



T-104
2022

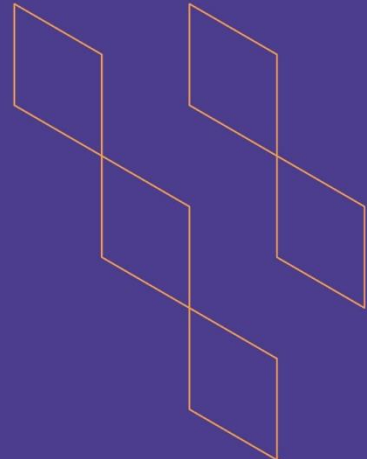
Course Specification





T-104
2022

Course Specification



Course Title: Pharmaceutical Engineering
Course Code: 533-PHU-2
Program: Pharmaceutical Sciences
Department: Pharmaceutics
College: Pharmacy
Institution: Najran University
Version: 1
Last Revision Date: 20/12/2023



Table of Contents:

Content	Page
A. General Information about the course	3
1. Teaching mode (mark all that apply)	3
2. Contact Hours (based on the academic semester)	3
B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods	4
C. Course Content	4
D. Student Assessment Activities	5
E. Learning Resources and Facilities	5
1. References and Learning Resources	5
2. Required Facilities and Equipment	5
F. Assessment of Course Quality	6
G. Specification Approval Data	6

A. General information about the course:

Course Identification	
1. Credit hours:	2 (2+0)
2. Course type	
a. University <input type="checkbox"/>	College <input checked="" type="checkbox"/> Department <input type="checkbox"/> Track <input type="checkbox"/> Others <input type="checkbox"/>
b. Required <input type="checkbox"/>	Elective <input checked="" type="checkbox"/>
3. Level/year at which this course is offered: 9 th level/ 5 th year	
4. Course general Description The course is designed to describe the underlying principles of pharmaceutical engineering and provides an in-depth understanding of the theory, instrumentation, and application related to pharmaceutical materials engineering that applied to design and optimization of pharmaceutical process and products development. It aware students related to the different unit operations and underlying factors involved in the development and manufacturing of various medications under a controlled environment with additional focus on quality control.	
5. Pre-requirements for this course (if any): NA	
6. Co- requirements for this course (if any): NA	
7. Course Main Objective(s) To provide concepts and understanding to students related to pharmaceutical materials and operation processes in the industry for products development. To study about the underlying factors that affecting the performance of equipment and pharmaceutical unit operations involved in the development of quality products.	

1. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1.	Traditional classroom	30	100
2.	E-learning		
3.	Hybrid <ul style="list-style-type: none"> Traditional classroom E-learning 		
4.	Distance learning		

2. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	Lectures	30
2.	Laboratory/Studio	
3.	Field	
4.	Tutorial	
5.	Others (specify) Assignments	



Total	30
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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	Describe the principles and theories of pharmaceutical engineering related to materials and unit operation involved in pharmaceutical product development.	K1	Lectures	Theoretical exams (Essay exam, MCQ, Quizzes); Presentations
2.0	Skills			
2.1	Demonstrate ability to solve/answer the problems related to industrial pharmaceutical operations.	S3	Lectures, Group discussion	Theoretical exams Presentations
3.0	Values, autonomy, and responsibility			
3.1	Demonstrate ability to present/communicate independently and professionally on related topic.	V1	Problem-based learning	Presentation, Observation card

C. Course Content

No	List of Topics	Contact Hours
1.	General introduction to pharmaceutical engineering	2
2.	Flow of fluids, Heat transfer	6
3.	Milling technology	2
4.	Pharmaceutical co-amorphous systems	2
5.	Industrial fermentation	4
6.	Pharmaceutical extrusion, Complexation	4
7.	Humidity, refrigeration, and air conditioning	4





8.	Pharmaceutical materials engineering	4
9.	Industrial hazards and plant safety	2
Total		30

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Quiz exam -I	5	05%
2.	Midterm exam	7-9	25%
3.	Quiz exam -II	12	05%
4.	Presentation	15	10%
5.	Observation card	1-15	05%
6.	Final Theory exam	17-19	50%

*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	Pharmaceutical Engineering. Sambamurty K, kar A. New Age International Publisher, 2019.
Supportive References	Practical Pharmaceutical Engineering. Prager G. John Wiley & Sons, 2018. Pharmaceutical Engineering Unit Operations Principles & Practice. Subrahmanyam CVS, Thimmasetty J, Suresh S, Devi VK, Vallabh Prakashan, 2012.
Electronic Materials	https://sdl.edu.sa/SDLPortal/en/Publishers.aspx https://www.nu.edu.sa/en/web/deanship-of-libraries-affairs/85
Other Learning Materials	https://www.elsevier.com/products/journals

2. Required Facilities and equipment

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	1. Suitable lecture room equipped with data show and internet and sufficient number of seats. 2. Suitable computer laboratory with internet and sufficient number of seats.
Technology equipment (projector, smart board, software)	Computers, data show, sound systems and internet
Other equipment (depending on the nature of the specialty)	



F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Students and the Head of the department	1. Indirect (survey) 2. Head of the department evaluates the faculty member
Effectiveness of students' assessment	Head of department, faculty, and student	1. Checking marking by the students themselves. 2. Using the help of other members in reviewing the quizzes and exams
Quality of learning resources	Students	Survey: Instructor's assessment by students
The extent to which CLOs have been achieved	Quality and development unit	Course specifications are periodically reviewed at Departmental level.
Other		

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

Assessment Methods (Direct, Indirect)

G. Specification Approval Data

COUNCIL /COMMITTEE	Pharmaceutics Department Council
REFERENCE NO.	Department meeting No. 13
DATE	25/12/2023

