



T-104
2022

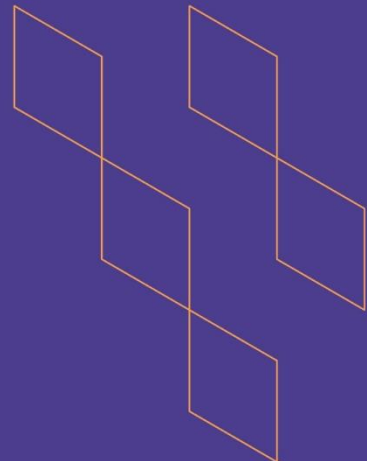
Course Specification





T-104
2022

Course Specification



Course Title:	Structural Elucidation of Chemical compounds
Course Code:	PHC 514
Program:	Pharmaceutical Sciences
Department:	Pharmaceutical chemistry
College:	Pharmacy
Institution:	Najran University
Version:	CS-V1
Last Revision Date:	20-12-2023



Table of Contents:

Content	Page
A. General Information about the course	3
Teaching mode (mark all that apply)	3
2. Contact Hours (based on the academic semester)	
Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods	5
Course Content	5
D. Student Assessment Activities	6
E. Learning Resources and Facilities	8
1. References and Learning Resources	8
2. Required Facilities and Equipment	8
F. Assessment of Course Quality	8
G. Specification Approval Data	9

A. General information about the course:

Course Identification	
1. Credit hours:	2 hours (2)
2. Course type	
a.	University <input type="checkbox"/> College <input 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:	8 th level / fifth year
4. Course general Description	
This course focuses on describing and explaining theoretical background and principles that are used for structural elucidation of chemical compounds using instrumental analysis of substances such as UV, IR, Mass, H1-NMR and C13 spectroscopies as well as their results interpretation	
5. Pre-requirements for this course (if any): None	
6. Co- requirements for this course (if any): None	
7. Course Main Objective(s)	
1- Explain the fundamentals of the quantitative instrumental analysis of substances and their resulted charts 2- Interpret the different types of spectroscopic analysis professionally	

B. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1.	Traditional classroom	30	100
2.	E-learning	0	0
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) homeworks and assignments	40
	Total	70



C. 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 fundamentals of the quantitative instrumental analysis of substances and their resulted charts	K3	Lectures	Theoretical exams Assignment
1.2				
...				
2.0	Skills			
2.1	Demonstrate calculation, and characterization skills using advanced techniques, tools and instruments as well as results interpretation	S3	Lectures, Problems Solving	Theoretical exams
2.2	Communicate clearly and effectively with professionals, administrative staff and supportive personnel	S5	Seminars	Assignment
3.0	Values, autonomy, and responsibility			
3.1	Work independently and professionally with independent thinking	V4	Seminars	Reports
3.2	Demonstrate accountability and confidence	V4	Practical work	Observation card
...				

D. Course Content

No	List of Topics	Contact Hours
----	----------------	---------------





1.	<u>Mass spectrometry (MS)</u> a. Theory of MS b. Mass interpretation of MS spectrum and structural elucidation c. Mass fragmentation pattern	6
2.	<u>UV-VIS spectroscopy (FES)</u> 1. Absorption of UV-VIS radiations 2. Types of electronic transitions and their wavelengths 3. Factors affecting ultraviolet absorption.	4
3	<u>IR spectrscopy</u> 1. Absorption of IR radiations 2. Types of vibrations and their wavelengths 3. Factors affecting IR absorption. 4. Instrumentation of IR spectrophotometers 5. Application of IR in determination of functional groups	6
4	<u>H1-NMR spectrscopy</u> a- Theory b- H1-NMR of common functional group and common groups c- H1-NMR interpretation d- Examples	6
5	<u>C13-NMR spectroscopy</u> a- Theory b- C13-NMR of common functional group c- C13-NMR interpretation d- Examples	5
6	<u>Data interpretation and critical thinking</u>	3
7		
Total		30

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Quiz #1	6	10%
2.	Midterm exam	9	20%
3.	Individual assignments	12	10%
4.	Observation card	12	5%
5.	Reports	2-13	5%



No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
7.	Final exam	16	50%
8.			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. Vogel's Quantitative chemical Analysis, 7th Edition, 2009 2. Analytical Chemistry by Christian, G.D. 7th Edition, John Wiley and Sons: New York, 2014.
Supportive References	<ol style="list-style-type: none"> 1. Analytical Chemistry by Christian, G.D. 7th Edition, John Wiley and Sons: New York, 2014 2. Power point slides
Electronic Materials	www.dlaf.nu.edu.sa
Other Learning Materials	Excel software for calculations and drawing

2. Required Facilities and equipment

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	Suitable lecture room equipped with data show and internet and sufficient number of seats. 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)	

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Head of departments and students	Indirect Questionnaires (indirect)
Effectiveness of students assessment	Faculty members and students	Indirect Questionnaires (indirect)
Quality of learning resources	Students	Questionnaires (Indirect)

Assessment Areas/Issues	Assessor	Assessment Methods
The extent to which CLOs have been achieved	Student peer reviewer	Direct Indirect
Other		

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

Assessment Methods (Direct, Indirect)

G. Specification Approval Data

COUNCIL /COMMITTEE	Pharmaceutical Chemistry Department Council
REFERENCE NO.	Council No.
DATE	20-12-2023