

Sohag University

Faculty of Pharmacy

Department of Pharmaceutical Chemistry.

Course Specifications

[Pharmaceutical Organic Chemistry 4]

1- Basic Information

Code: <i>PC-224</i>	Title: Pharmaceutical Organic Chemistry 4	Level: 2 nd year, 2 nd semester
Credit hours:	Lectures: 2/w	Practical: 2/w
		Total: 4/w

<p>2- Aims of Course</p>	<p>1- To provide the fundamental concepts of IR, ^1H, ^{13}C-NMR and MS; their techniques and application in structure determination.</p> <p>2- Studying different classes of heterocyclic compounds which have many of effective materials in the pharmaceutical products.</p>
<p>3- Intended Learning Outcomes of Course (ILOs)</p>	
<p>a- Knowledge and Understanding:</p>	<p>a1- Define basic principles in chemistry of heterocyclic compounds as important components of natural products and their applications.</p> <p>a2- Describe the appropriate knowledge concerning the reactivity and chemical behavior of heterocycles and to understand the principles of spectroscopic techniques</p>
<p>b- Intellectual Skills:</p>	<p>b1- Suggest and design synthetic plans for biologically active compounds.</p> <p>b2- Suggest and compare the appropriate methods of identification and purification of synthetic compounds.</p>
<p>c- Professional and practical Skills:</p>	<p>c1- Learning safety procedure for dealing with organic chemicals and be aware of the rules of good laboratory practice (GLP).</p> <p>c2- Learning how to use the glassware and instruments.</p> <p>c3- Synthesize model drugs. Collect chemical data from the proper resources. Detect and quantify the purity of synthetic compounds</p>
<p>d- General and Transferable Skills:</p>	<p>d1- Knowledge about heterocyclic compounds which cover more than 50 of effective materials in the pharmaceutical products.</p> <p>d2- Team working skills through collaborative projects and to give seminar to small group of students.</p> <p>d3- Time management effectively, and reporting data.</p> <p>d4- social and cultural activities through; problem solving and decision making abilities</p>

4- Course Contents

Topic	No. of hours	lectures	Tutorial/ Practical
1- Common and systematic nomenclature/ distillation	3	1.5	
2- Nomenclature of fused system/ distillation + tutorial	3	1.5	
3- Six-membered heterocycle; Pyridine chemistry and drugs containing pyridine nucleus, their uses and synthesis/ synthesis of urea derivatives	3	1.5	
4- Chemistry of quinoline and isoquinoline/ synthesis of tribromoaniline	1.5	0.75	
5- Five-membered heterocycle; furan, thiophene, pyrrole/ Synthesis of chalcones	2	1	
6- Chemistry of diazoles, purine/ synthesis of barbituric acid	1.5	0.75	
7- Infrared Spectroscopy (IR)/ IR tutorial	4	2	
8- Nuclear Magnetic Resonance (NMR) Spectroscopy/ NMR tutorial	7	3.5	
9- Mass Spectroscopy (MS)/ Tutorial for structural elucidation by spectroscopy	3	1.5	
Total hours	28	14	

N.B. each class containing selected examples of drugs in market and their uses

5- Teaching and Learning Methods

- 4.1- Lectures
- 4.2- Practical training (Laboratory)
- 4.3- Tutorials and class activity
- 4.4- Discussion and net research

6- Teaching and Learning Methods for disables

- Extra office hours
- Tutorials

7- Students assessment

a- Student Assessment methods

- 6.1- Final written exam to assess ILOs: a,b
- 6.2- Oral exam to assess ILOs: a,b and d
- 6.3- Practical exam to assess ILOs: a,b,c and d
- 6.4- Mid-Term exam to follow up and to assess ILOs: a,b

b- Students Assessment Schedule

No.	Assessment	week
1.	Mid-Term Exam	8 th week
2.	Practical Exam	14 th week
3.	Oral Exam	At the end of semester
4.	Final written Exam	At the end of semester

c- Weighting of assessment

No.	Exam.	Mark	%
1.	Mid-Term Exam	15	10%
2.	Practical Exam	30	20%
3.	Oral Exam	15	10%
4.	Final written Exam	90	60%
	Total	150	100%

8- List of references

- a- a-Course Notes
 - notes on the chemistry of Heterocyclic compounds and spectroscopy
 - Vol.\2
- b- Essential Books (Text Books)
 - 1- T.L Gilchrist, Heterocyclic chemistry, 2 nd edn., Longman/Niley, Harlow/chichester,1992
 - 2- R. M. silverstein, F. X. Webster, systematic identification of organic compounds, 6 th ed., John Wiley and sons, New York, 1998.
- c- Recommended Books
 - J.A. Joule and K. Mills, Heterocyclic chemistry, 4 th edn., Blackwell science oxford, 2000 .
- d- Periodicals, Web Sites,..... etc
 - Journal of organic chemistry
 - Tetrahedron letter
 - Online chemical resources