



T-104  
2022

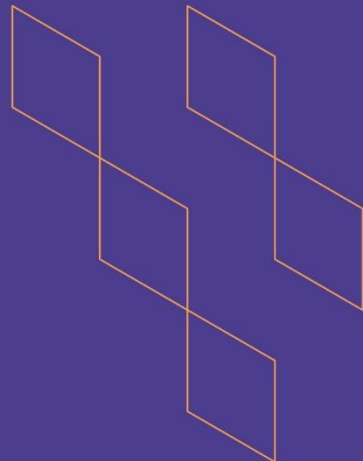
# Course Specification





T-104  
2022

## Course Specification



Course Title:	Pharmaceutics-III
Course Code:	431-PHU-3
Program:	Pharmaceutical Sciences
Department:	Pharmaceutics
College:	Pharmacy
Institution:	Najran University
Version:	1
Last Revision Date:	20/12/2023



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## A. General information about the course:

### Course Identification

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

#### 2. Course type

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

b. Required ☒ Elective ☐

3. Level/year at which this course is offered: 7<sup>th</sup> level/ 4<sup>th</sup> year

#### 4. Course general Description

The course is designed to familiarize the students with drug absorption, factor influencing bioavailability and drug disposition. It provides an in-depth understanding on impact of pharmaceutical dosage forms on drug absorption, and disposition. The course provides knowledge and understanding on strategies to improve the bioavailability and assessment methods of bioavailability for different drugs. It aware students to biopharmaceutical classification system in pharmaceutical product development and dosage form design including bioequivalence testing and overview of modified drug delivery system.

5. Pre-requirements for this course (if any): 333-PHU-3 & 334-PHU-3

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

#### 7. Course Main Objective(s)

- I. To study the biopharmaceutical principles of drug delivery and dosage form design
- II. To understand the impact of formulations/dosage forms design on drug absorption and disposition.

### 1. Teaching mode (mark all that apply)

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

### 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)	
	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 concept and understanding of biopharmaceutics and modified drug delivery systems	K1	Lectures	Theoretical exams (Essay exam, MCQ, Quizzes), Assignments
1.2	Demonstrate the knowledge of physicochemical properties of drugs influencing its biopharmaceutical performance in body	K3	Lectures	Theoretical exams, Assignments
...				
2.0	Skills			
2.1	Demonstrate ability to develop pharmaceutical formulations and its evaluation	S3	Lectures, Problem-based learning, Lab work	Theoretical exams, Practical exam, Assignments
3.0	Values, autonomy, and responsibility			
3.1	Demonstrate ability to work independently, ethically, and professionally	V1	Problem-based learning, Small group discussion	Observation card, Practical exam, Lab reports



## C. Course Content

No	List of Topics (Theory)	Contact Hours
i	Introduction to Biopharmaceutics and pharmaceutical products	2
ii	Drug absorption and main factors affecting absorption of drugs	2
iii	Physiological factors related to drug absorption	2
iv	Anatomic and physiologic considerations of GIT for oral absorption of drug, gastric emptying rate and GIT motility affecting oral drug absorption, effect of food on oral drug absorption	2
v	Pharmaceutical factors affecting biopharmaceutical performance of dosage forms	2
vi	Physicochemical properties of drugs influencing its absorption	2
vii	Drug distribution and underlying factors influencing dosage forms performance in body	6
viii	Drug elimination and underlying factors influencing dosage forms performance in body	6
ix	Concept of Bioavailability and Bioequivalence	2
x	Introduction to modified-drug release system, pharmaceutical product, and Biopharmaceutics classification system (BCS)	4
Total		30

No	List of Topics (Practical)	Contact Hours
I.	To compare and determine the influence of different type of binder on <i>in-vitro</i> dissolution profile of immediate release granules/pellets.	4
II.	To compare and determine the influence of binder concentration on <i>in-vitro</i> dissolution profile of immediate release granules/pellets.	4
III.	To compare and determine the <i>in-vitro</i> dissolution profile of immediate release and sustained release marketed tablet of same drug.	4
iv	Bioavailability and related numerical problem	4
v	Determination of Bioavailability by AUC method	4
vi	Determination of Bioavailability by area method	2
vii	Determination of Bioavailability by cut and weight method.	2
viii	Drug distribution and related problem	4
ix	Revision	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	20%
3.	Quiz exam -II	12	05%
4.	Assignments	15	05%
5.	Laboratory notebook and practical quiz	15	10%
6.	Observation card	1-15	05%
7.	Final Practical exam	16	10%
8.	Final Theory exam	17-19	40%

\*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"> <li>1. Applied Biopharmaceutics &amp; Pharmacokinetics, 7th edition, 2015, edited by Leon Shargel, Andrew B.C. Yu.</li> <li>2. Pharmaceutics - The Science of Dosage Form Design, 2nd edition, 2002, edited by Michael E. Aulton.</li> <li>3. Power point slides/word file</li> </ol>
Supportive References	<ol style="list-style-type: none"> <li>1. Remington: The Science and Practice of Pharmacy, 22nd Edition, 2013, edited by Loyd V. Allen Jr.</li> </ol>
Electronic Materials	<a href="https://sdl.edu.sa/SDLPortal/en/Publishers.aspx">https://sdl.edu.sa/SDLPortal/en/Publishers.aspx</a> <a href="http://dlaf.nu.edu.sa/en/e-libraries">http://dlaf.nu.edu.sa/en/e-libraries</a>
Other Learning Materials	Excel software for calculations



## 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 laboratories equipped with health and safety tools, 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)	1. Dissolution apparatus 2. UV-Spectrophotometer 3. Vortex mixer 4. Hot plate with magnetic stirrer 5. Water bath 6. Tablet Friablator 7. Tablet disintegrating apparatus

## 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 Council
REFERENCE NO.	Department meeting No. 13
DATE	25/12/2023

