

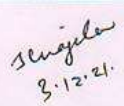

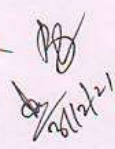
Part A Introduction			
Program: Certificate	Class: B.Sc	Year: 1st Year	Session: 2021 – 2022
Subject: Life Sciences			
1	Course Code	SLFSC1T	
2	Course Title	Basic Cell Biology, Biochemistry and ^{Biota} Biodiversity	
3	Course Type (Core Course/Elective/Generic Elective/Vocational/.....)	CORE	
4	Pre-requisite (if any)	To study this course, a student must have had the subject Biology in class 12.	
5	Course Learning outcomes (CLO)	After studying this course, students will be able to identify fundamental biomolecules, basic cell organelles, , their structure function and basic biodeiversity	
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	Structure of prokaryotic and eukaryotic cells. Structure and function of Plasma membrane, Endoplasmic reticulum, Golgi apparatus, Lysosomes, Ribosomes, Mitochondria, Chloroplast & Nucleus. Cell division (mitosis & meiosis) and their significance.	12	

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	Carbohydrates: Introduction, Classification, Structure and function Lipids: Introduction, Classification, Structure and function Vitamins: Types, Occurrence and function	12	
3	Proteins: Classification and functions, Types of amino acids Enzymes: General Characteristics, classification and factors affecting enzyme activity. Nucleic acid: Structure and function of DNA, RNA	12	
4	General Characteristics of Algae and Fungi, Lichens and their economic importance General characteristics, adaptation of Bryophytes, Pteridophytes & Gymnosperms General Characteristics and differences in monocot and dicot plants Anatomical features of woody plants. Economic importance of angiosperm plants	12	
5	General characteristics of Annelida , Arthropoda, Mollusca, Pisces, Amphibians, Reptiles, Aves and Mammals. Osmoregulation in fishes. Parental care in amphibians. Salient feature of poisonous and non-poisonous snakes. Flight adaptation in birds.	12	
Keywords/Tags: Biomolecules, Cell and its organelles, Biodiversity, Biodiversity BIOT-A			
Part C-Learning Resources			
Text Books, Reference Books, Other resources			
Suggested Readings:			
1. Molecular Biology of Cell, Alberts B.D., Lewis J. R., Ruberts, M. ,Walson Garland Pub.Co.			

2. Cell Biology, Genetics, Molecular Biology, Evolution and Ecology, Verma, P.S. & Agrawal, V.K., S. Chand Publications

3. Cell Biology, Genetics, Molecular Biology, Evolution and Ecology, Verma, P.S. & Agrawal, V.K., S. Chand Publications

Suggested equivalent online courses:

<https://nptel.ac.in/courses/102/103/102103012>

<https://nptel.ac.in/courses/102/106/102106025/>

<https://nptel.ac.in/courses/104/102/104102016/>

Part D-Assessment and Evaluation

Suggested Continuous Evaluation Methods:

Maximum Marks : 100

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

<p>Internal Assessment : Continuous Comprehensive Evaluation (CCE):25</p>	<p>Class Test/Assignment/Presentation <i>kw</i> Assignment / Presentation</p>	<p>15 10 Total Marks: 25</p>
<p>External Assessment : University Exam Section: 75 Time : 02.00 Hours</p>	<p>Section(A) : Three Very Short Questions (50 Words Each) Section (B) : Four Short Questions (200 Words Each) Section (C) : Two Long Questions (500 Words Each)</p>	<p>03 x 03 = 09 04 x 09 = 36 02 x 15 = 30 Total marks: 75</p>


Any remarks/ suggestions:

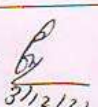
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Part A Introduction			
Program: Certificate	Class: B.Sc	Year: 1st Year	Session: 2021 – 2022
Subject: Life Sciences			
1	Course Code	SLFSC2T	
2	Course Title	Environmental Biology, Genetics & Evolution	
3	Course Type (Core Course/Elective/Generic Elective/Vocational/.....)	CORE	
4	Pre-requisite (if any)	To study this course, a student must have 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, ^{Aquatic} lentic, lotic, estuarine, marine, 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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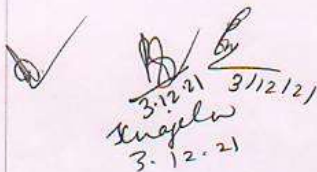

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	Ecological succession: Hydrosphere and Xerosphere.		
2	Environmental pollution: Sources, nature and effects of air, water, soil, noise, radioactive and nuclear pollution. Ozone layer depletion, acid rain. Global climate change. Biogeochemical cycles (Nitrogen, Carbon, Sulfur, phosphorus), Bio-fertilizers, Bio-pesticides.	12	
3	Mendelian laws of inheritance, Incomplete dominance, Co-dominance, epistasis, Complementary ratio and supplementary ratio, 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: Klinefelter'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	

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	(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:			
<ol style="list-style-type: none"> 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 <i>Assignment / Presentation</i>	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	



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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:		

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Syllabus of Practical Paper

Part A Introduction			
Program: Certificate	Class: B.Sc.	Year: 1 st year	Session: 2021-22
Subject: Life Science			
1	Course Code	SLFSCIP	
2	Course Title	EXERCISES IN CELL BIOLOGY BIOCHEMISTRY AND BIO DIVERSITY BIOTA	
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 Biochemistry and cell 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	Qualitative tests for carbohydrates. Lipids and proteins.		
2	Effect of temperature, pH and concentration on enzyme activity		
3	Paper chromatographic separation of amino acids		

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4	Preparation of hemin or hemochromogen crystals	
5	Chloroplast isolation from spinach leaves and demonstration of Hill's activity	
6	Study of different stages of mitosis and meiosis	
7	Study and identify the given plant material by section cutting and double staining of Monocot and Dicot-Stem, Leaf and Root.	
8	Study of Floral Organs by dissection of Flower and representing it by Floral diagram and Floral Formula	
9	Preparation of Herbarium	
10	An "animal album" containing photographs/cut outs with write up on different taxa /topics.	

Keywords/Tags Biomolecules and cell biology

Part C-Learning Resources

1.Introductory Practical Biochemistry ,SK sawhney and Randhir Singh Narosa

Part D-Assessment and Evaluation

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

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TOTAL	25	-	75
Any remarks/ suggestions:			

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Syllabus of Practical Paper 2

Part A Introduction			
Program: Certificate	Class: B.Sc.	Year: 1 st 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		

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3	Determine frequency, density and abundance of vegetation by quadrat 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

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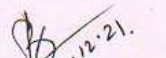
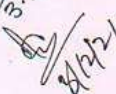
Suggested Continuous Evaluation Methods:

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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