

JAMAL MOHAMED COLLEGE (*Autonomous*)

College with Potential for Excellence
Accredited (3rd Cycle) with 'A' Grade by NAAC
(Affiliated to Bharathidasan University)
TIRUCHIRAPPALLI - 620 020



Since 1951

P.G. & Resear ch Depar tment OF MICROBIOLOGY

**Val ue added cour ses
(2021-2022)**

Semester	Code	Course	Title of the Course	Hours	Credits	Max. marks	Internal marks	External marks
III	-	Value added Course I	HEALTH AND DIAGNOSTIC MICROBIOLOGY	30	-	100	100	-

Course outcomes

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

1. Describe the importance of public health Microbiology.
2. Assess the biosafety measures and aseptic techniques.
3. Identify the strategies of sample collection and storage of organisms.
4. Analyze the report of clinical microbiology laboratory.
5. Acquire the knowledge on microbes in hospital infection and its diagnosis.

UNIT I

6 Hours

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

UNIT II

6 Hours

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 Hours

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

UNIT IV

6 Hours

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 Hours

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.

Self-study portion

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,

UNIT I	Chapter VI	T.B-4
UNIT II	Chapter IV	T.B-1
UNIT III	Chapter V	T.B-2
UNIT IV	Chapter XIII	T.B-2
UNIT V	Chapter IV	T.B-3

Books for Reference:

1. Butter worths. Medical laboratory manual for tropical countries. Microbiology by Monica chees brough (ELBS), 1985.
2. Lenetle, E, Balows,H.A. Hausler, W.J and Shadomy, J. Manual of Clinical Microbiology, Bethesda American Society of Microbiology, 1985.
3. David Greenwood, Richard,C.B, Slack, J and Peutherer, F. Medical Microbiology 6th Edition, Churchill Livingstone, 2003.

Web Source:

- 1.<https://asm.org/Articles/2020/September/Careers-in-Clinical-and-Public-Health-Microbiology>
2. <https://milnepublishing.geneseo.edu/suny-microbiology-lab/chapter/biosafety-practices-and-procedures-for-the-microbiology-laboratory/>
- 3.<https://bitesizebio.com/45159/how-to-preserve-microorganisms/>
- 4.<https://www.healthline.com/health/hospital-acquired-nosocomial-infections#risk-factors>

Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes:

Semester	Code	Title of the Paper					Hours	Credits		
III		HEALTH AND DIAGNOSTIC MICROBIOLOGY					30			
Course Outcomes (COs)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)				
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	✓	✓	✓		✓	✓	✓	✓		✓
CO2		✓	✓	✓	✓		✓	✓	✓	✓
CO3		✓	✓		✓		✓	✓		✓
CO4				✓	✓				✓	✓
CO5	✓	✓	✓		✓	✓	✓	✓		✓
Number of Matches= 34 Relationship :Moderate										

Prepared by:

Dr. H. Vajiha Banu

Checked by:

1. Dr.N.Packialakshmi
2. Dr.J.Sirajudeen

Note:

Mapping	1-29%	30-59%	60-69%	70-89%	90-100%
Matches	1-14	15-29	30-34	35-44	45-50
Relationship	Very poor	Poor	Moderate	High	Very high

Semester	Code	Course	Title of the Course	Hours	Credits	Max. marks	Internal marks	External marks
V	-	Value added Course II	ENTREPRENEURIAL MICROBIOLOGY	30	-	100	100	-

Course Outcomes

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

1. Acquire knowledge on principles and government policies related to entrepreneurship.
2. Understand the importance of microorganism in industries.
3. Introspect the knowledge on fermented products.
4. Describe the benefits of production of biofertilizers and composting.
5. Inspect the quality of the industrial products.

UNIT I

6 Hours

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 Hours

Industrially important microorganisms: *Spirullina*, *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 Hours

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 Hours

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 Hours

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.
Self study portion.

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 (4th edition), S. Chand and Company Ltd, New Delhi, 2007.

UNIT I	Chapter II	T.B-1
UNIT II	Chapter XXIII	T.B-3
UNIT III	Chapter IX	T.B-2
UNIT IV	Chapter XX	T.B-4
UNIT V	Chapter X	T.B-2

Books for Reference:

1. Md. Sabur Khan, Handbook of Entrepreneurship development, DCCI, Bangladesh, 2013.
2. Robbins,S. (2003) Entrepreneurship Development Pearson Education/PHI, 17th Edition,2003.
3. Frazier, W. C, Westhoff, D.C Food Microbiology, TATA Mc Graw Hill Publishing company Ltd. New Delhi, 2004.
4. Demain, A.L and Davies, J.E. Manual of Industrial Microbiology and Biotechnology. ASM press, 2010
5. Subba Rao, NS. Biofertilizer in Agriculture and Forestry, 3'd edition, Oxford &IBU Publications, 1997.

Web source:

1. http://www.crectirupati.com/sites/default/files/lecture_notes/Entrepreneur%20ship.pdf
2. <https://oneclass.com/study-guides/au/usyd/busi/mktg1001/559017-mktg1001-principles-of-marketing-complete-course-notes.en.html>
3. <http://microbio.du.ac.in/web3/uploads/Microbiology%20Uploads/Reading%20material/MB OE-201%2007.%20Fermentation%20Economics.pdf>

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Semester	Code	Title of the Paper					Hours	Credits		
V	-	ENTREPRENEURIAL MICROBIOLOGY					30	-		
Course Outcomes (COs)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)				
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1				✓	✓				✓	✓
CO2	✓		✓	✓	✓	✓		✓	✓	✓
CO3	✓		✓	✓	✓	✓		✓	✓	✓
CO4	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
CO5			✓	✓	✓			✓	✓	✓
Number of Matches= 36 Relationship : High										

Prepared by:

Ms. A.Fasila Begum

Checked by:

1. Dr. M.Mohamed Mahroop Raja
2. Dr.J.Sirajudeen

Note:

Mapping	1-29%	30-59%	60-69%	70-89%	90-100%
Matches	1-14	15-29	30-34	35-44	45-50
Relationship	Very poor	Poor	Moderate	High	Very high