



T-104
2022

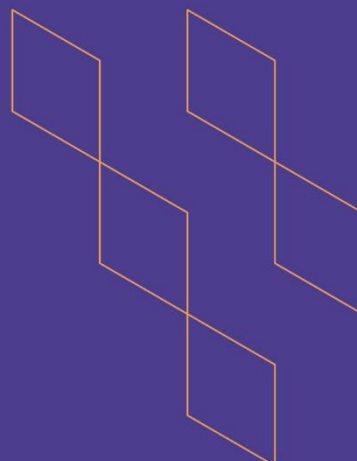
Course Specification





T-104
2022

Course Specification



| |
|--|
| Course Title: Industrial Pharmacy |
| Course Code: 432-PHU-3 |
| Program: Pharmaceutical Sciences |
| Department: Pharmaceutics |
| College: Pharmacy |
| Institution: Najran University |
| Version: \ |
| Last Revision Date: 22/12/2023 |



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A. General information about the course:

Course Identification

1. Credit hours: 3 (2+1)

2. Course type

a. University ☐ College ☒ Department ☐ Track ☐ Others ☐

b. Required ☒ Elective ☐

3. Level/year at which this course is offered: Level 8/ 4th year

4. Course general Description

The course is aimed to describe the pharmaceutical unit operation carrying out in pharmaceutical industry for manufacturing of various dosage form specifically solid dosage forms, equipment used as well as factors affecting the different pharmaceutical unit operations. It provides awareness to students related to the different unit operation involved in manufacturing of various dosage form in pharmaceutical industry. The various unit operations cover in the subject including pharmaceutical engineering, heat process and heat flow mechanisms, evaporation, distillation, extraction, filtration, centrifugation, crystallization, size reduction, size separation, mixing and drying.

5. Pre-requirements for this course (if any): 431-PHU-3

6. Co- requirements for this course (if any): NA

7. Course Main Objective(s)

Familiarize the student to pharmaceutical unit operation carrying out in pharmaceutical industry for manufacturing of various dosage forms, equipment used as well as factors that affecting the performance of different pharmaceutical unit operations.

1. Teaching mode (mark all that apply)

| No | Mode of Instruction | Contact Hours | Percentage |
|----|--|---------------|------------|
| 1. | Traditional classroom | 60 | 100 |
| 2. | E-learning | 0 | 0 |
| 3. | Hybrid <ul style="list-style-type: none"> Traditional classroom E-learning | | |
| 4. | Distance learning | 0 | 0 |

2. Contact Hours (based on the academic semester)

| No | Activity | Contact Hours |
|----|-------------------|---------------|
| 1. | Lectures | 30 |
| 2. | Laboratory/Studio | 30 |
| 3. | Field | |



| | | |
|----|------------------------------|----|
| 4. | Tutorial | |
| 5. | Others (specify) Assignments | |
| | Total | 60 |

B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods

| Code | Course Learning Outcomes | Code of CLOs aligned with program | Teaching Strategies | Assessment Methods |
|------|---|-----------------------------------|------------------------|---|
| 1.0 | Knowledge and understanding | | | |
| 1.1 | Demonstrate the knowledge of the principles and theories of industrial process for manufacturing the different dosage forms | K1 | Lectures | Written Exam, Assignments |
| 1.2 | Demonstrate knowledge of physicochemical properties for drug development process and manufacturing | K3 | Lectures | Written Exam, Assignments |
| ... | | | | |
| 2.0 | Skills | | | |
| 2.1 | Demonstrate the evaluation of the different pharmaceutical technologies and industrial operations | S3 | Lectures, Lab work | MCQs Written Exam Practical exams |
| 2.2 | | | | |
| ... | | | | |
| 3.0 | Values, autonomy, and responsibility | | | |
| 3.1 | Demonstrate ability to work independently and professionally on related topics | V1 | Problem-based learning | Practical Exam, Lab reports, Observation Card |
| 3.2 | | | | |
| ... | | | | |





