COURSE TITLE	**BACTERIAL SYSTEMATICS**
COURSE CODE	**02MB0254**
COURSE CREDITS	**4**

Objective:

1 To study the microbial classification and nomenclature and study the diversity among microorganisms.

Course Outcomes: After completion of this course, student will be able to:

1 Understand the importance of classification and nomenclature of microorganisms.

2 To get acquainted with special features of the microbes from the extreme environment

3 Understand the importance of classification of viruses and its structure

4 Develop an understanding regarding common diseases caused by pathogen and its virulence.

Pre-requisite of course:NA

Teaching and Examination Scheme

Theory Hours	Tutorial Hours	Practical Hours	ESE	IA	CSE	Viva	Term Work
4	0	0	50	30	20	0	0

Contents : Unit	Topics	Contact Hours
1	**General Characters and Systematics:** Principles of bacterial taxonomy & classification Numerical taxonomy Outlines of bacterial classification (as per Bergey's manual of systematic bacteriology) General characters and classification of the following groups: Fungi, Eubacteria	15
2	**Microbes in Extreme Environment:** Extremophiles: Microbes thriving at high & low temperatures, pH, high hydrostatic & osmotic pressures, salinity, & low nutrient levels, special features of the thermophilic, methanogenic and halophilic Archaea; photosynthetic bacteria, Cyanobacteria some Archaea who live in extreme conditions like cold, and space.	15
3	**Basic Concepts of Virology** General characteristics of viruses, differences between bacteria and viruses. Classification of viruses Physical and chemical Structures of different Viruses on the basis of capsid symmetry - enveloped (Herpes virus), helical (TMV) and icosahedral (Polyoma viruses), Capsids, complex (Bacteriophage, and Virion size, enveloped (Herpes), helical (TMV) and icosahedral (Polyoma), Capsids.	15

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Contents : Unit	Topics	Contact Hours
4	**Pathogenic Microorganisms** Definition of Pathogens, pathogenicity, Entry of pathogens into the host, types of bacterial pathogens, Virulence, Virulence factors – exotoxins, enterotoxins, endotoxins, neurotoxins. List of common bacterial, fungal and viral diseases of human beings (Name of the disease, causative pathogen, parts affected)	15
Total Hours		**60**

Textbook :

1 General Microbiology, Stanier, R.Y., Iingraham, J.L., Wheelis, Painter, R.K.,, MacMillan Press Ltd.,, 1987

2 Experimental Microbiology,, Patel. R.J., Patel. K.R.,, Aditya Publications, Ahmedabad,, 2016

References:

1 Microbiology,, Microbiology,, Pelczar, M.J., Chan E.C.S., Krieg, N.R.,, Tata McGraw Hill Publication Co. Ltd., 1993

2 Microbiology, Microbiology, Prescott, L.M., Harley, J.P. and Klein, D.A.,, Tata McGraw Hill Publication Co. Ltd., 2002

Suggested Theory Distribution:

The suggested theory distribution as per Bloom's taxonomy is as follows. This distribution serves as guidelines for teachers and students to achieve effective teaching-learning process

Distribution of Theory for course delivery and evaluation

Remember / Knowledge	Understand	Apply	Analyze	Evaluate	Higher order Thinking
20.00	30.00	25.00	15.00	10.00	0.00

Instructional Method:

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

2 The internal evaluation will be done on the basis of continuous evaluation of students in the laboratory and class-room.

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

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

Supplementary Resources:

1 https://microbenotes.com/category/virology/

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Supplementary Resources:

2 https://www.medicalnewstoday.com/articles/pathogens-definition