



DEPARTMENT OF MICROBIOLOGY

MUHAMMED ABDURAHIMAN MEMORIAL ORPHANAGE (MAMO) COLLEGE

[Govt. Aided First Grade College & Affiliated to University of Calicut.
Re-Accredited by NAAC with A Grade]

CURRICULUM FOR CERTIFICATE COURSE IN

CERMB003: HISTORY OF MICROBIOLOGY

OFFERED DURING THE
ACADEMIC YEAR 2018-19
[APPROVED BY ACADEMIC COMMITTEE, MAMO COLLEGE]



MANASSERY, MUKKAM POST,
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INSTITUTIONAL VISION, MISSION & OBJECTIVES 01



VISION

VISION: Build Scientifically Oriented, Intellectually Accomplished, Morally Upright and Socially Committed youth who can play a constructive role in Nation Building.



MISSION

MISSION: Intellectual, social and economic empowerment of the youth in general and women, minorities, orphans and the destitute in particular by providing quality, value-based higher-education.



OBJECTIVES

OBJECTIVES: Pursuit of Excellence, Harnessing technology, Thrust on value-based education, Nurturing Excellence and Moulding the youth for Nation Building.



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VISION, MISSION, OBJECTIVES & CORE VALUES OF THE DEPARTMENT **02**



VISION

VISION: To brim the upcoming generation with Scientific Knowledge.



MISSION

MISSION: Providing quality education and training to bring out the very best in students through the stimulus of scholarly progression and intellectual development.



OBJECTIVES: (a) Empowerment of the students with scientific background and the technical skills, (b) Empower the students to be an entrepreneur in the field of Microbiology and allied areas.



VALUES

CORE VALUES: Accountability, Communication, inclusivity, innovation, Industrial excellence, Professionalism, Teamwork and tolerance.



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B.Sc MICROBIOLOGY: PROGRAMME EDUCATIONAL OBJECTIVES [PEOs] 03

After 4 to 5 years of graduation, the career and professional accomplishments attained by the Microbiology Graduates would reflect that the programme really prepared the graduates to deal with the real world, where they could apply and use the skills and knowledge they have learned to good use.

Specifically, the graduate would be able to:



PEO1: Pursue any of the following three alternatives: (i) immediately take up a career in any area of Microbiology and work productively as a successful microbiologist in diverse career paths including supportive and leadership roles on multidisciplinary teams. (ii) Broaden the scope of the career path by pursuing higher studies and research in the field of Microbiology. (iii) Go for taking up the challenge and spearheads start-ups by positively exploiting the diverse potentials of the microbiological field.



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PEO2: Graduates will communicate effectively, recognize and incorporate societal needs and constraints in their professional endeavours, and practise their profession with high regard to legal and ethical responsibilities.



PEO3: Be original, creative, innovative and systematic in their all endeavours, including individual, collaborative and entrepreneurial ventures with meticulous strategic thinking, planning and execution.



PEO4: Have sufficient breadth of understanding to enable continued professional development and lifelong learning throughout their career.



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B.Sc MICROBIOLOGY: PROGRAMME SPECIFIC OUTCOME [PSOs] 04

On successful completion of a Bachelor Degree in Microbiology, the graduates would be able to:



PSO1: The students able to understand the theoretical knowledge in the field of microbiology like general, analytical, clinical, food and industrial sectors.



PSO2: The students able to expertise in applying practical knowledge in medical, biochemical and industrial sectors.



PSO3: The students acquire research knowledge in industrial training and summative projects.



PSO4: The students able to analyse socially acceptable solutions to complex environmental problems with applications of modern and appropriate techniques for sustainable development.



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PSO5: The students able to create bio products like microbial inoculums, biologically active compounds and probiotics.



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B.Sc MICROBIOLOGY: PROGRAMME OUTCOMES [POs] 05

The students graduating from B.Sc Microbiology Programme should be able to:



PO1: SCIENTIFIC & COMPUTING KNOWLEDGE: Apply scientific and practical methods to analyse microorganisms from different sources.



