**Course Description**

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| **Faculty** | **Pharmacy** |
| **Department**  | **Pharmaceutics and Pharmaceutical Technologies** | **Level** |  |
| **Course**  | **Advanced Pharmacy Technologies** | **Code** | **1701440** | **Prerequisite** | 1701304 |
| **Credit hours** |  | **Theoretical**  |  | **Practical** |  |
| **Coordinator** |  | **Email** |  |
| **Teachers** | Rehan Al kasasbeh | **Emails** |  |
| **Lecture Time** |  | **Place** |  | **Attendance mode** |  |
| **Semester**  |  | **Preparation date**  |  | **Modification Date** |  |

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| **Abstracted Course Description**  |
| This course explores cutting-edge technologies and innovative practices in the field of pharmacy. Students will gain insights into the latest advancements in pharmaceutical technology, including automated compounding, telepharmacy, artificial intelligence in drug discovery, and emerging drug delivery systems. The course emphasizes the integration of technology in pharmacy practice and its impact on patient care, safety, and efficiency. |
| **Course Goals** |
| * To expose students to advanced pharmacy technologies and their applications.
* To develop an understanding of how technology enhances pharmacy practice.
* To prepare students to adapt and utilize emerging technologies in pharmaceutical settings.
* To foster critical thinking about the ethical and regulatory aspects of advanced pharmacy technologies.
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| **CILOs** |
| **Knowledge** |
| a1. Understand the principles and operation of advanced pharmacy technologies.a2. Recognize the role of technology in medication management, drug discovery, and patient care.a3. Comprehend the ethical and regulatory considerations related to advanced pharmacy technologies. |
| **Skills** |
| b1. Utilize automated compounding systems and telepharmacy technologies.b2. Evaluate the impact of artificial intelligence on drug discovery and clinical decision support.b3. Analyze emerging drug delivery systems and their implications for patient outcomes. |
| **Competencies** |
| c1. Apply advanced pharmacy technologies to optimize medication management and patient care.c2. Adapt and implement technology-driven solutions to enhance pharmacy practice.c3. Assess the ethical, legal, and regulatory aspects of advanced technologies in pharmacy.c4. Collaborate effectively in interdisciplinary healthcare teams using advanced pharmacy technologies |
| **Learning Methods** |
| * Lectures and discussions on advanced pharmacy technologies and their applications
* Hands-on training and demonstrations of automated compounding and telepharmacy systems
* Case studies and real-world examples of technology-driven pharmacy solutions
* Guest lectures from experts in pharmaceutical technology
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| **Evaluation Tools** |
| Quizzes, Midterm exam, Final Exam, Reports |
| **Week** | **Topics** | **Learning methods** | **Evaluation tool** | **ILOs** | **Hours** |
| **1.** | Introduction | Lecture material and notes | Exams | **A2,a3,b1,b3,c2,c3** | **3** |
| **2.** | Automated Compounding Systems | Homework and Projects, Presentation, … | Assignments, | **A2,a3,b1,b3,c2,c3** | **3** |
| **3.** | Telepharmacy | Lecture material and notes  | Exams | **A2,a3,b1,b3,c2,c3** | **3** |
| **4.** | Artificial Intelligence in Drug Discovery | Homework and Assignments, Projects, Presentation, … | Exams | **A1,a2,b1,b2,c1** | **3** |
| **5.** | Next-Gen Drug Delivery Systems | Lecture material and notes  | Exams | **A1,a2,b1,b2,c1** | **3** |
| **6.** | Blockchain in Pharmacy | Lecture material and notes  | Exams | **A1,a2,b1,b2,c1** | **3** |
| **7.** | Augmented Reality in Pharmacy Education | Homework and Assignments, Projects, Presentation, … | Exams | **A1,a2,b1,b2,c1** | **3** |
| **8.** | Midterm Exam | Lecture material and notes  | Exams | **A2,a3,b1,b3,c2,c3** | **3** |
| **9.** | Nanotechnology Applications in Pharmacy: Targeted Drug Delivery and Diagnostics | Lecture material and notes  | Exams | **A2,a3,b1,b3,c2,c3** | **3** |
| **10.** | IoT and Smart Devices in Medication Adherence | Lecture material and notes  | Exams | **A2,a3,b1,b3,c2,c3** | **3** |
| **11.** | Digital Health Records in Pharmacy Practice | Lecture material and notes | Exams | **A2,a3,b1,b3,c2,c3** | **3** |
| **12.** | Personalized Medicine | Lecture material and notes | Exams | **A1,a2,b1,b2,c1** | **3** |
| **13.** | Pharmacogenomics | Presentation | Presentation, project, assignments | **A1,a2,b1,b2,c1** | **3** |
| **14.** | 3D Printing in Pharmacy: Customized Medications and Dosage Forms | Presentation | Presentation, project, assignments | **A1,a2,b1,b2,c1** |  |
| **15.** | Final Exam |  |
| **16.** |  |  |  |  |  |

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| **Plan of Course Evaluation** |
| **Evaluation Tools** | **Mark** | **ILOs** |
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| **First Exam (Mid-term)**  | **30%** | **A1,a2,b1,b2,c1** |  |  |  |  |  |
| **Second Exam (If available)** |  |  |  |  |  |  |  |
| **Final Exam** | **50%** | **A1,A2,a3,b1,b2,b3,,c1c2,c3** |  |  |  |  |  |
| **Activities** |  |  |
| **Activities Evaluation** | Homework/Tasks | 10% | B1.B2,B3C1 |  |  |  |  |  |
| Case Study  |  |  |  |  |  |  |  |
| Discussion and Interactions |  |  |  |  |  |  |  |
| Group Activities |  |  |  |  |  |  |  |
| Laboratory Exams |  |  |  |  |  |  |  |
| Presentations |  |  |  |  |  |  |  |
| Quizzes | 10% | C2,C3A1 |  |  |  |  |  |
| Others |  |  |  |  |  |  |  |
| **Total** | 100% |  |  |  |  |  |  |

 **Components**  |
| **Book** |  |
| **References** |  |
| **Recommended Readings** |  |
| **Electronic materials** |  |
| **Other websites** |  |