



Faculty of: **Sciences and Life Sciences**
 Course: **Bachelor of Science (Chemistry)**
 Semester: **I**
 Subject Code: **MIE201-1C**
 Subject Name: **General Microbiology I**

Sr. No	Category	Subject Code	Subject Name	Teaching hours/ Week			Credit hours	Credit Points	Evaluation Scheme/ Semester												
				Th	Tu	Pr			Theory				Tutorial / Practical				Total				
									Continuous and Comprehensive Evaluation		End Semester Exams		Internal Assessment		End Semester Exams						
									Marks	Marks	Marks	Duration	Marks	Duration	Marks	Duration					
3	MINOR	MIE 201-1C	General Microbiology I	3	-	2	5	4	10	Assignment	10	Quiz	05	Attendance	50	2	25	1	-	-	100

AIM

- Aware students of the history of microbiology
- Acquaint the basic concept of microbiology as a subject.
- Basic concepts of microbial metabolism.
- Learn basic laboratory skills for handling glassware

COURSE CONTENTS

Course Outline for Theory

UNIT	COURSE CONTENT	TEACHING HOURS
I	History Of Development of Microbiology: <ul style="list-style-type: none"> • Contribution Of Great Scientists in The Field of Microbiology, Scope of Microbiology and Its Applications 	08
II	Microscope And Culture Media: <ul style="list-style-type: none"> • Microscope And Various Types of Microscopes • Culture Media and Culture Methods 	10
III	Classification And Taxonomy: <ul style="list-style-type: none"> • Bacteria, Actinomycetes, Spirochetes, Rickettsia and Viruses Morphology and Physiology of Bacteria – Structure of Bacteria, Nutrition, Cultivation, Isolation, Identification of Bacteria, Reproduction and Growth of Bacteria 	12
IV	Fermentation Techniques: <ul style="list-style-type: none"> • General Requirements-Culture-Strain Development Media-Equipment Sterilization-Fermentation Process-Controls-Extraction, Etc. Detailed Production of Selected Antibiotics Such as Penicillin, Streptomycin and Vitamins Such as Cyanocobalamin, Riboflavin. 	15

Course Outline for Practical

SR. NO	COURSE CONTENT	HOURS
1	Experiments Devised to Prepare Various Types of Culture Media	30
2	Isolation of Aerobic Bacteria, Fungus, And Yeast.	
3	Various Staining Methods, Various Methods of Isolation and Identification of Microbes	
4	Microbial Assay of Antibiotics and Vitamins Etc.	

TEACHING METHODOLOGY

- Conventional method (classroom blackboard teaching)
- ICT Techniques
- Teaching through the classroom, laboratory work
- Variety of learning styles and tools (PowerPoint presentations, audio-visual resources, e-resources, seminars, workshops, models)
- Teaching through laboratory work

LEARNING OUTCOME

- Expand the microbiology knowledge using various fundamental aspects of different branches of sciences.
- To gain knowledge about contribution of scientists in microbiology filed
- Obtain significant knowledge about sterilization methods.
- Understanding the importance of laboratory work and laboratory safety.
- To gain a knowledge about an application of microorganism in different field.
- Acquire knowledge about types of glassware and their calibration.
- To understand the working system of various microscope.

ARRANGEMENT OF LECTURE DURATION AND PRACTICAL SESSION AS PER DEFINED CREDIT NUMBERS

Units	Lecture Duration (In Hrs.)		Calculation of Credits (In Numbers)		Total Lecture Duration	Credit Calculation
	Theory	Practical	Theory	Practical	Theory+ Practical	Theory+ Practical
Unit – 1	08	30	3	1	45+30	4
Unit – 2	10					
Unit – 3	12					
Unit – 4	15					
TOTAL	45	30	3	1	75	4

EVALUATION

Theory Marks	Practical Marks	Total Marks
75	25	100

REFERENCE BOOKS

1. **Hardin J, Bertoni G and Kleinsmith LJ.** (2010). Becker's World of the Cell. 8th edition. Pearson

2. **Karp G. (2010) Cell and Molecular Biology: Concepts and Experiments.** 6th edition. John Wiley & Sons. Inc
3. **De Robertis, EDP and De Robertis EMF.** (2006). Cell and Molecular Biology. 8th edition. Lipincott Williams and Wilkins, Philadelphia
Cooper, G.M. and Hausman, R.E. (2009). The Cell: A Molecular Approach. 5 th Edition. ASM Press & Sunderland, Washington, D.C.; Sinauer Associates, MA