PO2: PROBLEM ANALYSIS: Identify, formulate, review research literature, and analyze complex real-life problems reaching substantiated conclusions using first principles of statistics, natural sciences, and bioinformatics.



PO3: DESIGN/DEVELOPMENT OF SOLUTIONS: Design solutions for complex real-life problems or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.



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PO4: CONDUCT INVESTIGATIONS OF COMPLEX PROBLEMS: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.



PO5: MODERN TOOL USAGE: Apply appropriate and modern practical techniques, resources, and modern bioinformatics software including prediction and modeling to complex biomolecules with an understanding of the limitations.



PO6: THE MICROBIOLOGICAL PROFESSION AND SOCIETY: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional practice.



PO7: ENVIRONMENT AND SUSTAINABILITY: Understand the impact of the environmental pollutions and their solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.



PO8: ETHICS: Apply ethical principles and commit to professional ethics and responsibilities and norms of the microbiological practice.



PO9: INDIVIDUAL AND TEAM WORK: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.



PO10: COMMUNICATION: Communicate effectively on complex microbial activities with the community and



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with society, such as, being able to comprehend and write effective reports and analyse the microbial activities, make effective presentations, and give and receive clear instructions.



PO11: PROJECT MANAGEMENT AND FINANCE:

Demonstrate knowledge and understanding of the microbiological principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.



PO12: LIFE-LONG LEARNING: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of changing environment.



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CERTIFICATE COURSE

CERMB003: HISTORY OF MICROBIOLOGY 06

COURSE CURRICULUM

Course Name	History of microbiology
Course Code	CERMB003
Year	2018-19
Course Designer	Mrs. Jasna. E
Couse Duration	30 Hrs
Course Schedule	November to February
Maximum Students Intake	60 Students



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1. COURSE LEVEL

Foundational, skill-oriented certificate programme.

2. PREREQUISITE

None.

3. COURSE INTAKE & ADMISSION

Maximum 60 students will be given admission to the course based on First-Come-First-Serve basis. All the students of the MAMO College are eligible for free enrolment for the course. The enrolment notification will be issued for the course well in advance of the commencement of the course.

4. COURSE COORDINATOR

Ms. Jasna. E, Assistant Professor, Department of Microbiology.

5. COURSE PREAMBLE

The study of microbiology is extremely rewarding, leading to advances in the welfare of the environment as well as human population. Learn the history and frequently used microbiology terminology. The seventeenth century discovery of living forms existing invisible to the naked eye was a significant milestone in the history of science, for from the 13th century onwards it had been postulated that invisible entities were responsible for decay and diseases.

6. DURATION

Total Duration: 30 Hrs. [Contact Hrs. 16 Hrs., Courseworks: 7 and Assessment Works: 7]



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7. CURRICULUM FOCUS

Enhance the employability of the learners through curriculum enrichment for additional skill development.

8. COURSE OBJECTIVES

Learners are expected to

(a) understand the history of microbiology and information about the important scientists and their contributions

9. SKILL EXPECTED

On the successful completion of the course, learners will be able to:

- (a) To understand the history of microbiology
- (b) To achieve the details about spontaneous generation and biogenesis
- (c) To differentiate the structure of prokaryotes and eukaryotes

10. COURSE OUTCOMES

Upon the successful completion of the course, learners will be able to:

CO No	Course Outcome(CO)	Skill/Knowledge Attainment Level Based on Revised Bloom's Taxonomy
CO1	History and development of Microbiology, biogenesis, spontaneous generation	Understand
CO2	Analyse various contributions of scientists in different areas of microbiology	Analyse



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CO No	Course Outcome(CO)	Skill/Knowledge Attainment Level Based on Revised Bloom's Taxonomy
CO3	Analyse the various experimental studies such as penicillin discovery, swan-necked experiment etc	Comparison
CO4	Familiarise with the important innovations of different scientists, it act as the turning of microbiology field	Understand
CO5	To differentiate the structural differences between single celled and multicellular organism	Comparison

