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	2024 / 2025	Semester	2
Module Code	BSPG2102-221		
Learning Module	Pharmacognosy		
Pre-requisite(s)	N/A		
Medium of Instruction	Chinese / English		
Credits	4	Contact Hours	60
Instructor	Kuok Chiu Fai	Email	cfkuok@mpu.edu.mo
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MODULE DESCRIPTION

This 60-hours subject is one of the professional subjects of the pharmacy technician program. This subject introduces basic concepts for pharmacognosy, pharmaceutical botany and the chemistry of natural products. The external characteristics, chemical components, biogenesis and medical uses of selected crude drugs will be covered, and the identification and analytical methods for different types of the chemical ingredients in crude drugs will introduced.

MODULE INTENDED LEARNING OUTCOMES (ILOS)

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

M1.	familiar with the basic knowledge of pharmaceutical botanical and the usage of natural herbs.
M2.	familiar with the sources, ingredients, properties and medical use of crude drugs.
M3.	describe the definition, classification and preparation procedure for crude drugs.
M4.	describe the active ingredients in crude drugs, and their chemical structures, properties and characteristics.

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

PILOs	**M1**	**M2**	**M3**	**M4**
P1. To demonstrate understanding of a range of subjects, fields, principles and approaches relevant to pharmacy technology	✓	✓	✓	✓
P2. To demonstrate understanding of theories, analytical approaches and practices that underpin pharmacy operations and management				
P3. To demonstrate understanding of major trends and issues related to pharmacy technology	✓	✓	✓	✓

P4. To apply professional knowledge and skills to analyse, interpret and solve problems, challenges and risks in pharmacy practice		✓	✓	✓
P5. To critically appraise and interpret scientific and clinical literature and apply evidence-based practice	✓	✓	✓	✓
P6. To acquire and apply research skills in pharmacy technology	✓	✓	✓	✓
P7. To demonstrate effective communication and teamwork skills				
P8. To maintain professional and ethical standards in pharmacy practice and research	✓	✓	✓	✓

MODULE SCHEDULE, COVERAGE AND STUDY LOAD

Week	Content Coverage	Contact Hours
1	Introduction to pharmacognosy	2
1	Major compounds in plants	2
2, 3	Carbohydrates and selected crude drugs	6
3	Glycosides and selected crude drugs	2
7	Lipids and selected crude drugs	4
8	Terpenoids and selected crude drugs	4
8, 9	Alkaloids and selected crude drugs	6
10	Plant phenolic compounds and selected crude drugs	4
10	Extraction methods for natural products	2
11	Separation methods for natural products	2
12	Study methods for natural products	2
13, 14	Chemical structure identification of chemical entity	4
11	**Experiment** – Extraction and TLC analysis of crude drugs	4
12	**Experiment** – Partition of the extraction from crude drugs	4
13	**Visit** – Medicinal Botany Garden	4
15	**Active learning module** – Advanced study in natural products	4
9	**Midterm test**	2
17	**Examination**	2

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	M4
T1. Lectures	✓	✓	✓	✓
T2. In-class discussion	✓	✓	✓	✓
T3. Experiment and report			✓	✓
T4. Active learning module and report		✓	✓	✓
T5. Test and examination	✓	✓	✓	✓

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.

ASSESSMENT

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

Assessment Activities	Weighting (%)	ILOs to be Assessed
A1. Active learning module and report	10	M2, M3, M4
A2. Experiment reports	20	M3, M4
A3. Test	30	M1, M2, M3, M4
A4. Examination	40	M1, M2, M3, M4

This learning module is graded on a 100 point scale, with 100 being the highest possible score and 50 being the passing score.

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

Assessment Activities	Assessment Criteria	Mark Ranges				
		88-100	73-87	58-72	50-57	<50
A1.	Demonstrate the understanding of the covered topics in module and show active learning attitude	Excellent	Good/ Very Good	Satisfactory	Marginal Pass	Fail; not reaching marginal levels
A2.	Demonstrate the understanding of the covered topics in module	Excellent	Good/ Very Good	Satisfactory	Marginal Pass	Fail; not reaching marginal levels
A3.	Demonstrate the understanding of the covered topics in module	Excellent	Good/ Very Good	Satisfactory	Marginal Pass	Fail; not reaching marginal levels

REQUIRED READINGS

Biren N. Shah, A.K. Seth (2013). *Textbook of Pharmacognosy and Phytochemistry* (2nd edition). Elsevier.

REFERENCES

Ashutosh Kar. (2007). *Pharmacognosy and Pharmacobiotechnology* (Revised-expanded 2nd edition). New age international (P) Ltd.

William Charles Evans. (2009). *Trease and Evans' Pharmacognosy* (16th edition). Saunders Ltd.

Paul M. Dewick. (2002). *Medicinal natural products: a biosynthetic approach* (2nd edition). Wiley.

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/.