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	1
Module Code	BSPT2101		
Learning Module	Pharmaceutics		
Pre-requisite(s)	Nil		
Medium of Instruction	Chinese / English		
Credits	4	Contact Hours	60
Instructor	Dr. Tao Yi, Aaron	Email	yitao@mpu.edu.mo
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MODULE DESCRIPTION

This course aims to enable students to apply the concepts of pharmaceutics in their pharmacy practice. This course has 44-hour lectures, 12-hour laboratory sessions, 4-hour examination and 60 teaching hours in total.

MODULE INTENDED LEARNING OUTCOMES (ILOS)

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

M1.	Describe theoretical backgrounds of different dosage forms.
M2.	Develop conventional pharmaceutical dosage forms under guidance.
M3.	Evaluate the pharmaceutical performance of conventional dosage forms according to pharmacopoeial requirements.
M4.	Apply pharmaceutical knowledge to analyse and interpret dosage forms.
M5.	Demonstrate an understanding of the relationship between drug characteristics and dosage forms.
M6.	Communicate scientific concepts effectively, demonstrating comprehension of pharmaceutics principles.

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

PILOs	**M1**	**M2**	**M3**	**M4**	**M5**	**M6**
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
2	Chapter 1 Introduction Chapter 2 New Drug Development and Approval Process Chapter 3 Pharmaceutical quality and Current Good Manufacturing Practices	7
3	Chapter 4 Dosage Form Design: Pharmaceutical and Formulation Considerations	7
4	Chapter 5 Dosage Form Design: Biopharmaceutical and Pharmacokinetic Considerations Chapter 6 Powders and Granules	4
5	Chapter 7 Capsules Chapter 8 Tablets	4
6	Chapter 9 Solid Oral Modified-Release Dosage Forms and Drug Delivery Systems Chapter 10 Transdermals and Transdermal Drug Delivery Systems	4
8	**Midterm (2 hours)** Chapter 11 Pulmonary, nasal, ocular, otic, and vaginal drug delivery	4
9	Chapter 12 Radiopharmaceuticals Chapter 13 Preparation and delivery of biopharmaceuticals	4
10	Chapter 14 Novel Dosage Forms and nanomedicines	4
11	Chapter 15 The formulation and manufacture of plant medicines	4
13	Chapter 16 Design and administration of medicines for paediatric and geriatric patients	4
14	Experiment 1 – Influence of excipients on the quality of pharmaceutical suspensions Experiment 2 – Influence of operating parameters on student self-prepared 3% hydroquinone toner & cream	4
15	Experiment 3 – Wet granulation process for manufacturing paracetamol tablets Experiment 4 – Dissolution and disintegration tests for paracetamol tablets	4
16	Experiment 5 – Preparation of liposomes and determination of encapsulation efficiency Experiment 6 –Preparation of dropping pills of traditional Chinese medicine	4
17	**Final (2 hours)**	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	M5	M6
T1. Lectures with case studies and real-life examples	✓	✓	✓	✓	✓	
T2. Laboratory Practice	✓	✓	✓	✓	✓	✓
T3. Group discussion	✓	✓	✓	✓	✓	✓

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. In Class oral Tests	6	M1, M2, M3, M4, M5, M6
A2. Group discussions	9	M1, M2, M3, M4, M5, M6
A3. Laboratory Practice	5×6=30	M1, M2, M3, M4, M5, M6
A4. Midterm	25	M1, M2, M3, M4, M5
A5. Final exam	30	M1, M2, M3, M4, M5

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. In Class oral Tests	Demonstrate the ability to answer questions on topics covered in the outline	Excellent	Good/ Very Good	Satisfactory	Marginal Pass	Fail; not reaching marginal levels
A2. Group discussions	Demonstrate the ability to apply pharmaceutical knowledge to analyse and interpret practical cases and communicate scientific concepts effectively through oral discussions	Excellent	Good/ Very Good	Satisfactory	Marginal Pass	Fail; not reaching marginal levels
A3. Laboratory Practice	Demonstrate the ability to demonstrate understanding of theories, pharmaceutical approaches and practices, and apply the basic techniques in pharmaceutical practice	Excellent	Good/ Very Good	Satisfactory	Marginal Pass	Fail; not reaching marginal levels
A4. Midterm	Demonstrate the ability to understand, identify, and apply appropriate pharmaceutical concepts, knowledge, and methods	Excellent	Good/ Very Good	Satisfactory	Marginal Pass	Fail; not reaching marginal levels
A5. Final exam	Demonstrate the ability to understand, identify, and apply appropriate pharmaceutical concepts, knowledge, and methods	Excellent	Good/ Very Good	Satisfactory	Marginal Pass	Fail; not reaching marginal levels

REQUIRED READINGS

Loyd V. Allen, Timothy B. McPherson. (2021) Ansel's Pharmaceutical Dosage Forms and Drug Delivery Systems (12th edition). Lippincott Williams & Wilkins, Philadelphia, USA

Kevin Taylor, Michael Aulton. (2021) Aulton's Pharmaceutics: The Design and Manufacture of Medicines (6th edition). Churchill Livingstone, Edinburgh, U.K.

REFERENCES

Patrick J. Sinko. (2023) Martin's Physical Pharmacy and Pharmaceutical Sciences (8th edition). Lippincott Williams & Wilkins, Philadelphia, USA

David S. Jones (2016) Pharmaceutics - Dosage Form and Design (2nd edition). Pharmaceutical Press, London, UK

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/.