

ALLIED MICROBIOLOGY - I

Semester	Subject Code	Category	Lecture		Theory		Practical		Credit
			Total hrs	Hrs/week	Total hrs	Hrs / week	Total hrs	Hrs/week	
III		Allied	60	4	60	4	0	0	4

COURSE OBJECTIVES

To enable the students to understand the basics of Microbiology

COURSE OUTCOMES

On the successful completion of the course, students will be able to know the basics in Microbiology.

CO Number	CO Statement	Knowledge Level (K1-K4)
CO1	To understand the knowledge about the microscopes & the contributions of various scientists to the microbial world.	K2
CO2	To understand the nomenclature & classification of microorganisms.	K2
CO3	To understand the sterilization techniques & the role of antibiotics in the control of microorganisms.	K2
CO4	To understand the staining & cultivation techniques of different microorganisms.	K2
CO5	To understand about the growth pattern & nutrient uptake mechanisms of different microorganisms.	K2

MAPPING WITH PROGRAMME OUTCOMES:

COS	PO1	PO2	PO3	PO4	PO5	PO6
CO1	S	M	S	S	S	S
CO2	S	S	M	M	S	M
CO3	S	M	M	S	M	M
CO4	S	S	S	S	S	S
CO5	S	M	S	M	S	M

S- Strong;**M- Medium;****L- Low****Unit -I: History and Microscopy****12 hrs**

History and recent developments in Microbiology: Spontaneous generation, Biogenesis, Contributions of Louis Pasteur, Leewenhoek, Lazzaro Spallanzani, John Tyndall, Joseph Lister and Robert Koch. Microscopy – Simple, Compound – Bright field, Dark field, Phase contrast, Fluorescence and Electron microscopy.

Unit -II: Classification and anatomy of Microorganisms**12 hrs**

Binomial nomenclature of microbes, Five kingdom concept, Anatomy of Procaryotes and Eucaryotes.

Unit -III: Culture and Identification methods**12 hrs**

Culture techniques – Media preparation, Aerobic and anaerobic culture techniques. Staining methods – Dyes, Simple, Differential (Gram staining) and Special staining (Spore staining) methods. Development of laboratory techniques for pure and mixed cultures, Preservation of cultures. Microbial identification methods – morphological, physiological and biochemical methods.

Unit -IV: Antimicrobial Chemotherapy**12****hrs**

Antibiotics, its classification, mode of action, antimicrobial resistance and testing methods (Disc diffusion method).

Unit -V: Measurement of microbial growth

12

hrs

Growth determination – Growth curve, Measurement of microbial growth. Structural characteristics of Algae – Chlorella, Fungi – Mucor and Protozoa – Entamoeba.

DISTRIBUTION OF MARKS: Theory - 100% and Problems – Nil

TEACHING METHODOLOGY:

- ❖ Lectures
- ❖ Power point presentation
- ❖ Charts
- ❖ Models
- ❖ Group discussion
- ❖ Group assignments

TEXT BOOKS:

Sl no:	Book Name	Author	Publisher	Year of Publication
01	General Microbiology	Robert F. Boyd	Times/Missor/Mosby College Publishers	1998
02	Fundamental Principles of Bacteriology	Salle A.J	McGraw Hill Publishers	2007
03	Microbiology	Pelczar JR M.J., Chan E.C.S. and Kreig N.R	McGraw Hill Publishers	2006

04	Brock – Biology of Microorganisms	Michael T. Madigan, John M. Martin K, Jack Parker	Prentice Hall, Pearson Education	2003
05	Microbial Physiology	Albert G. Moat, John W. Foster and Michael P. Spector	John Wiley and Sons	2008

REFERENCE BOOKS:

Sl no :	Book Name	Author	Publisher	Year of Publication
01	Manual for identification of Medical Bacteria	Cowan and Steel	Cambridge University Press	2004
02	Introduction to Microbiology	John L.Ingraham & Catherine A	Ingraham. Book/Cole Thomson Learning	2000
03	Fundamentals of Microbiology	Edward Alcamo I	Jones and Barlett Publishers	2006
04	Biology of Microorganisms	Brock	15 th Edition Prentice Hall, Pearson education	2017
05	Bergey's Manual of Determinative Bacteriology	John G. Holt, Noel R. Krieg, Peter H.A, James T. Staley and Stanely T. Williams	Lippincott Williams and Wilkins Publishers	2000
06	Microbiology	Prescott.M, JP Harley and D.A. Klein	Brown Publishers	2007

WEB SOURCES:

<http://gsbs.utmb.edu/microbook/toc.htm>

<http://www.sci-eng.mmu.ac.uk/biology/useful/27.htm>.

http://www.microbes.info/resources/general_Microbiology/

www.microbiologyplace.com

<http://www.med.umich.edu/tamc/links.html>

SYLLABUS DESIGNER:

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