Syllabus: Hospital Pharmacy
(#1917021567)
Second Semester 2024/2025

COURSE INFORMATION	
Course Name: Hospital Pharmacy (Hybrid education) **Semester: First** **Department: Clinical Pharmacy & Pharmacy Practice** **Faculty: Pharmaceutical Sciences**	**Course Code: 1917021567** **Sections: 1 & 2** **Core Curriculum**: **2019 Study Plan**
Day(s) and Time(s): Thursday 8.30-11.30 (Section 1), Thursday 11.30-2.30 (Section 2) **Classroom: 101.** **Date prepared: December 2022** **Date updated: March 2026**	**Credit Hours:** 1 **Prerequisites**: 131702566 or concurrent (Pharmacotherapy 2)

COURSE DESCRIPTION

This course provides an in-depth exploration of the roles and responsibilities of pharmacists in a hospital setting, emphasizing the integration of clinical and administrative functions. Students will learn about the structure and operations of hospital pharmacies, including medication management systems, sterile and non-sterile compounding, and inventory control. The course will focus on clinical pharmacotherapy, where students will apply principles of pharmacokinetics and pharmacodynamics to optimize patient care, collaborate with healthcare teams, and manage complex drug therapies. Additionally, students will gain insights into the use of technology, including electronic health records (EHR), automated dispensing systems, and pharmacy informatics to enhance workflow efficiency and ensure medication safety. The course also covers regulatory requirements, ethical considerations, and quality assurance measures, preparing students to contribute effectively to multidisciplinary healthcare teams in hospital environments. The course will also introduce emerging technologies such as Artificial Intelligence (AI) in hospital pharmacy, including their role in clinical decision support, medication safety monitoring, and optimization of medication therapy.

DELIVERY METHODS

The course will be delivered through a combination of active learning strategies. These include:

- PowerPoint lectures and active classroom-based discussion.

Students will be encouraged to participate and be actively involved in the learning process. Lectures will start with questions to inquire about the students' prior knowledge of the topic. These questions will also be repeated at the end of the lecture to gain insight into the students' competences (to verify whether students have understood the topic). During the lecture presentation, time will be given to allow students to reflect on what they have learnt.

- Video lectures.
- E-learning resources: e-reading assignments (as per semester).

FACULTY INFORMATION

Name	**Tahani Alwidyan**
Academic Title:	**Assistant Professor**
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Office Hours:	**Monday: 9.30-10.30 & 1.30-2.30** **Wednesday:1.30-2.30** ***Please send an e-mail (alwidyantahani@hu.edu.jo) to meet at any other time.***

REFERENCES AND LEARNING RESOURCES

Required Textbook:

1. Textbook of Hospital Pharmacy, 4th edition 2010 by Allwood

Suggested Additional Resources:

1. A Textbook of Hospital and Clinical Pharmacy, 1st edition 2023 by Megha Tiwari
2. Handbook of Hospital and Clinical Pharmacy: Reference book of Hospital & Clinical Pharmacy, 2018 by Raghvendra Sharma

Useful Web Resource:

1. AACP: https://www.aacp.org/
2. ACPE: https://acpe.edu/
3. ASHP best practices: https://www.ashp.org/pharmacy-practice/resource-centers/compounding/best-practices-and-guidelines

STUDENT LEARNING OUTCOMES MATRIX

Alignment matrix between the course objectives and the **course** learning outcomes (CLOs) with the **program** learning outcomes (PLOs).

Core Curriculum LOs	B.Sc. Pharmacy Program LOs	Course Objectives (1-4 as below)				Course Student LOs (A-D as below)				Assessment Method(s)
	Main Domain	**1**	**2**	**3**	**4**	**A**	**B**	**C**	**D**	
Foundational Knowledge	**Learner**					A.1 A.2				Exams Quizzes Homework Project
Essentials for Practice and Care	**Caregiver**									
	Manager									
	Provider						B.1 B.2			Exams Quizzes Homework Project
Approach to Practice and Care	**Creative Thinker and Problem-solver**									
	Educator									
	Advocate									
	Communicator						C.1 C.2			Exams Quizzes Homework Project
	Promoter									
Personal and Professional Development	**Self-aware**								D.2	Exams Quizzes Homework Project
	Leader									

	Innovator									
	Professional									
	Collaborator								D.1	Exams Quizzes Homework Project
Pharmaceutical Product Expert	**Manufacturer**									

COURSE OBJECTIVES**

After course completion students should:

1. Understand the Role and Function of Hospital Pharmacy:

- Explain the organization, responsibilities, and operations of the hospital pharmacy department.
- Describe the role of hospital pharmacists in the healthcare system, focusing on patient safety, medication management, and pharmaceutical care.

