

Syllabus for Skill development course

Title of course- Certificate in Application of different techniques in biological sciences					
Paper Title: Fundamentals of Biological Science Techniques					
Nodal Department of HEI to run course			Department of Vocational studies		
Broad Area/Sector-			Science		
Sub Sector-			Biosciences		
Nature of course - Independent / Progressive			Progressive		
Name of suggestive Sector Skill Council			NSDC		
Aliened NSQF level					
Expected fees of the course –Free/Paid			As decided by College/University		
Stipend to student expected from industry					
Number of Seats-.....30.....					
Course Code-.....SL-02			Credits- 03 (1 Theory, 2 Practical)		
Max Marks...25..... Minimum Marks.....10...					
Name of proposed skill Partner (Please specify, Name of industry, company etc for Practical /training/ internship/OJT					
Job prospects-Expected Fields of Occupation where student will be able to get job after completing this course in (Please specify name/type of industry, company etc.)			Student will be able to get job in Research laboratories in various Colleges, institutes and Universities.		
Syllabus					
Unit	Topics	General/ Skill component	Theory/ Practical/ OJT/ Internship/ Training	No of theory hours (Total-15 Hours=1 credit)	No of Practical Hours (Total-60 Hours=2 credits)
I	Cell Biology	Skill	Theory	3	
II	Molecular biology and rDNA technology	Skill	Theory/Pra ctical	3	15
III	Medical genetics	Skill	Theory/Pra ctical	3	15
IV	Molecular diagnostics	Skill	Theory/Pra ctical	3	15
V	Metabolism and Integration	Skill	Theory/Pra ctical	3	15
Suggested Readings:					
S.N	Title	Author	Publisher		
1.	Biological Science	Scott Freeman	Pearson		
2.	Lehninger Principles of Biochemistry	David L. Nelson and Michael Cox	WH Freeman		
3.	Cell Biology, Genetics, Molecular Biology, Evolution & Ecology	Verma P.S.	S chand		
Suggested Digital platforms/ web links for reading-					
Suggested OJT/ Internship/ Training/ Skill partner					
Suggested Continuous Evaluation Methods:					
Total Marks: 25					
House Examination/Test: 10 Marks					
Written Assignment/Presentation/Project / Term Papers/Seminar: 10 Marks					
Class performance/Participation: 5 Marks					
Course Pre-requisites:					

- Student of science stream with biology
- To study this course, a student must have the subject Biology in class/12th/ certificate/diploma
- If progressive, to study this course a student must have passed previous courses of this series.

Suggested equivalent online courses:

Any remarks/ suggestions:

Notes:

- Number of units in Theory/Practical may vary as per need
- Total credits/semester-3 (it can be more credits, but students will get only 3credit/ semester or 6credits/ year
- Credits for Theory =01 (Teaching Hours = 15)
- Credits for Internship/OJT/Training/Practical = 02 (Training Hours = 60)

Syllabus for Fundamentals of Biological Science Techniques

Unit	Topics	Syllabus
I	Cell Biology	<ul style="list-style-type: none"> • An Overview of Cells • Tools and techniques in cell biology • Cancer
II	Molecular biology and rDNA technology	<ul style="list-style-type: none"> • Genes and genomic organization • Replication of DNA • DNA repair • Proteins Synthesis • Recombinant DNA technology
III	Medical genetics	<ul style="list-style-type: none"> • Clinical genetics • Metabolic/biochemical genetics • Cytogenetics • Molecular genetics
IV	Molecular diagnostics	<ul style="list-style-type: none"> • molecular cloning • macromolecule blotting and probing • gel electrophoresis • polymerase chain reaction • spectral karyotyping imaging and DNA microarrays
V	Metabolism and Integration	<ul style="list-style-type: none"> • Concept of Metabolism • Metabolic Pathways • Metabolic Integration