



Course Specification

(Bachelor)

Course Title: **Industrial Pharmacy**

Course Code: **PHCU 535**

Program: **Pharmaceutical Sciences**

Department: **Pharmaceutics**

College: **Pharmacy**

Institution: **Najran University**

Version: **3**

Last Revision Date: 20.08.2024



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A. General information about the course:

1. Course Identification

1. Credit hours: (3 (2+1))

2. Course type

A. ☐ University ☐ College ☐ Department ☐ Track ☒ Program
B. ☒ Required ☐ Elective

3. Level/year at which this course is offered: (Level 9/ 5th 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):

PHCU-433

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

None

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.

2. 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 	0	0
4	Distance learning	0	0



3. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	Lectures	30
2.	Laboratory/Studio	30
3.	Field	0
4.	Tutorial	0
5.	Others	0
Total		60

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

Code	Course Learning Outcomes	Code of PLOs 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 Lab reports
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, Observation Card
3.2				
...				



C. Course Content

No	List of Topics (Theory)	Contact Hours
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 (Practical)	Contact Hours
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%





No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
3.	Assignments	14-15	5%
4	Quiz (Practical)	12-15	10%
5	Observation Card	15	5%
6	Practical Exam and lab. report	16	10%
7	Final Exam	17-19	40%
8	Total		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"> Unit processes in pharmacy, David Gandderton. Pharmaceutics –Dosage Form and Design, David Jones. Pharmaceutical Compounding and Dispensing, Chris Langley & Dawn Belcher. Pharmaceutical Technology, controlled drug release, M.H. Rubinstein
Supportive References	<ol style="list-style-type: none"> The theory and practice of industrial pharmacy, Leon Lachman. Introduction to industrial pharmacy, Adel M. Sakr& Hassan M. EL-Sabbagh
Electronic Materials	<ol style="list-style-type: none"> https://sdl.edu.sa/SDLPortal/en/Publishers.aspx http://dlaf.nu.edu.sa/en/e-libraries http://www.nu.edu.sa/en/web/deanship-of-libraries-affairs/85 http://lib.nu.edu.sa/DigitalLibrary.aspx 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"> Suitable lecture room equipped with data show and internet access Suitable labs equipped with health and safety tools.
Technology equipment (projector, smart board, software)	<ol style="list-style-type: none"> Computer Internet access Data show
Other equipment (depending on the nature of the specialty)	<ol style="list-style-type: none"> Computer Internet access Data show





Items	Resources

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		

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

Assessment Methods (Direct, Indirect)

G. Specification Approval

COUNCIL /COMMITTEE	PHARMACEUTICS DEPARTMENT COMMITTEE
REFERENCE NO.	14460216-1060-00001
DATE	21.08.2024