2. Medication Distribution and Management Systems:

- Demonstrate knowledge of medication distribution systems used in hospitals, including unit-dose and automated dispensing systems.
- Understand the principles of inventory management, formulary management, and drug procurement processes.

3. Clinical Pharmacotherapy and Patient Care:

- Apply clinical pharmacology and therapeutic principles to hospital pharmacy practice, including dosage adjustments for special populations (e.g., pediatrics, geriatrics).
- Recognize the importance of therapeutic drug monitoring, drug interactions, and adverse drug reaction reporting in the hospital setting.

4. Principles of Sterile and Non-Sterile Compounding:

- Understand and apply the principles of aseptic techniques in preparing sterile products such as intravenous (IV) admixtures.
- Demonstrate knowledge of non-sterile compounding procedures and the handling of hazardous drugs.

5. Medication Safety and Quality Assurance:

- Implement strategies for reducing medication errors and enhancing patient safety, including the use of barcoding, medication reconciliation, and clinical decision support systems.
- Understand and participate in hospital pharmacy quality assurance programs and infection control measures.

6. Regulatory and Ethical Responsibilities:

- Understand the legal, regulatory, and ethical responsibilities of hospital pharmacists, including compliance with laws related to controlled substances and patient privacy (HIPAA).
- Explain the role of regulatory bodies such as the Joint Commission and the FDA in hospital pharmacy operations.

7. Interdisciplinary Collaboration and Clinical Decision-Making:

- Recognize the role of the hospital pharmacist as part of a multidisciplinary team, participating in clinical rounds, therapeutic decision-making, and patient counseling.
- Apply evidence-based guidelines and protocols to optimize patient outcomes.

8. Use of Technology and Informatics in Hospital Pharmacy

- Utilize pharmacy informatics tools, such as electronic health records (EHR), computerized physician order entry (CPOE), and automated dispensing systems to enhance efficiency and safety in hospital pharmacy practice.
- Use of technology such as AI in hospital pharmacy

9. Antimicrobial Stewardship and Specialized Clinical Services

- Participate in antimicrobial stewardship programs to optimize the use of antibiotics and minimize resistance.
- Understand the pharmacist's role in specialized clinical services such as oncology, critical care, and nutrition support.

10. Develop Professional Skills and Ethical Practices

- Foster professionalism, communication skills, and a commitment to continuous learning in hospital pharmacy practice.
- Understand the ethical implications of pharmaceutical care and prioritize patient-centered care in all interactions.

11. Understand the emerging role of AI and predictive analytics in hospital pharmacy practice, including applications in clinical decision support systems, medication error detection, antimicrobial stewardship, and workflow optimization.

COURSE INTENDED LEARNING OUTCOMES** (ILOS)

A. Foundational Knowledge

A.1 Recognize the structure, function, and key responsibilities within hospital pharmacy operations, including inventory management, medication safety, and compliance with regulatory standards.

A.2 Show proficiency in using pharmacy informatics, AI-supported clinical decision systems, automation systems, and sterile/non-sterile compounding techniques, while adhering to quality assurance protocols and promoting medication safety.

B. Essentials to Practice and Care

B.1 Demonstrate the hospital pharmacist's role within the healthcare team, focusing on patient-centered care, medication management, and adherence to safety and quality standards.

B.2 Manage the implementation of pharmaceutical care principles, including clinical pharmacokinetics and evidence-based practices, to optimize medication therapy, ensure patient safety, and promote effective healthcare delivery across diverse populations.

C. Approach to Practice and Care

C.1 Implement medication error prevention strategies, conduct audits, and ensure that automated dispensing processes comply with legal and regulatory standards, particularly in handling the controlled substances.

C.2 Simulate automation for inventory control and supply chain management in the hospital pharmacy.

D. Personal and Professional Development

D.1 Develop professional responsibility, effective communication, and collaborative skills with healthcare teams to ensure optimal patient care.

D.2 Develop the ability to automated dispensing systems, robotic pharmacy systems, electronic health records, and AI-assisted clinical tools to enhance patient safety and improve workflow efficiency.

