



Gyanmanjari
Innovative University

Course Syllabus
Gyanmanjari Science College
Semester-2 (M.Sc.)

Subject: Practicals-MSCMB12512

Type of course: Major

Prerequisite: Basic Knowledge of Molecular Biology, Agriculture Microbiology, Industrial Microbiology and Immunology.

Rationale: Practicals in this area can help students to develop the skills they need to design and conduct experiments in areas of Agriculture Microbiology, Industrial Microbiology, Molecular Biology and Immunology to analyze data by using scientific instruments.

Teaching and Examination Scheme:

Teaching Scheme			Credits	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.

List of Practical:

Sr. No	Descriptions	Hrs
1	Isolation. Identification and characterization of <i>Bacillus spp.</i>	3
2	Perform Multiple sequence alignment (MSA) using Bioinformatics tool.	3
3	Isolation of Bacteriophage from sewage water.	3
4	Obtain Protoplast from bacterial cells.	3



5	Isolation and Identification of <i>Actinomyces</i> .	3
6	Obtain Spheroplast from bacterial cells.	3
7	Isolation and Identification of <i>Pseudomonas spp.</i>	3
8	Isolation and Identification of <i>Rhizobium spp.</i>	3
9	Isolation and Identification of <i>Xanthomonas spp.</i>	3
10	Isolation, cultivation and characterization of <i>Azotobacter spp.</i>	3
11	Perform Restriction Enzyme Digestion of DNA.	3
12	Extraction of Genomic DNA from <i>E.coli</i> using Maxiprap method	3
13	Extraction of genomic DNA using miniprap method	3
14	To perform Polymerase chain reaction (PCR).	3
15	Extraction of Bacterial Plasmid or Extra chromosomal DNA.	3
16	To perform Transformation of plasmid in to the host cell by Transformation method.	3
17	To perform transformation of plasmid DNA by Conjugation method.	3
18	Extraction of Metagenomic DNA from soil.	3
19	Urea estimation by DAM method from blood serum.	3
20	Isolation and identification of <i>Bacillus spp.</i> From soil.	3
21	Effects of UV radiation on pigment of <i>Serratia marcescens</i>	3
22	Estimation for the presence of <i>Salmonella typhi</i> infection in blood using Widal Test	3
23	RPR test for diagnosis of <i>syphilis</i> from blood serum.	3



24	Determination of total cholesterol & HDL cholesterol.	3
25	Estimation of chloride content from blood serum.	3
26	Estimation of blood sugar by GOD- POD method.	3
27	Assay of Alkaline phosphate from blood serum.	3
28	Estimation of calcium from blood serum.	3
29	Estimation of Billirubin from blood serum.	3
30	Quantitative estimation of uric acid from blood serum.	3
31	Estimation of Urea by berthelot method from blood serum.	3
32	Quantitative estimation of Total protein from blood serum.	3
33	Estimation of Oxygen transfer rate of given water sample.	3
34	Fermentative production of citric acid from given sugar source.	3
35	To analyze Sugar tolerance in given medium.	3
36	To analyze Alcohol tolerance in given medium.	3
37	Perform the Screening of L – Asparaginase.	3
38	Perform Quantification and Purification of L- Asparaginase.	3
39	Analyze the Ethanol Production from jaggery .	3
40	Effects of UV radiation on fermenting mutant of <i>E.coli</i> .	3
	Total	120



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 and faculty will upload marks on GMIU web Portal.	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.

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.

