LADOKE AKINTOLA UNIVERSITY OF TECHNOLOGY,
OGBOMOSO

DEPARTMENT OF PURE AND APPLIED BIOLOGY

MASTER OF TECHNOLOGY (M.TECH) IN MICROBIOLOGY
(BIOLOGY)

2012
1. INTRODUCTION

An understanding of the interactive processes in nature requires an integration of biological and technological precepts. Indeed, recent rapid advances in biology are due larger than this. While the biology student, fairly early in his training, readily appreciates that most life processes are ultimately explained in terms of reactions at the molecular level, some difficulties arise in his appreciation of control of such processes at the genome level. These graduate programmes in biology are designed to eliminate these difficulties through gradual exposure to recent developments in relevant fields. These recent developments have further highlighted the complex and multi-disciplinary nature of biology. Their implications for man and his plant and animal resources constitute the core of the programme.

2. OBJECTIVES
The higher degree programmes of the Department are designed to:

i. Deepen the knowledge of promising graduates in Biology.

ii. Develop the ability to carry out independent investigations in microbiology resulting in original contribution to knowledge and

iii. Provide high level manpower relevant to national needs particularly in industries, agriculture, forestry, research institutes, medicine and veterinary science.

3. DEGREES OFFERED

   Master of Technology in Microbiology

4. ADMISSION REQUIREMENTS

   For master M.Tech programme in Microbiology admission shall be open to graduates of Ladoke Akintola University of Technology or of any other Universities recognized by the Senate of Ladoke Akintola University of Technology with at least a second Class (Hons) Division in discipline related to Biochemistry.

   M. Tech. programme in Microbiology shall be for a minimum of 18 months with year extension up to a maximum of three years for full-time or 36 month’s minimum and 6 years maximum for part-time candidate.
The filed of specialization shall be decided by candidate in consultation with the Head of Department and other members of Staff involved with teaching of 700 level Courses.

5. i) **Course Requirements**

a). candidates admitted to the programme shall be required to register for a minimum of 20 and a maximum of 26 units of Course-work in a year and a project, which shall carry six units.

b). to qualify for the award of the degree, candidates must:

1. Be credited with a minimum of 23 units.

2. Satisfy Departmental requirements as well as the Faculty requirements.

ii) **Assessment**

Candidates shall be assessed on course work in the form of term papers, and/or written examinations at the end of each semester.

In addition, candidates shall be required to submit a dissertation based on an approved project work which shall be subjected to an oral defense.

6. **CURRICULUM**

(a) Course of Study.

The department shall offer Master of Technology in Microbiology.
### M. TECH MICROBIOLOGY

<table>
<thead>
<tr>
<th>Course</th>
<th>Code</th>
<th>Course Title</th>
<th>LTP</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>MCB</td>
<td>701</td>
<td>Advanced Microbial Genetics Molecular Biology</td>
<td>2-0-3</td>
<td>3</td>
</tr>
<tr>
<td>MCB</td>
<td>702</td>
<td>Advanced Microbial Physiology</td>
<td>2-0-3</td>
<td>3</td>
</tr>
<tr>
<td>MCB</td>
<td>703</td>
<td>Advanced Immunology and Immunochemistry</td>
<td>2-0-3</td>
<td>3</td>
</tr>
<tr>
<td>MCB</td>
<td>704</td>
<td>Advanced Virology</td>
<td>2-0-3</td>
<td>3</td>
</tr>
<tr>
<td>MCB</td>
<td>705</td>
<td>Advanced Industrial Microbiology</td>
<td>2-0-3</td>
<td>3</td>
</tr>
<tr>
<td>MCB</td>
<td>706</td>
<td>Advanced Bacteriology</td>
<td>2-0-3</td>
<td>3</td>
</tr>
<tr>
<td>MCB</td>
<td>707</td>
<td>Advanced Mycology</td>
<td>2-0-3</td>
<td>3</td>
</tr>
<tr>
<td>MCB</td>
<td>708</td>
<td>Seminar</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>MCB</td>
<td>709</td>
<td>Project</td>
<td></td>
<td>6</td>
</tr>
</tbody>
</table>

**MCB 701: Advanced Microbial Genetics and Molecular Biology 2-03**

*(3 Units)*

Biochemical nature of genetic material; Genetic code protein synthesis; gene expression regulation of gene expression. Basis technique is gene cloning; strategies and gene libraries chromosome walking. Re-combinant selection and screening; DNA sequencing; C-DNA cloning in bacterial and yeast and plant and animal tissue cultures.
Application in agriculture, cloning in plants; probes in plant disease, crop.

Plant improvement; transgenic animals.

Application of genetic engineering in medicine; ante-natal screening.

Forensic probes, PCR technology and gene therapy Industrial applications of gene manipulations.

Genetics engineering and developing countries.

**MCB 702: Advanced Microbial Physiology 2-0-3 (3 Units)**


**MCB 703: Advanced Immunology and Immunochemistry 2-0-3 (3 Units)**

**MCB 704: Advanced Virology 2-0-3 (3 Units)**


**MCB 705: Advanced Industrial Microbiology 2-0-3 (3 Units)**

Growth characteristics of a microbial culture, determination of biomass, cell measurement, the growth curve, microbial process development, cell
cultivation system, batch process, continuous process, led batch process, mathematics description of growth, enzyme production and application, cell and enzyme immobilization, socio-ecological concepts in biotechnology, (Bioprocess, properties, growth and production, Bioreactors, Downstream process operation, filtration, Cell description methods, precipitation, chromatography, Bio process control, Alcohol production and recovery.

**MCB 706: Advanced Bacteriology 2-0-3 (3 Units)**

Technique in determining the structural and biochemical characteristics of bacteria. Assessment of anti-bacterial activity, serology, antigen, anti-biology Reactions. Immunology, Industrial bacteriology.


**MCB 708: Seminar (1 Units)**

Literature review on a topic in area of specialization, presented at a semester.
MCB 709: Research Project (6 Units)

An assessment of the student’s performances in the execution of the research project report in area of Microbiology.

LIST OF TEACHING STAFF AND THEIR QUALIFICATIONS

1. Mr. O. O. Oyegoke - B.Sc., (Ibadan) M.Sc., (Ibadan)-Ag. HOD. Lecturer I
2. Prof. J.K. Oloke – B.Sc., MSc., Ph. D. (Ife) – Professor
4. Prof. O.O. Fawole- B.Sc., (Lagos) M.Sc., (Ibadan) Ph. D. (Ife)- Professor
5. Dr. M. O. Liasu – B.Sc., (Nigeria) M.Sc., Ph. D. (Ibadan)-Senior Lecturer
6. Dr. (Mrs.) A. O. Adebiyi – B.Sc., (Ado-Ekiti) M. Sc., (Ibadan), Ph.D. (Ogbomoso)-Senior Lecturer.
7. Mr. A.T. Ogunkunke – B.Sc., Ilorin, MSc., (Ilorin) – Lecturer I
9. Mr. S. O. Adewoye – Ilorin, M.Sc., (Ilorin) – Lecturer I
10. Mrs. G.A. Aderinto - B.Sc., Ilorin, M.Sc., (Ilorin) – Lecturer I
12. Dr. Lateef Agbaje- B. Tech., M. Tech., Ph.D. (Ogbomoso) - Lecturer I