

Course Specifications

Subject: Medicinal chemistry I

Subject Code: 801

University: Beni-Suef

Faculty: Pharmacy

Program in which the course is given: Bachelor of Pharmaceutical Sciences

Department responsible for offering the course: Department of pharmaceutical medicinal chemistry

Department responsible for teaching the course: Department of pharmaceutical medicinal chemistry

Academic year: Fourth year students- 1st semester

A- Basic information

Title: Medicinal chemistry I

Code: 801

Credit hours (# of credit hours/week):

Lecture (2) hour + Practical (2) hour = Total (6) hour

Course Coordinators: Dr/ Noha Hani Amin

B- Professional information

1. Overall Aim of the Course

The aim of this course is to introduce students to the basic concepts of drug design, drug discovery drug metabolism the fundamental principles that underpin modern medicinal chemistry of steroidal and peptide hormones, oral hypoglycemics and diuretics.

2. Intended Learning Outcomes of the course (ILOs)

On successful completion of this course, students will be able to apply knowledge and understanding of the theoretical and practical sections of this course, to achieve higher competencies, as described under the following categories of skills:

a. Knowledge and understanding

1. Demonstrate comprehensive knowledge of the principles behind chemical identification and lead compound development.
2. Demonstrate a detailed clear knowledge of the principle bonding interactions in drug receptor level, the basic concepts of structure activity relationships (SAR).
3. Demonstrate clear understanding of the physiochemical parameters of the drug that affect drug-receptor interactions.
4. Understanding the concepts of drug latention, bioisosterism, soft drugs and their biological activities.
5. Explain the utility of prodrugs and their mechanisms of activation.
6. Demonstrate the general pathways of drug metabolism.
7. Demonstrate appropriate knowledge of the role of computer in drug design and basic concepts and principle used.
8. Describe the synthesis, chemical properties, mode of action, assay, metabolism, adverse side effects and structure-activity relationship of the drugs related to the topics covered by this course.
9. Explain the relationship between molecular structure and its biological action particularly in drugs related to the topics covered by this course.

b. Intellectual Skills

1. Analyze the contributions of organic functional groups to receptor binding of drug molecules and predict their effects on activity/potency.
2. Predict metabolism, and pharmacological activity/potency of individual drugs that their names were not covered by the course contents based on the contribution of their functional groups to their structures.
3. Solve physicochemical problems and using the outcomes to assist in drug design.
4. Apply chemical knowledge to the development and analysis of drugs.

c. Professional and Practical Skills

1. Carry out appropriate experiments to determine the purity of raw materials.
2. Analyze quantitatively drugs and their physicochemical properties.
3. Determine some physicochemical parameters of drugs.

d. General and Transferable Skills

Communication:

- Demonstrate competence in oral, written communication and data analysis and interpretation.

Group working:

- Demonstrate the ability to work effectively as part of a team.
- Set realistic plan work to meet target within deadlines.

3. Course Contents

Topics	No. of Hours	Lecture
Introduction to medicinal chemistry and drug design	4 Hrs	
Hormones.	6 Hrs	
Drug metabolism	4 Hrs	
Diuretics	3 Hrs	
Oral hypoglycemics	3 Hrs	
Total	20 Hrs	
Tutorial /Practical		
Limit test of cl (Ep and Bp)-)	2Hrs	
limit test of SO ₄ (Ep and BP , Limit test for iron.	2Hrs	
Limit test of heavy metals, pb , Ca and Mg	2Hrs	
Tests of purity of phosphoric acid and citric acid	2Hrs	
Tests of purity of NaCl, glycerol,	2Hrs	
Quantitative determination of : Progesteron Norethisterone L-Thyroxin	2Hrs	
Quantitative determination of : Metformin.HCl Glibneclamide Frusemide	2Hrs	
Quantitative determination of : Spironolactone Haemodialysis solution	2Hrs	
LogP and pka determination.	2Hrs	
Total	18Hrs	

4. Teaching and learning Methods

1. Lectures.
2. Practical laboratory sections.
3. Problem solving and working in groups.

5. Student Assessment Methods

1. Laboratory work (practical sections activities and other assignments delivered as reports and oral presentations) and quiz to assess the theoretical aspects of experimental work.
2. Practical examination to assess gained practical skills.
3. Written exam to assess knowledge and understanding of theoretical information as well as higher intellectual skills.
4. Oral examination to assess acquired knowledge and higher intellectual skills.

Weighting of Assessment

Type of Assessment	Marks	Weight (%)
Semester work	5	3%
Sheet exam	5	3%
Practical exam	50	34%
Final written exam	80	54%
Final oral exam	10	6%
Total		100%

6-List of References

6.1 Text Books:

- i. Foye, W.O.; "Principles of Medicinal Chemistry", 4th edition, Lippincott Williams & Wilkins, U.S.A.
- ii. Patrick, G. L.; "An introduction to medicinal Chemistry", 3rd Edition, Oxford University Press, 2005.
- iii. Abraham, D.J.; "Burger's Medicinal Chemistry", 6th edition, John Wiley & sons, New Jersey, 2003.
- iv. Delgado, J.N. and Remers, W.A.; "Wilson and Gisvold's Textbook of Organic Medicinal and Pharmaceutical Chemistry", 11th edition, Lippincott Williams & Wilkins, U.S.A., 2004.

6.2. General References:

- i. Different pharmacopeias (British, Egyptian, USP).
- ii. Merck Index.

All these textbooks are available in the library of the faculty of Pharmacy-Beni-SeuifUniversity.

7-Facilities required for teaching and learning

Black and white boards, white screen and overhead projectors, computer aided with data show apparatus and full equipped laboratory.

Head of department:.....

Date:.....

ضمان الجودة- كلية الصيدلة-جامعة بني سويف