ACADEMIC SUPPORT

It is The Hashemite University policy to provide educational opportunities that ensure fair, appropriate and reasonable accommodation to students who have disabilities that may affect their ability to participate in course activities or meet course requirements. Students with disabilities are encouraged to contact their instructor to ensure that their individual needs are met. The University through its Special Need section will exert all efforts to accommodate for individual's needs.

Special Needs Section:

Tel: **00962-5-3903333 Extension: 4209**
Location: **Students Affairs Deanship/ Department of Student Welfare Services**
Email: **amalomoush@hu.edu.jo**
amalomoush@staff.hu.edu.jo

COURSE REGULATIONS

Participation

Class participation and attendance are important elements of every student's learning experience at The Hashemite University, and the student is expected to attend all classes. A student should not miss more than 15% of the classes during a semester. *Those exceeding this limit of 15% will receive a failing grade regardless of their performance*. It is a student's responsibility to monitor the frequency of their own absences. **Attendance record begins on the first day of class irrespective of the period allotted to drop/add and late registration. It is a student's responsibility to sign-in; failure to do so will result in non-attendance being recorded.**

In exceptional cases, the student, with the instructor's prior permission, could be exempted from attending a class provided that the number of such occasions does not exceed the limit allowed by the University. The instructor will determine the acceptability of an absence for being absent. A student who misses more than 25% of classes and has a valid excuse for being absent will be allowed to withdraw from the course.

On average, students need to spend 15 hours of study and preparation weekly. At the beginning of the lectures, students should be on time and should not leave before the end of the lecture without an accepted excuse. **If the student missed a class, it is him/her responsibility to find out about any announcements or assignments they have missed.** For any clarification, students should communicate with their instructor at her posted office hours or by appointment. Students should listen well to the lecture, if anyone has a question, he/she should ask the instructor. Students can find the course material at the course Microsoft team/Model after the lecture.

Sharing of course materials is forbidden. No course material including, but not limited to, course outline, lecture hand-outs, videos, exams, and assignments may be shared online or with anyone outside the class. Any suspected unauthorized sharing of materials will be reported to the university's Legal Affairs Office. If a student violates this restriction, it could lead to student misconduct procedures.

Plagiarism

Plagiarism is considered a serious academic offence and can result in your work losing marks or failing. HU expects its students to adopt and abide by the highest standards of conduct in their interaction with their professors, peers, and the wider University community. As such, a student is expected not to engage in behaviors that compromise his/her own integrity as well as that of The Hashemite University.

Plagiarism includes the following examples, and it applies to all student assignments or submitted work:

- **Use of the work, ideas, images or words of someone else without his/her permission or reference to them.**
- **Use of someone else's wording, name, phrase, sentence, paragraph or essay without using quotation marks.**
- **Misrepresentation of the sources that were used.**

The instructor has the right to fail the coursework or deduct marks where plagiarism is detected.

Missed Assessments

In all cases of assessment, students who fails to attend an exam on the scheduled date without prior permission, and/or are unable to provide a medical note, will automatically receive a failure grade for this part of the assessment.

- In cases where a student misses an assessment on account of a medical reason or with prior permission; in line with university regulations an incomplete grade for the specific assessment will be awarded and an alternative assessment or extension can be arranged.

Cheating

Cheating, academic dis-conduct, fabrication and plagiarism will not be tolerated, and the university policy will be applied. Cheating policy: The participation, the commitment of cheating will lead to applying all following penalties together:

- Failing the subject, he/she cheated at.
- Failing the other subjects taken in the same course
- Not allowed to register for the next semester.
- The summer semester is not considered as a semester.

Student Complaints Policy

Students at The Hashemite University have the right to pursue complaints related to faculty, staff, and other students. The nature of the complaints may be either academic or non-academic. For more information about the policy and processes related to this policy, you may refer to the students' handbook.

