



Course Syllabus
Gyanmanjari Science College
Semester-1(M.Sc.)

Subject: Practicals-MSMB11506

Type of course: Major

Prerequisite: Environmental pollution and biotechnology, Genetic evolution and biostatistics, Instrumentation in biological sciences, Cell biology

Rationale: Practicals in this area can help students to develop the skills they need to design and conduct experiments in areas of environment, biotechnology, genetics and cell biology to analyze data by using scientific instruments.

Teaching and Examination Scheme:

Teaching Scheme			Credits C	Examination Marks					Total Marks
CI	T	P		Theory Marks		Practical Marks		CA	
			ESE	MSE	V	P	ALA		
0	0	12	6	00	00	40	80	30	150

Legends: CI-Class Room Instructions; T – Tutorial; P - Practical; C – Credit; ESE - End Semester Examination; MSE- Mid Semester Examination; V – Viva; CA - Continuous Assessment; ALA- Active Learning Activities.

Continuous Assessment:

Sr. No	Active Learning Activities	Marks
1	Journal Unit wise Practical will be given by faculty and students will prepare Journal for the Practicals.	30
Total		30



Suggested Specification table with Marks (Theory):60

Distribution of Theory Marks (Revised Bloom's Taxonomy)						
Level	Remembrance (R)	Understanding (U)	Application (A)	Analyze (N)	Evaluate (E)	Create (C)
Weightage	20%	40%	30%	10%	-	-

Note: This specification table shall be treated as a general guideline for students and teachers. The actual distribution of marks in the question paper may vary slightly from above table.

List of Practical:

Sr. No	Descriptions	Hrs
1	Study of blood cells	3
2	Effects of tonicity on blood cells	3
3	Study of bar body from cheek cells	3
4	Study of Somatic cell division by onion root tip	3
5	Study of tissue organization on monocot root and stem	3
6	Study of tissue organization on Dicot root and stem	3
7	To study amylase activity by <i>Bacillus spp.</i>	3
8	Sugar estimation by DNS method.	3
9	Effect of streptomycin on Extracellular protein synthesis.	3
10	Study of Diauxic growth curve pattern of <i>E.coli.</i>	3
11	Qualitative estimation of carbohydrates.	3



12	Qualitative estimation of Amino Acids.	3
13	Estimation of protein by Biuret method.	3
14	Estimation of lactose from a given milk sample.	3
15	Estimation of Vitamin-C.	3
16	Estimation of sugar by Althorn's method	3
17	Measurement of pH and preparation of Buffer solution	3
18	Electrical conductivity determine with the help of conductivity meter	3
19	Phase contrast microscope	3
20	Paper chromatography	3
21	Thin layer chromatography	3
22	Estimation of Ca^{+2} and Mg^{+2} content	3
23	Determination of total alkalinity.	3
24	Total acidity of water sample.	3
25	Determination of total dissolved salts.	3
26	Determination of free CO_2 content in water sample.	3
27	Total hardness of water.	3
28	Estimation of chloride content.	3
29	Estimation of copper content.	3



30	Estimation of dissolved oxygen.	3
31	Biological oxygen demand.	3
32	Estimation of phosphate content in water.	3
33	Estimation of sulphate content in water.	3
34	Estimation of total cellulose activity	3
35	Estimation of endoglucanase activity.	3
36	Estimation of exoglucanase activity.	3
37	Estimation of B-glucosidase activity.	3
38	Effect of pH, Substrate Conc., Temperature, Incubation time on enzyme activity.	3
39	Saccharification of cellulosic and lignocellulosic waste.	3
40	Estimation of hemicelluloses and lignin.	3
	Total	120

Instructional Method:

The course delivery method will depend upon the requirement of content and the needs of students. The teacher, in addition to conventional teaching methods by black board, may also use any tools such as demonstration, role play, Quiz, brainstorming, MOOCs etc.

From the content 10% topics are suggested for flipped mode instruction.

Students will use supplementary resources such as online videos, NPTEL/SWAYAM videos, e-courses, Virtual Laboratory

The internal evaluation will be done on the basis of Active Learning Assignment

Practical/Viva examination will be conducted at the end of semester for evaluation of performance of students in the laboratory.