11. MAPPING OF COs WITH PSO's AND POs

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	0	1	0	1	1	1	1	1	2	2	0	1	1	1	0	1	1
CO2	1	0	2	1	0	1	1	1	2	3	1	2	1	1	2	1	1
CO3	1	1	2	1	1	1	1	1	2	0	1	2	1	1	1	1	1
CO4	1	0	2	1	1	0	1	1	2	3	1	2	1	1	2	1	1
CO5	1	0	2	1	1	0	1	1	2	3	1	2	1	1	2	1	1
AVG	0.8	0.4	1.6	1	0.8	0.6	1	1	2	2.2	0.8	1.8	1	1	1.4	1	1



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12. MODULE-WISE COURSE CONTENTS

MODULE 1: HISTORY AND SCOPE OF MICROBIOLOGY

MODULE DURATION: 13 Hrs. [Contact Hrs. 6 Hrs., Course Works: 3 and Assessment Works: 4]

MODULE CONTENT: scope and history of microbiology, spontaneous generation, biogenesis

MODULE OUTCOME: On successful completion of the module learners can familiarize with the path of the development of microbiology and concept of spontaneous generation and biogenesis

MODULE 2: CONTRIBUTIONS OF SCIENTISTS IN VARIOUS AREAS OF MICROBIOLOGY

MODULE DURATION: 17 Hrs. [Contact Hrs. 10 Hrs. Course Works: 4 Hrs and Assessment Works: 3 Hrs]

MODULE CONTENT: Anton Van Leeuwenhoek, Joseph Lister, Paul Ehrlich, Edward Jenner, Louis Pasteur, Robert Koch, Martinus W Beijernick, Alexander Fleming, Sergie N Winogradsky, Selman A Waksman

MODULE OUTCOME: On successful completion of the module, learners will be able understand the major and minor contributions of various scientists and their details about experimental studies

REFERENCES:

1. Ananthanarayan and Paniker, *Textbook of Microbiology*.
2. Gerard J., Tortora, Berdell R. Funke, *Textbook of Microbiology - An Introduction*.



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ADDITIONAL REFERENCES & STUDY MATERIALS:

- Singh R. S. (1998). *Plant Diseases Management*. 7th edition. Oxford & IBH, New Delhi.

13. DELIVERY MODE

The course employs multi-mode delivery mechanisms including contact lecture, online MOOC courses from NPTEL, Online and offline course works.

14. DELIVERY SCHEDULE

November to February.

15. DETAILED COURSE DELIVERY PLAN

Hour	Delivery Mode and Activity	Topics to be Covered
1	Contact Hour - 1: Classroom Discussion	Introducing the Course
2	Lab Hour - 1	Launching and Navigating the screen. Introduce User Interface of MS-Word and its Basic Features. Introduce Formatting.
3	Contact Hour - 2: Classroom Demonstration	Create and Edit Documents
4	Contact Hour - 3: Classroom Demonstration	Using Proofing Tools
5	Contact Hour - 4: Classroom Demonstration	Setting Tabs
6	Contact Hour - 5: Classroom Demonstration	Format Paragraphs



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7	Contact Hour - 6: Classroom Demonstration	Printing Documents
8	Lab Hour - 2	Editing, Setting tabs, Formatting paragraphs, Printing documents
9	Course Work – 1: Course Assignment	Course Assignment to Create Documents with Specific Formatting Requirements
10	Course Work – 2: Course Assignment	Course Assignment to Create Documents with Specific Formatting Requirements
11	Assessment Hour - 1	Assignment to Create Documents with Specific Formatting.
12	Course Work – 3: Course Assignment	Course Assignment to Create Documents with Specific Formatting Requirements
13	Assessment Hour - 2	Assignment to Create Documents with Specific Formatting.
14	Contact Hour - 7: Classroom Demonstration	Working with Columns, Pictures, Diagrams, Charts, Tables, etc.
15	Contact Hour - 8: Classroom Demonstration	Working with Mail Merge and Macros.
16	Lab Hour - 3	Working with Tables
17	Lab Hour - 4	Working with Pictures and Diagrams.
18	Lab Hour - 5	Working Charts and Templates
19	Course Work – 4: Course Assignment	Course Assignment to Create Documents with Tables having Specific Formatting Requirements



