



Rajarshi Shahu Mahavidyalaya, Latur

(Autonomous)

Department of Mathematics

Course Type: GE-I

Course Title: Microbiology in Everyday Life

Course Code: 101MIB1401

Credits: 03

Max. Marks: 75

Lectures: 45 Hrs.

Learning Objectives:

- LO 1. To learn importance of microorganisms in everyday life.
- LO 2. To study types of microorganisms.
- LO 3. To study role of microorganisms with respect to human health
- LO 4. To study harmful role of microorganisms
- LO 5. To study measures for controlling microorganisms.

Course Outcomes:

After completion of course the student will be able to-

- CO 1. Describe various types of useful and harmful microorganisms.
- CO 2. Explain ubiquitous nature of microbes.
- CO 3. Use methods for observation of microbes.
- CO 4. Explain the applications of microorganisms with reference to food fermentations.
- CO 5. Apply measures to control spread of microorganisms
- CO 6. Describe role of microbes with respect to human health.

Unit No.	Title of Unit & Contents	Hrs.
I	Microbiology and Microorganisms	12
	<ol style="list-style-type: none">1. Introduction, Definition of Microbiology.2. Discovery of microbial world.3. Microorganisms are everywhere (ubiquitous nature of microorganisms).4. Types of Microorganism5. Types of Microorganisms: Bacteria (including Actinomycetes), Fungi, Algae, Protozoa and Viruses.6. Microscopic Observation of microorganisms.7. Staining of Microbes	
	Unit Outcomes: UO 1. Student will describe different types of microorganisms and their ubiquitous nature. UO 2. Student will use methods for observation and identify microorganisms	
II	Microbes and Human Health	12
	<ol style="list-style-type: none">1. Normal microflora of the human body.	

	2. Types of human microbial interactions. 3. Antibiotics 4. Importance of vaccines. 5. Commonly occurring Diseases	
	Unit Outcomes: UO 1. Student will explain human microbial interactions UO 2. Student will explain importance of vaccination .	
III	Control of Microbes in day-to-day life	11
	1. Use of sanitizers and disinfectants. 2. Role of antimicrobials in toothpaste and cosmetics. 3. Antimicrobial activity of kitchen spices. 4. Asepsis 5. Antimicrobial activity of routinely used herbs. 6. Food Preservative agents in kitchen-sugar, salt, vinegar	
	Unit Outcome: UO 1. Student will practice standard methods of sanitation UO 2. Student will describe antimicrobial activity of routinely used herbs and spices	
IV	Fermented Foods and Spoilage	10
	1. Microbial fermented foods in daily life. 2. Spoilage of daily food. 3. Spoilage of Vegetables 4. Microbial spoilage of grains and its prevention. 5. Probiotics	
	Unit Outcomes: UO 1. Student will apply methods of control to prevent spoilage of food UO 2. Student will describe importance of fermented food	

Learning Resources:

1. A textbook of Microbiology, Dubey R. C. and D.K. Maheshwary. (2012), S Chand and Company. New Delhi, India
2. A Textbook of Microbiology ,Ananthanarayan and Paniker's, (Orient Black Swan, 7th edition) 2016.
3. Brock Biology of Microorganisms, Bender K. S., Buckley D. H., Stahl D. A., Sattley W. M. And Madigan M. T. (2017). E-Book, Global Edition. United Kingdom: Pearson Education.
4. Elementary Microbiology, Vol. I and II. Dr. A. H Modi, Akta Prakashan. Nadiad
5. Essentials of Microbiology, Jain A. and Jain P. (2019). Elsevier- India.
6. Fundamental Principles of Bacteriology, Salle A. J. (McGraw-Hill Book Co. New York and London 1973) 7th Edition.
7. Fundamentals of Microbiology, Frobisher M., (W. B. Saunders, Philadelphia, 1962) 7th edition.
8. General Microbiology . Stanier R. Y., Ingraham J. L., Wheelis M. L. and Painter P. R., (Macmillan Education Ltd., London, 2001) 5th edition.
9. General microbiology ,Volume I. Powar C. B. and Daginawala H. I. (2005)..

Himalaya Publishing House Private Limited, Pune, India.
10. General microbiology, Volume II. Powar C. B. and Dagainawala H. I. (2005).
Himalaya Publishing House, Private Limited, Pune, India



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(Autonomous)

Department of Mathematics

Course Type: Lab Course

Course Title: GE I - Microbiology in Everyday Life

Course Code: 101MIB1402

Credits: 01

Max. Marks: 50

Lectures: 30 Hrs.

Learning Objectives:

- LO 1. To Study morphology of bacteria and fungi
- LO 2. To understand design and handling of microscope.
- LO 3. To study microorganisms involved in food fermentations
- LO 4. To learn staining techniques for observation of microbial morphology
- LO 5. To understand control of microorganisms

Course Outcomes:

After completion of course the student will be able to-

- CO 1. Microscopically observe microorganisms.
- CO 2. Handle light microscope.
- CO 3. Use aseptic techniques and isolate microorganisms.
- CO 4. Record antimicrobial activity of sanitizer, spices and herbs.
- CO 5. Record presence of spoilage causing microorganisms.

Practical	Experiments	Hrs.
1	Microscopic Observation of Bacteria	30
2	Microscopic Observation of Fungi	
3	To perform Simple Staining	
4	To study antimicrobial activity of spices	
5	To study antimicrobial activity of medicinal herbs	
6	To study antimicrobial activity of sanitizers.	
7	To study microorganisms causing spoilage of food	
8	To study microflora present in fermented milk products.	
9	To study of normal flora of skin.	

Learning Resources:

1. Microbiology: A Laboratory Manual, Cappuccino J. and Welsh C. (2019). Loose Leaf Edition. United Kingdom: Pearson Education.
2. Practical Microbiology, Dubey R. C. and Maheshwari D. K. (2012). S. Chand and Company Limited, New Delhi, India
3. Laboratory Manual in Microbiology, Gunasekaran P. (2007). New Age International Private Limited, New Delhi, India.

4. Handbook of Techniques in Microbiology: A Laboratory Guide to Microbes. Karwa A.S., Rai M.K. and Singh H.B. (2012), Scientific Publishers, Jodhpur, Rajasthan, India
5. Laboratory Manual of Microbiology, Kumar V. (2012). Scientific Publishers, Jodhpur, Rajasthan, India
6. Essentials of Practical Microbiology , Sastry A. S. and Bhat S. K. (2017). Jaypee Brothers, Medical Publishers Private Limited, Pune, Maharashtra, India
7. Manual of Microbiology (Second Edition), Sharma K. (2007).. ANE Books, New Delhi, India.
8. Bacteriological techniques, Baker F. J., (Butter worth & Co Publishers Ltd, 1967).
9. Experimental Microbiology, Patel R. (Aditya Book Centre, 5th edition, Vol. I and Vol. II, 2009).
10. Handbook of Media for Clinical and Public Health Microbiology, Atlas R, (CRC Press, 2013)