environmental Science: A New Approach, Dahiya, P. and Ahlawat M., Narosa Publishers.
3. Ecology- Subrahmanyam, N.S. and Sambamurty, A.V.S.S. Narosa Publishing House.
4. Fundamentals of Genetics, Miglani, Gurbachan, S. Narosa Publishing House
5. The Science of Genetics, Atherly A.G. ,Girton J.R. & McDonald, J.F. Saunders College Pub.
6. Environmental Studies, Basak, Pearson Publishers

2. Suggestive digital platforms web links

Suggested equivalent online courses:

https://nptel.ac.in/courses/102/105/102105088/

Part D-Assessment and Evaluation

Suggested Continuous Evaluation Methods:

Maximum Marks : 100

Continuous Comprehensive Evaluation (CCE) : 25marks University Exam (UE) 75 marks

Internal Assessment : Continuous Comprehensive Evaluation (CCE):25	Class Test ~~Assignment/Presentation~~ Assignment / Presentation	15 10 Total Marks: 25
External Assessment : University Exam Section: 75	**Section(A) :** Three Very Short Questions (50 Words Each) **Section (B) :** Four Short Questions	03 x 03 = 09

3.12.21 3/12/21

3.12.21

Time : 02.00 Hours	(200 Words Each) **Section (C) :** Two Long Questions (500 Words Each)	04 x 09 = 36 02 x 15 = 30 Total marks: 75

Any remarks/ suggestions:

3.12.21 3/12/21

3.12.21

Syllabus of Practical Paper 2

Part A Introduction			
Program: Certificate	Class`:B.Sc.	Year: 1st year	Session:2021-22
Subject: Life Science			

1	Course Code	SLFSC2P	
2	Course Title	Exercise In Environmental Biology, Genetics & Evolution	
3	Course Type (Core Course/Elective/Generic Elective/Vocational/.....)	CORE	
4	Pre-requisite (if any)	To study this course, a student must have had the subject Biology in class/12th/ certificate/diploma.	
5	Course Learning outcomes (CLO)	On completion of this course, learners will be able to do practical exercises of Genetics and Environmental biology	
6	Credit Value	2	
7	Total Marks	Max. Marks: 25+75	Min. Passing Marks:33

Part B- Content of the Course

Total No. of Lectures-Tutorials-Practical (in hours per week): 30 hrs

L-T-P:

Unit	Topics	No. of Lectures
1	To study structure of chromosomes by using permanent slides.	
2	Working out the laws of inheritance by coloured balls/seeds	

3.12.21 3/12/21 3.12.21 3/12/21

3	Determine frequency, density and abundance of vegetation by quadrate method	
4	Study of ecological adaptations in hydrophytes and xerophytes	
5	Soil analysis (pH, temperature, moisture content and inorganic radicals	
6	To find out the porosity (percent pore space) of the soil sample	
7	Water analysis (pH, Dissolved oxygen and Carbon dioxide).	
8	To detect the presence of chlorine and ammonia in water sample	
9	To find out the water holding capacity of soil sample	
10	Study of Biogeochemical cycles using charts Determination of probability by tossing coins	

Keywords/Tags **Genetics and Environment biology**

Part C-Learning Resources

Text Books, Reference Books, Other resources

Part D-Assessment and Evaluation

3.12.21 3/12/21 3.12.21 3/12/21

Suggested Continuous Evaluation Methods:

Internal Assessment	Marks	External Assessment	Marks
Class Interaction /Quiz	10	Viva Voce on Practical	15
Attendance	5	Practical Record File	10
Assignments (Charts/ Model Seminar / Rural Service/ Technology Dissemination/ Report of Excursion/ Lab Visits/ Survey / Industrial visit)	10	Table work / Experiments 1 One Major Experiment .20 marks 2 one Minor Experiment 'A' 10marks 3.Minor Experiment 'B'10 marks 4. Spottings (1-5) 10marks	50
TOTAL	25		75

Any remarks/ suggestions:

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