澳門理工大學
Universidade Politécnica de Macau
Macao Polytechnic University

FACULTY OF HEALTH SCIENCES AND SPORTS

BACHELOR OF SCIENCE IN BIOMEDICAL TECHNOLOGY (PHARMACY TECHNOLOGY)

LEARNING MODULE OUTLINE

Academic Year	2025 / 2026	Semester	2
Module Code	BSOC1102		
Learning Module	Organic Chemistry		
Pre-requisite(s)	**Nil**		
Medium of Instruction	Chinese / English		
Credits	3	Contact Hours	45
Instructor	Lo Veng Meng ,Richard Yitao	Email	yitao@mpu.edu.mo
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MODULE DESCRIPTION

This module is one of the fundamental subjects of biomedical program. There includes lecture hours and demonstration/experiment classes.

This module is designed to provide basic knowledge and applications of current organic chemistry.

MODULE INTENDED LEARNING OUTCOMES (ILOS)

On completion of this learning module, students will be able to:

M1.	Understand background knowledge of organic chemistry
M2.	Understand the application of organic chemistry
M3.	Understand the operation procedure of organic laboratory.

These ILOs aims to enable students to attain the following Programme Intended Learning Outcomes (PILOs):

PILOs	**M1**	**M2**	**M3**
P1. To demonstrate understanding of a range of subjects, fields, principles and approaches relevant to medical laboratory technology	✓	✓	
P2. To demonstrate understanding of theories and practices that underpin medical laboratory operations and management	✓	✓	✓
P3. To demonstrate understanding of major trends and issues related to medical laboratory technology	✓	✓	
P4. To apply professional knowledge and skills to analyse, interpret and solve problems, challenges and risks in medical laboratory practice	✓	✓	

P5. To critically appraise and interpret scientific and clinical literature and apply evidence-based practice	✓	✓	
P6. To acquire and apply research skills in medical laboratory technology	✓	✓	
P7. To demonstrate effective communication and teamwork skills			✓
P8. To maintain professional and ethical standards in medical laboratory practice and research		✓	✓

MODULE SCHEDULE, COVERAGE AND STUDY LOAD

Content

Theory	Contact Hours
1. Introduction to Organic Chemistry 1.1 Carbon Chemistry 1.2 Properties of Organic compounds	**2 hr**
2. Class Organic Compounds & Naming Organic Compounds **2.1 Hydrocarbons: Aliphatic & Aromatic Hydrocarbons.** **2.2 Derivatives of Hydrocarbons:** **2.3 Naming Organic Compounds: IUPAC system.**	**4 hrs**
3. Structure of Organic Compounds 3.1 Structural formula of organic compounds 3.2 Isomers: Structural and Stereo isomers 3.3 Conformations of Organic compounds.	**5 hrs**
4. Reactions of Organic Compounds 4.1 Substitution reactions. 4.2 Addition reactions 4.3 Elimination reactions 4.4 Rearrangement reactions 4.5 Oxidation-Reduction reactions	**5 hrs**
5. Aliphatic Hydrocarbons 5.1 Introduction to Alkane 5.2 Preparation and properties of Alkane 5.3 Cycloalkanes 5.4 Reactions of Alkanes and Cycloalkanes 5.5 Introduction to Alkene & Alkyne 5.6 Preparation and properties of Alkene & Alkyne 5.7 Reactions of Alkenes and Alkynes	**2 hrs**
6. Aromatic Hydrocarbons 6.1 Introduction to Aromatic hydrocarbons 6.2 Polynuclear Aromatic Hydrocarbons 6.3 Reaction of Aromatic Hydrocarbons 6.4 Heterocyclic Aromatic Compounds	**3 hrs**
7. Alcohols, Phenols, and Ethers 7.1 I.U.P.A.C. Names and common names	**2 hrs**

7.2 Structure and properties 7.3 Reaction of Alcohols 7.4 Phenols, Ethers and Thiols	
8. Aldehydes and Ketones 8.1 I.U.P.A.C. Names and common names 8.2 Structure and properties 8.3 Reaction of Aldehydes and Ketones	**2 hrs**
9. Carboxylic Acids and Carboxylic Acid Derivatives 9.1 I.U.P.A.C. Names and common names 9.2 Structure and properties 9.3 Reaction of Carboxylic Acids 9.4 Esters, Acid Chlorides and Acid Anhydrides	**3 hrs**
10. Amines 10.1 I.U.P.A.C. Names and common names 10.2 Structure and properties 10.3 Reactions of Amines and Amides 10.4 Heterocyclic Amines	**3 hrs**
11. **Organic analysis** 11.1 Introduction to Qualitative organic analysis 11.2 General Scheme of Analysis ● Preliminary Tests ● Physical Constants ● Solubility tests ● Analysis for elements present ● Molecular weight determination ● Group Classification Test ● Consultation of Literature ● Preparation of Derivatives 11.3 Examples	**6 hrs**
12. Introduction to Organic Synthesis 12.1 Carbon – Carbon single bonds formation 12.2 Carbon –Carbon double bonds formation 12.3 Degradations	**2 hrs**
13. **Oral Presentation**	**2 hrs**
Total	**41 hrs**