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Hour	Delivery Mode and Activity	Topics to be Covered
20	Course Work – 5: Course Assignment	Course Assignment to Create Documents with Pictures, Diagrams, Charts, etc., having Specific Formatting Requirements
21	Lab Hour - 6	Working with Mail Merge
22	Lab Hour - 7	Working with Macros
23	Lab Hour - 8	Working with Multi-Page Documents
24	Assessment Hour - 3	Assignment to Create Documents with Specific Formatting Requirements
25	Assessment Hour - 4	Assignment to Create Documents with Specific Formatting Requirements
26	Assessment Hour - 4	Assignment to Create Documents with Specific Formatting Requirements
27	Course Work – 6: Course Assignment	Course Assignment to Create Documents with mail merging features
28	Course Work – 7: Course Assignment	Course Assignment to Create Multi-Page Documents with Specific Formatting Requirements
29	Assessment Hour - 5	Course End Assessment
30	Assessment Hour - 6	Course End Assessment



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16. ASSESSMENT COMPONENTS

Total Marks: 100

CLASSROOM AND GROUP PARTICIPATION: 20 Marks. This component aims at testing the course content understanding and the reflection skills and their attainment levels.

COURSE WORK: 30 Marks. This component aims at testing the skill attainment levels of the learners in analysing and implementing the real-world problem.

MID-COURSE ASSIGNMENT: 20 Marks. This component aims at testing the module-wise attainment levels of the course objectives and course outcome and module outcomes.

END-COURSE ASSESSMENT: 30 Marks. This component aims at testing overall attainment levels of the course with respect to course objectives, course outcome and module outcomes.

17. COURSE EVALUATION & GRADING

The course evaluation is done/coordinated entirely by the course coordinator. The following 10-point Indirect Grading System is used for awarding grades to students:

Percentage of Mark	Letter Grade	Interpretation	Class
95 and above	O	Outstanding	First Class with Distinction
85 to below 95	A+	Excellent	First Class with Distinction
75 to below 85	A	Very good	First Class with Distinction
65 to below 75	B+	Good	First Class
55 to below 65	B	Satisfactory	First Class
45 to below 55	C	Average	Second Class



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Principal: 0495-2295121



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COORDINATOR
ACADEMIC COMMITTEE
MUHAMMED ABDURAHIMAN MEMORIAL
ORPHANAGE COLLEGE
P.O. MANASSERY, MUKKAM - 673602



MUHAMMED ABDURAHIMAN MEMORIAL ORPHANAGE (MAMO) COLLEGE

[Govt. Aided First Grade College & Affiliated to University of Calicut.
Re-Accredited by NAAC with A Grade]

DEPARTMENT OF MICROBIOLOGY

CURRICULUM FOR CERTIFICATE COURSE - CERMB003

35 to below 45	P	Pass	Third Class
Below 35	F	Failure	Fail
Incomplete	I	Incomplete	Fail
Absent	Ab	Absent	Fail

The grade is awarded by the course-coordinator by considering the overall performance of the learner in all the assessment component of the course.

18. GRIEVANCE REDRESSAL

The grievances, if any, can be submitted to the Head of the Department for its redressal. Those grievances that cannot be redressed by HoD can be forwarded to Academic Council of the College for final decision on the matter.

19. ISSUANCE OF CERTIFICATES

The Course Completion Certificate will be issued to all the successful candidates showing the Total Marks and Grade Obtained.



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