COURSE ASSESSMENT

Course Calendar and Assessment

Students will be graded through the following means of assessment:

Course Assessment Plan						
Assessment	Grade Weighting	Deadline	CILOs			
			A	B	C	D
First exam	30%	~ 5th/ 6th week 2-13/11/2025	A	B	C	D
Second exam	30%	~ 11th / 12th week 14-24/12/2025	A	B	C	D
Final exam	40 %	~ 15th/ 16th week	A	B	C	D

Description of Exams

✓ **The Final exam is described as follow:**

- Test questions predominately come from material presented in the class and the class discussions.
- Semester exams may be conducted during the regularly scheduled weekly class period.
- Exams may consist of a combination of multiple choice, short answer, match, true and false, and/or descriptive questions.
- The final exam date is determined by the university.
- The final exams test students' theoretical knowledge of the topics and skills that were covered and discussed during the course.
- No make-up exams will be given. Only documented absences will be considered as per HU guidelines. Make-up exams may be different from regular exams in content and format.
- Grades are not negotiable and are awarded according to the following criteria:

Letter Grade	Description	Grade Points
A+	Excellent	4.00
A		3.75
A-		3.50
B+	Very Good	3.25
B		3.00
B-		2.75
C+	Good	2.50
C		2.25
C-		2.00
D+	Pass	1.75
D	Pass	1.50
F	Fail	0.00
I	Incomplete	-

WEEKLY LECTURE SCHEDULE AND CONTENT DISTRIBUTION

"Lecture hours and weeks are approximate and may change as needed."

Note: For the one lecture period per week (S/M/T/W), one lecture period covers 3 lecture hours (165 minutes). The course content specifies chapters of the textbook that will be included in exams.

Week No.	No of Hours	CILOs	Week Topic	Notes	Delivery Method	Assessment Method
1	3	Introduction to the course & the course outline				
2	3	A	**Topic 1:** Introduction to Hospital Pharmacy: Role, functions, and responsibilities of a hospital pharmacist.		PowerPoint presentations, active classroom-based discussion, Video lectures. E-learning resources	Exams Quizzes Homework Project
3	3	A-D	**Topic 2:** 1) Pharmacy Practice Models: Centralized vs decentralized systems, collaborative practice models. 2) Telepharmacy in Hospital Settings: Introduction to Telepharmacy and its role in remote medication counseling. Telepharmacy and AI-enabled role in remote patient monitoring and medication management systems.		PowerPoint presentations, active classroom-based discussion, Video lectures. E-learning resources	Exams Quizzes Homework Project

4	3	A-D	**Topic 3:** Medication Management in Hospitals: Drug distribution systems, formulary management, and inventory control.		PowerPoint presentations, active classroom-based discussion, Video lectures. E-learning resources	Exams Quizzes Homework Project
5	3	A-D	**Topic 4:** Clinical Pharmacy Services: Medication therapy management, drug interactions, and therapeutic drug monitoring. Introduction to AI-assisted clinical decision support systems for medication therapy management and drug interaction detection.		PowerPoint presentations, active classroom-based discussion, Video lectures. E-learning resources	Exams Quizzes Homework Project
6	3	A-D	**Topic 5:** Sterile Preparations and Compounding: Techniques and standards for IV admixtures and other sterile preparations.		PowerPoint presentations, active classroom-based discussion, Video lectures. E-learning resources	Exams Quizzes Homework Project
7	3	A-D	**Topic 6:** Patient Safety and Medication Errors: Prevention, reporting, and handling of medication errors.		PowerPoint presentations, active classroom-based discussion, Video lectures. E-learning resources	Exams Quizzes Homework Project
8	3	A-D	**Topic 7:** Antimicrobial Stewardship: Hospital pharmacist's role in preventing antibiotic resistance.		PowerPoint presentations, active classroom-based discussion, Video lectures. E-learning resources	Exams Quizzes Homework Project
9	3	A-D	**Topic 8:** Pharmacoeconomics in Hospital Pharmacy: Cost-effective therapies, budgeting, and financial management. **Outpatient Pharmacy**		PowerPoint presentations, active classroom-based discussion, Video lectures. E-learning resources	Exams Quizzes Homework Project
10 & 11	6	A-D	**Topic 9:** 1) Oncology Pharmacy Services: Handling and administration of chemotherapy and oncology drugs. 2) Nutritional Support and Parenteral Nutrition: Role of		PowerPoint presentations, active classroom-based discussion, Video lectures. E-learning resources	Exams Quizzes Homework Project

			pharmacists in managing parenteral nutrition.			
12	3	A-D	**Topic 10:** Regulatory Affairs and Good Hospital Pharmacy Practice (GHPP): Ensuring compliance with international and national regulatory guidelines.		PowerPoint presentations, active classroom-based discussion, Video lectures. E-learning resources	Exams Quizzes Homework Project
13 & 14	6		Interactive Learning and Case Studies & Material Revision			
15&16	Final exam as per HU calendar					

Course outline created and updated by Dr. Tahani Alwidyan on December 2022 and March 2026, respectively.