



**University of Management & Technology**  
**School of Science**  
**Department of Life Science**

**Biochemistry of Drugs and their Resistance**

|                           |   |                            |                        |
|---------------------------|---|----------------------------|------------------------|
| <b>Lecture Schedule</b>   | Monday and Thursday<br>11:00-12:15 PM   | <b>Semester</b>            | Spring 2021            |
| <b>Pre-requisite</b>      | ---   | <b>Credit Hours</b>        | 3                      |
| <b>Instructor</b>         | Dr. Asma Irshad   | <b>Contact Moodle link</b> | Asma.irshad@umt.edu.pk |
| <b>Office</b>             | Additional offices North Block  | <b>Office Hours</b>        | See office window      |
| <b>Course Description</b> | <p>The contents of the course are in such a way to help students understand the indiscriminate use of medicines and introduction to antibiotics. Classes of drugs and their mode of action are considered to gain further insight into the reaction mechanism of drugs, Drug side effects and drug-drug interactions. Mechanisms of drug resistance, drug resistance detection, antimicrobial prophylaxis and empiric therapy, antimicrobial stewardship and human consumption of antibiotics through food chain are also considered. The students will understand the antibiotic sensitivity Test, MRSA, drug resistance issues: MDR, TDR and XDR Tuberculosis and Roll Back Malaria. Also, they will be able to describe the emerging and re-emerging drug resistance issues and give appropriate interpretations</p>   |                            |                        |
| <b>Expected Outcomes</b>  | <p>The general objective of the course describe and carry out the techniques of drug classes, mode of action, side effects, metabolism, resistance and the sensitivity testing which involve Emerging and re-emerging drug resistance issues.</p> <p>At the end of the course, the students should be able to</p> <ul style="list-style-type: none"> <li>• Describe the Indiscriminate use of medicines</li> <li>• Describe the introduction to antibiotics</li> <li>• Describe the Classes of drugs and their mode of action</li> <li>• Explain the Drug side effects and drug-drug interactions</li> <li>• Describe the Mechanisms of drug resistance</li> <li>• Describe Drug resistance detection</li> <li>• Describe Antimicrobial prophylaxis and empiric therapy</li> <li>• Describe Antimicrobial stewardship</li> <li>• Describe Human consumption of antibiotics through food chain;</li> <li>• Describe Antibiotic Sensitivity Test</li> <li>• Describe MRSA;</li> <li>• Describe Roll Back Malaria</li> <li>• Describe Drug resistance issues: MDR, TDR and XDR Tuberculosis</li> </ul> |                            |                        |

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|-----------------------|--|
|                       | <ul style="list-style-type: none"> <li>Describe Emerging and re-emerging drug resistance issues</li> </ul>   |
| <b>Textbook(s)</b>    | <ol style="list-style-type: none"> <li>Antimicrobial Resistance Global Report on Surveillance. (2014) World Health Organization Geneva, Switzerland.</li> <li>Anti Antimicrobial Resistance Policy Government of Pakistan</li> <li>Latest Research Articles from Journals</li> </ol> |
| <b>Grading Policy</b> | <ul style="list-style-type: none"> <li><b>Sessional</b> <b>40%</b></li> <li>Quizzes 62.5%</li> <li>Assignment 25%</li> <li>Presentation 12.5%</li> <li><b>Final Exam:</b> <b>60%</b></li> <li>Viva 20%</li> <li>Open Book exam 20%</li> <li>Term paper 20%</li> </ul>                |

### Course Schedule

| Week | Lecture # | TOPICS  |
|------|-----------|---|
| 1    | 1<br>2    | Indiscriminate use of medicines               |
| 2    | 1<br>2    | The introduction to antibiotics               |
| 3    | 1<br>2    | Classes of drugs and their mode of action     |
| 4    | 1<br>2    | Drug side effects and drug-drug interactions  |
| 5    | 1<br>2    | Mechanisms of drug resistance                 |
| 6    | 1<br>2    | Drug resistance detection                     |
| 7    | 1<br>2    | Antimicrobial prophylaxis and empiric therapy |

|    |        |  |
|----|--------|--|
| 8  | 1<br>2 | Antimicrobial stewardship  |
| 9  | 1<br>2 | Human consumption of antibiotics through food chain  |
| 10 | 1<br>2 | Antibiotic Sensitivity Test  |
| 11 | 1<br>2 | MRSA   |
| 12 | 1<br>2 | Roll Back Malaria  |
| 13 | 1<br>2 | Drug resistance issues: MDR Tuberculosis   |
| 14 | 1<br>2 | Drug resistance issues: TDR Tuberculosis   |
| 15 | 1<br>2 | Drug resistance issues: XDR Tuberculosis<br>Describe Emerging and re-emerging drug resistance issues |

## HEC COURSE CONTENTS

### Biochemistry of Drugs and their Resistance:

#### Course Objectives:

The contents of the course are in such a way to help students understand the indiscriminate use of medicines, mechanism of action, side effects, antibiotic sensitivity testing and drug resistance issues.

#### Course Contents:

The indiscriminate use of medicines and introduction to antibiotics, Classes of drugs and their mode of action, Drug side effects and drug-drug interactions, Mechanisms of drug resistance, drug resistance detection, antimicrobial prophylaxis and empiric therapy, antimicrobial stewardship, human consumption of antibiotics through food chain, The antibiotic sensitivity Test, MRSA, drug resistance issues: MDR, TDR and XDR Tuberculosis, Roll Back Malaria, the emerging and re-emerging drug resistance issues.