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	BSDT1102		
Learning Module	Basic Dispensing Techniques II (調劑學 II)		
Pre-requisite(s)	Nil		
Medium of Instruction	English/ Chinese		
Credits	3	Contact Hours	45
Instructor	Lao Cheng Kin, Chatmann	Email	cklao@mpu.edu.mo
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MODULE DESCRIPTION

During this 45-hour module, students learn sterile compounding and aseptic technique through a series of lectures and practical sessions. This module also provides students with a broad overview of various compounding services including reconstitution services of cytotoxic drugs and total parenteral nutrition.

MODULE INTENDED LEARNING OUTCOMES (ILOS)

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

M1.	Provide the rationale for aseptic technique and clean room design.
M2.	Perform basic sterile compounding using aseptic technique.
M3.	Perform mathematical calculations required for the usual dosage determinations and solution preparations in the compounding and dispensing of sterile drug products.
M4.	Recognize the risks of exposure to cytotoxic drugs.
M5.	Describe how to compound and handle cytotoxic drugs appropriately.
M6.	Explain the method of designing a parenteral nutrition order and demonstrate the related compounding technique.

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

	Content Coverage	Contact Hours
1	Introduction to sterile compounding	3
2	**Practical session 1: Aseptic calculations**	2
3	Sterile compounding areas	2
4	Aseptic technique and preparation of sterile products	5
5	**Practical session 2: Proper gowning and basics of aseptic technique I**	3
6	**Practical session 3: Basics of aseptic technique II**	3
7	**In-class activity: Aseptic technique errors and omissions**	1
8	**Midterm test**	1.5
9	Safe handling and reconstitution of cytotoxic drugs	4
10	**Practical session 4: Individual aseptic technique training**	0.5
11	**Practical session 5: Reconstitution of nonhazardous and hazardous drugs**	3
12	Theory and reconstitution of parenteral nutrition	7
13	**Practical session 6: Adult total parenteral nutrition**	4
14	**Practical session 7: Neonatal total parenteral nutrition**	4
15	**Practical test**	0.5
16	**Final exam**	1.5

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. Interactive lectures	✓	✓	✓	✓	✓	✓
T2. Video demonstration	✓	✓			✓	
T3. Case studies			✓			✓
T4. Practical work		✓	✓		✓	✓

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. Practical reports	30	M1-M6
A2. Practical test (Note: Read remark #1 below)	35	M1-M6
A3. Midterm test	10	M1-M3
A4. Final exam	25	M1-M6

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.

Make-up assessments will not be provided for all practical sessions, midterm test and practical test under any circumstances. Students who are absent will receive a score of zero for that assessment.

Remark #1: Students who fail the practical test are required to attend further training and pass an additional practical test in order to be eligible for the final exam. Failing in the additional practical test will result in zero point in final exam. Moreover, the original practical test grade will be used for calculation of overall module grade. The additional practical test will be evaluated on a pass/ fail scale and will not be counted in the overall module grade.

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	Mark Ranges				
	88-100	73-87	58-72	50-57	<50
A1. Practical reports	Excellent	Good/ Very Good	Satisfactory	Marginal Pass	Fail; not reaching marginal levels
A2. Practical test	Excellent	Good/ Very Good	Satisfactory	Marginal Pass	Fail; not reaching marginal levels
A3. Midterm test	Excellent	Good/ Very Good	Satisfactory	Marginal Pass	Fail; not reaching marginal levels
A4. Final exam	Excellent	Good/ Very Good	Satisfactory	Marginal Pass	Fail; not reaching marginal levels

REQUIRED READINGS

None

REFERENCES

- Elder DE. A practical guide to contemporary pharmacy practice. 4th ed. Philadelphia, PA: Lippincott Williams & Wilkins; 2017.
- Johnston M. Sterile products and aseptic techniques. 2nd ed. Boston, MD: Pearson; 2011.
- American Society of Health-System Pharmacists. Basics of aseptic compounding technique. Bethesda, MD: ASHP; 2006.
- American Society of Health-System Pharmacists. Compounding sterile preparations – video training program companion workbook. Bethesda, MD: ASHP; 2005.
- ISOPP Standards for the Safe Handling of Cytotoxics. *J Oncol Pharm Pract.* 2022;28 (3_suppl):S1-S126.
- International Society of Oncology Pharmacy Practitioners Standards Committee. ISOPP standards of practice. Safe handling of cytotoxics. *J Oncol Pharm Pract.* 2007; 13 Suppl: 1-81.
- Mirtallo J, Canada T, Johnson D, et al. Safe practices for parenteral nutrition. *JPEN J Parenter Enteral Nutr.* 2004;28(6):S39-70.

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/.