



Faculty of: **Sciences and Life Sciences**
 Course: **Bachelor of Science (Chemistry)**
 Semester: **II**
 Subject Code: **MIE202-1C**
 Subject Name: **General Microbiology II**

Sr. No	Category	Subject Code	Subject Name	Teaching hours/Week			Credit hours	Credit Points	Evaluation Scheme/ Semester								Total		
				Th	Tu	Pr			Theory				Tutorial / Practical						
									Continuous and Comprehensive Evaluation		End Semester Exams		Internal Assessment		End Semester Exams				
									Marks	Marks	Marks	Duration	Marks	Duration	Marks	Duration			
3	MINOR	MIE 202 - 1C	General Microbiology II	3	-	2	5	4	10	10	05	Assignment	50	2	25	1	-	-	100

AIM

- Acquaint the basic concept of microbiology
- Basic concepts of organelles and their function.
- Gain knowledge about bacterial growth and reproduction.

COURSE CONTENTS

Course Outline for Theory

UNIT	COURSE CONTENT	TEACHING HOURS
I	Control Of Microbes: Sterilization: Methods Of Sterilization, Validation of Sterilization Methods and Equipment. Disinfection: Definition, Factors Influencing Disinfectants and Antiseptics and Their Evaluation	10
II	Analytical Microbiology: Sterility Of Pharmaceuticals, Microbiological Assay of Vitamins, Antibiotics and Amino Acids	10
III	Industrial Microbiology: Microorganism Such as Bacteria, Yeast and Molds Used in Industrial Processes	10
III	Immunology And Immunological Preparation: Immunity, Primary and Secondary Defense Mechanism, Interferon, Principles of Immunology, Antigen Antibody Reactions and Application, Preparation, Standardization and Storage of Vaccines, Sera and Toxoids	15

Course Outline for Practical

SR. NO.	COURSE CONTENT
1	Microbiology Good Laboratory Practices and Biosafety.

2	To Study the Principle and Applications of Important Instruments (Biological Safety Cabinets, Autoclave, Incubator, BOD Incubator, Hot Air Oven, Light Microscope, Ph Meter) Used in The Microbiology Laboratory.
3	The Effect of Temperature and Ph on Microorganisms
4	IMVIC Test. Multiple Test Systems: SIM, Litmus Milk
	Total Hours = 30

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

- At the end of this course the students would have sufficient knowledge of bacteria.
- Obtain the knowledge about growth and reproduction of bacteria.
- Understanding the bacterial nutrition and different culture media .
- To gain a knowledge about an application of microorganism in different field .
- Learn different bacteriological technique for bacterial growth .
- 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	10	30	3	1	45+30	4
Unit – 2	10					
Unit – 3	10					
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
4. **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.