**Course Description**

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| **Faculty** | **Pharmacy** |
| **Department**  | **Pharmaceutics and Pharmaceutical Technologies** | **Level** |  |
| **Course**  | **Industrial pharmacy** | **Code** | **1701404** | **Prerequisite** | 1701304 |
| **Credit hours** | 2 | **Theoretical**  | 1701405 | **Practical** | 1701405 |
| **Coordinator** | Rehan Al kasasbeh | **Email** |  |
| **Teachers** | Rehan al kasasbeh | **Emails** |  |
| **Lecture Time** |  | **Place** |  | **Attendance mode** |  |
| **Semester**  |  | **Preparation date**  |  | **Modification Date** |  |

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| **Abstracted Course Description**  |
| The course covers some important unit operations used in Pharmaceutical technology and drug manufacturing of solid, semisolid and liquid preparations e.g., size analysis, size reduction, mixing, powder flow, micromeritics, drying and filteration. |
| **Course Goals** |
| * To introduce students to essential unit operations in pharmaceutical manufacturing.
* To equip students with knowledge and skills for handling pharmaceutical materials effectively.
* To foster an understanding of the critical parameters that impact pharmaceutical product quality.
* To prepare students for roles in the pharmaceutical manufacturing industry.
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| **CILOs** |
| **Knowledge** |
| a1. Understand the principles and significance of unit operations in pharmaceutical technology.a2. Identify key parameters affecting pharmaceutical product quality during manufacturing.a3. Comprehend the theory and application of size reduction, mixing, and filtration processes. |
| **Skills** |
| b1. Perform size analysis and assessment of pharmaceutical materials.b2. Demonstrate proficiency in size reduction techniques and mixing processes.b3. Analyze and assess powder flow characteristics and micromeritics.b4. Apply knowledge of drying and filtration principles in pharmaceutical manufacturing. |
| **Competencies** |
| c1. Apply theoretical knowledge to practical scenarios in pharmaceutical manufacturing.c2. Perform unit operations with precision, ensuring product quality and safety.c3. Demonstrate the ability to troubleshoot common issues in pharmaceutical manufacturing.c4. Collaborate effectively in a pharmaceutical manufacturing team. |
| **Learning Methods** |
| * Lectures on unit operations, principles, and pharmaceutical material handling
* Practical demonstrations and hands-on experience in unit operation techniques
* Group discussions and case studies on pharmaceutical manufacturing challenges
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| **Evaluation Tools** |
| Quizzes, Midterm exam, Final Exam |
| **Week** | **Topics** | **Learning methods** | **Evaluation tool** | **ILOs** | **Hours** |
| **1.** | Introduction | Lecture material and notes | Exams | **A2,a3,b1,b3,c2,c3** | **3** |
| **2.** | Particle size analysis | Homework and Projects, Presentation, … | Assignments, | **A2,a3,b1,b3,c2,c3** | **3** |
| **3.** | Particle size analysis cont. | Lecture material and notes  | Exams | **A2,a3,b1,b3,c2,c3** | **3** |
| **4.** | Mixing | Homework and Assignments, Projects, Presentation, … | Exams | **A1,a2,b1,b2,c1** | **3** |
| **5.** | Mixing cont. | Lecture material and notes  | Exams | **A1,a2,b1,b2,c1** | **3** |
| **6.** | Mixing cont. | Lecture material and notes  | Exams | **A1,a2,b1,b2,c1** | **3** |
| **7.** | Particle size reduction | 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.** | Particle size reduction cont. | Lecture material and notes  | Exams | **A2,a3,b1,b3,c2,c3** | **3** |
| **10.** | Micromeritics | Lecture material and notes  | Exams | **A2,a3,b1,b3,c2,c3** | **3** |
| **11.** | Micromeritics cont. | Lecture material and notes | Exams | **A2,a3,b1,b3,c2,c3** | **3** |
| **12.** | Drying | Lecture material and notes | Exams | **A1,a2,b1,b2,c1** | **3** |
| **13.** | Drying cont. | Presentation | Presentation, project, assignments | **A1,a2,b1,b2,c1** | **3** |
| **14.** | Clarification | Presentation | Presentation, project, assignments | **A1,a2,b1,b2,c1** | **3** |
| **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% | B1.B2,B3C1 |  |  |  |  |  |
| Others |  |  |  |  |  |  |  |
| **Total** | 100% |  |  |  |  |  |  |

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