

DEPARTMENT OF MICROBIOLOGY

VALUE ADDED COURSE

Semester	Course Code	Course Title	Hours
III	21UMBVAC1	HEALTH AND DIAGNOSTIC MICROBIOLOGY	30

Course outcomes:

At the end of the course, students will be able to:

CO1. Describe the importance of public health Microbiology.

CO2. Assess the biosafety measures and aseptic techniques.

CO3. Perform the techniques of sample collection, storage and identification of organisms.

CO4. Analyse the report of clinical microbiology laboratory.

CO5. Acquire the knowledge on microbes in hospital infection and its diagnosis.

UNIT I

6 hrs

Public Health: Definition, scope, concept and importance of public health microbiology – Roles of World Health Organization in public health – Health situations and programmers in India- General vaccine types administered to general public.

UNIT II

6 hrs

Diagnostic Microbiology: Purpose of diagnostic microbiology and responsibility - Laboratory safety. General safety considerations – Biohazards and practices specific to microbiology – Classification of biological agents on the basis of hazards.

UNIT III

6 hrs

Design and apply safe specimen sampling strategies: Blood, Urine, Sputum, CSF, Pus & amp; Faeces– Specimen transportation, International regulations in the movement of infectious materials across national borders, design packaging and transportation protocols.

UNIT IV

6 hrs

Microscopic Examination: Cultivation and identification of specimens for Bacteria, Mycobacteria, Fungi, Parasites and Viruses. Special precautions for specific areas of clinical Microbiology- Antibiotic Susceptibility Testing (AST).

UNIT V

6 hrs

Hospital acquired infection: Prophylactic immunization – Disposal of infective hospital and laboratory materials – monitoring of sanitation in community – Techniques used for the diagnosis of hospital acquired infections.

Text books:

T.B-1 Bailey and Scott's. Diagnostic Microbiology (8th edition). C.V. Mosby Company.1990.

T.B-2 Abdul Khader, Medical laboratory techniques (1stedition). Frontline Publications, Hyderabad,2003.

T.B -3 Patrick, R, Murry Ken, S, Rosenthal Michael, A and faller, P. Medical Microbiology 5th Edition, Elsevier Mosby, 2005.

T.B-4 Ananthanarayan and Panicker's Text Book of Microbiology 10th Edition,

Semester	Course Code	Course Title	Hours
V	21UMBVAC2	ENTREPRENEURIAL MICROBIOLOGY	30

Course Outcomes

At the end of the course, students will be able to

CO1.Acquire knowledge on principles and government policies related to entrepreneurship.

CO2.Understand the importance of microorganism in industries.

CO3.Introspect the knowledge on fermented products.

CO4.Describe the benefits of composting and production of biofertilizers.

CO5. Inspect the quality of the industrial products.

UNIT I

6 hrs

Entrepreneur Development: Definition, Institutes involved, Government contributions to entrepreneur and risk assessment. Essentials of Entrepreneurship - Concepts of market survey. Sales and Marketing principles. Understanding of Government policies: Ethical and Other Legal Issues in microbial products.

UNIT II

6 hrs

Industrially important microorganisms: *Spirulina*, *Streptomyces*, *Dunaliella* and yeast- food, feed and Baker's yeast, Commercial products obtained from microorganisms – single cell protein, Vitamin B12, β – Carotene and mushroom cultivation.

UNIT III

6 hrs

Microbial cells as fermentation products: Enzymes as fermentation products- bacterial and fungal amylases, proteolytic enzymes. Fermented dairy products- buttermilk, cream, yoghurt, kefir, koumiss, acidophilus milk and cheese and their nutritional values.

UNIT IV

6 hrs

Agriculturally important microbes: Biofertilizer production- *Rhizobium* sp., *Azospirillum* sp., *Azotobacter* sp.. Chemical fertilizers versus biofertilizers. Biowaste remediation Composting - definition, preparation, filling tray beds, spawning, maintaining optimal temperature, casing, water harvesting and storage.

UNIT V

6 hrs

Quality of Microbial Products: Microbiological examinations of Industrial products, Control of microbes for quality products. Food control agencies and its regulations. Pest control systems in industries. Key aspects of hygiene in industries. Inspection methods for raw materials and its products. Indian standard organizations and its procedures.

Textbooks:

T.B-1 Charantimath , PM. Entrepreneurship Development Pearson Education, 2006.

T.B-2 Adams, M.R, and Moss, M.O, Food Microbiology, 2nd Edition, Royal society of chemistry, 2000.

T.B-3 Cassida, L.E., J.R, Industrial Microbiology, New Age International (P) Ltd, New Delhi, 2005

T.B-4 R.C.Dubey,A Textbook of Biotechnology (4thedition),S.Chand and Company Ltd, New Delhi, 2007.