C. Course Content

| No | List of Topics | Contact Hours |
|---------------|---|---------------|
| Theory | | |
| 1. | General introduction of Industrial Pharmacy | 2 |
| 2. | The industrial processes: mixing technologies 1. Mixing equipment's for powders, semisolids and liquids. 2. Factors affecting mixing. | 4 |
| 3 | Size Reduction | 2 |
| 4 | Size Separation | 2 |
| 5 | Drying Technique | 2 |
| 6 | Crystallization Process | 4 |
| 7 | Centrifugation and Evaporation | 4 |
| 8 | Filtration and Extraction | 4 |
| 9 | Pharmaceutical Dry powder coating Technology | 2 |
| 10 | Pharmaceutical Powder Characterizations | 2 |
| 11 | Manufacturing Tablet Dosage forms | 2 |
| Total | | 30 |

| No | List of Topics | Contact Hours |
|------------------|---|---------------|
| Practical | | |
| 1. | Preparation of Powder mixing | 2 |
| 2. | Preparation and study equipment of liquids and semi solids dosage forms | 2 |
| 3. | Size Reduction using ball mill technique | 2 |
| 4. | Size Separation using sieves | 2 |
| 5. | Study Drying Technique such as spray drying and freeze drying | 4 |
| 6. | Preparation of Crystallization forms | 4 |
| 7. | Study Centrifugation and Evaporation | 4 |
| 8. | Study equipment of Filtration and Extraction | 4 |
| 9. | Study equipment of Pharmaceutical Dry powder coating Technology | 2 |
| 10 | Study equipment of Pharmaceutical Powder Characterizations | 2 |
| 11 | Manufacture Tablet Dosage forms | 2 |
| Total | | 30 |



D. Students Assessment Activities

| No | Assessment Activities * | Assessment timing (in week no) | Percentage of Total Assessment Score |
|----|-------------------------|--------------------------------|--------------------------------------|
| 1. | Quiz | 4-5 | 10% |
| 2. | Midterm Exam | 7-9 | 20% |
| 3. | Assignments | 14-15 | 5% |
| 4. | Quiz (Practical) | 12-15 | 10% |
| 5. | Observation Card | 15 | 5% |
| 6. | Practical Exam | 16 | 10% |
| 7. | Final Exam | 17-19 | 40% |
| 8. | Total | 19 weeks | 100% |

*Assessment Activities (i.e., Written test, oral test, oral presentation, group project, essay, etc.)



E. Learning Resources and Facilities

1. References and Learning Resources

| | |
|--------------------------|--|
| Essential References | <ol style="list-style-type: none"> 1. Unit processes in pharmacy, David Gandderton. 2. Pharmaceutics –Dosage Form and Design, David Jones. 3. Pharmaceutical Compounding and Dispensing, Chris Langley & Dawn Belcher. 4. Pharmaceutical Technology, controlled drug release, M.H. Rubinstein |
| Supportive References | <ol style="list-style-type: none"> 1. The theory and practice of industrial pharmacy, Leon Lachman. 2. Introduction to industrial pharmacy, Adel M. Sakr& Hassan M. EL-Sabbagh |
| Electronic Materials | <ol style="list-style-type: none"> 1. https://sdl.edu.sa/SDLPortal/en/Publishers.aspx 2. http://dlaf.nu.edu.sa/en/e-libraries 3. http://www.nu.edu.sa/en/web/deanship-of-libraries-affairs/85 4. http://lib.nu.edu.sa/DigitalLibrary.aspx 5. http://www.tandfonline.com/action/journalInformation?show=aimsScope&journalCode=iphd20 |
| Other Learning Materials | Computer-based programs/CD, professional standards or regulations and software. |

2. Required Facilities and equipment

| Items | Resources |
|--|---|
| facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.) | <ol style="list-style-type: none"> 1. Suitable lecture room equipped with data show and internet access 2. Suitable labs equipped with health and safety tools. |
| Technology equipment (projector, smart board, software) | <ol style="list-style-type: none"> 1. Computer 2. Internet access 3. Data show |
| Other equipment (depending on the nature of the specialty) | <ol style="list-style-type: none"> 1. Computer 2. Internet access 3. Data show |

F. Assessment of Course Quality

| Assessment Areas/Issues | Assessor | Assessment Methods |
|---|---------------------------------|--------------------|
| Effectiveness of teaching | Students | Indirect |
| Effectiveness of students assessment | Examination committee | Direct |
| Quality of learning resources | Course coordinator and students | Indirect |
| The extent to which CLOs have been achieved | Course coordinator | Direct |
| Other | | |

Assessor (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify))

Assessment Methods (Direct, Indirect)

G. Specification Approval Data

| | |
|--------------------|---|
| COUNCIL /COMMITTEE | PHARMACEUTICS DEPARTMENT COMMITTEE |
| REFERENCE NO. | PHARMACEUTICS DEPARTMENT MEETING NO. 13 |
| DATE | 25/12/2023 |