Practice (Laboratory 4-6 students per group)	**Duration**
1. Common Organic Reactions	**2 hrs**
2. Organic Analysis	**2 hrs**
Total	**4 hrs**

Teaching and Learning Activities

In this learning module, students will work towards attaining the ILOs through the following teaching and learning activities:

Teaching and Learning Activities	**M1**	**M2**	**M3**
T1. *Interactive lectures* ■ Lectures: PowerPoint slides is presented and other supplementary materials provided if necessary ■ • Q & As: Raising different questions can draw student interest to the lecture they learn.	✓	✓	✓
T2. Laboratories ■ Students learn technical skills through laboratory operations		✓	✓
T3. *Assignments* ■ In- depth knowledge learning can be attained by actively learning from students through their assignments	✓	✓	✓

Alignment of MILOS with Teaching and Learning Activities

Activities	**M1**	**M2**	**M3**
Interactive lectures	✓	✓	✓
Laboratories		✓	✓
Assignments	✓	✓	

Attendance

Attendance requirements are governed by the Academic Regulations Governing Bachelor's Degree Programmes of the Macao Polytechnic University. Students who do not meet the attendance requirements for the learning module shall be awarded an 'F' grade.

Asssessment

In this learning module, students are required to complete the following assessment activities:

Assessment Activities	Weighting (%)	ILOs to be Assessed
A1. Exercises	50%	M1, M2, M3
A2. Written Report	20%	M1, M2
A3. Oral Presentation	10%	M1, M2
A4. Laboratory Report	10%	M3
A5. Molecular Modelling	10%	M1

Any students scoring less than 35% of the total mark in the final examination will be given an "F" grade for the module even if the overall grade is 50% or higher.

The assessment will be conducted following the University's Assessment Strategy (see www.mpu.edu.mo/teaching_learning/en/assessment_strategy.php). Passing this learning module indicates that students will have attained the ILOs of this learning module and thus acquired its credits.

MARKING SCHEME

Marks Ranges	Grade	Grade Point	Grade Definitions**
93–100 88 – 92	A A-	4.0 3.7	Excellent
83 – 87	B+	3.3	Very Good
78–82 73 – 77	B B-	3.0 2.7	Good
68–72 63–67 58 – 62	C+ C C-	2.3 2.0 1.7	Satisfactory
53 – 57 50 – 52	D+ D	1.3 1.0	Passed
0 – 49	F	0	Failed

Generic descriptions of each grade are given below:

Excellent: Strong evidence of original thinking; good organisation, capacity to analyse and systemise; superior grasps of subject matter; strong evidence of extensive knowledge base.

Very Good: Evidence of grasps of subject; strong evidence of critical capacity and organic ability; good understanding of issues; evidence of familiarity with literature.

Good: Evidence of grasp of subject; some evidence of critical capacity and organic ability; reasonable understanding of issues; evidence of familiarity with literature.

Satisfactory: Profiting from the study experience; understanding of the subject; ability to develop solutions to simple problems in the material.

Pass: Sufficient familiarity with the subject matter to enable the student to progress without repeating the learning module.

Fail: Little evidence of familiarity with the subject matter; weak in critical and organic skills; limited, or irrelevant use of literature.

REQUIRED READINGS

1. General, organic, and biological chemistry 11th ed./2022 Katherine J. Denniston, Joseph J. Topping, Danae Quirk, McGraw-Hill internation Edition

REFERENCES

1. Klein's Organic Chemistry 3rd ed. / 2017 Global Edition, David R. Klein John Wiley & Sons, Inc., ISBN: 978-1-119-45105-1
2. Instant Notes Organic Chemistry 2nd ed. G. L. Patrick BIOS Scientific Publishers, 2005, ISBN 0-203-42761-0 Master e-book ISBN

STUDENT FEEDBACK

At the end of every semester, students are invited to provide feedback on the learning module and the teaching arrangement through questionnaires. Your feedback is valuable for instructors to enhance the module and its delivery for future students. The instructor and programme coordinators will consider all feedback and respond with actions formally in the annual programme review.

ACADEMIC INTEGRITY

The Macao Polytechnic University requires students to have full commitment to academic integrity when engaging in research and academic activities. Violations of academic integrity, which include but are not limited to plagiarism, collusion, fabrication or falsification, repeated use of assignments and cheating in examinations, are considered as serious academic offenses and may lead to disciplinary actions. Students should read the relevant regulations and guidelines in the Student Handbook which is distributed upon the admission into the University, a copy of which can also be found at www.mpu.edu.mo/student_handbook/.