



## Reference standard for Master of Pharmaceutical Science (Pharmaceutical Medicinal Chemistry)

### Introduction:

This programme include studies of fundamental courses which are a must for all students affiliated to different departments. In addition, the department has to assign special courses that adapted to support the core specialization. In fulfillment of the requirements of the degree, the candidate must perform an experimental part relevant to the project of research of the thesis and write a dissertation that must be refereed by a scientific council.

Passing courses exams and defending thesis are the requirements of fulfillments of obtaining the degree.

### Specifications of graduate program Master of Pharmaceutical Science (Pharmaceutical Medicinal Chemistry)

By the end of the M. Pharm. Sci. programme, the graduate should be able to:

1. Use effectively the principles of scientific research in dealing with the problems of drug design and synthesis
2. Design experiments to solve problems of drug molecules synthesis.
3. Understand the molecular bases pharmacological interactions of the molecules
4. Apply the scientific methods in the evaluation and comparison of results
5. Accept scientific criticism
6. Commit to scientific honesty

### Program Intended Learning Outcomes (ILOs)

#### a- Knowledge and Understanding:

By the end of the M. Pharm. Sci. programme, the graduate should be able to:

- a1- Be aware of the basics of sciences related to the field of dug design and synthesis.
- a2- Define basics of good laboratory practice (GLP) in chemistry labs.
- a3- Be aware of concepts and basics of laboratory safety and waste disposal.
- a4- Be aware of basic research ethics.

## **b- Intellectual Skills**

By the end of the M. Pharm. Sci. programme, the graduate should be able to:

- b1- Design a systematic research plan to study a Medicinal Chemistry project
- b2- Suggest the available approaches to solve drug design and synthesis problems
- b3- Evaluate risk factors and indicators of success of a suggested study in the field of the synthesis of drug molecules.
- B4- Self-evaluation of own research
- B5- Support decisions with documents and references.
- B6- Interpret the results and data

## **c- Professional and Practical Skills**

By the end of the M. Pharm. Sci. programme, the graduate should be able to:

- c1- Master practical research procedures according to the good laboratory practice (GLP) basics in chemistry labs.
- c2- Write and present research data and reports efficiently.
- c3- Test equipments and methods used in chemistry research.
- c4- Perform experiments safely and environmentally hazardless.

## **d- General and Transferable Skills**

By the end of the M. Pharm. Sci. programme, the graduate should be able to:

- d1- Use efficiently information technology software in the field of the computer-aided drug design.
- d2- Communicate efficiently with colleagues and coworkers.
- d3- Work in a team and offer expertise and advice to others.
- d4- Improve his knowledge continuously through self-learning.
- d5- Participate in scientific seminars and conferences
- d6- Manage time efficiently

# **Programme Specification**

## **A- Basic Information**

1- Programme Title: Master Pharm. Sci (Pharm. Med Chem)...

2- Programme Type: Single  Double  Multiple

3- Department (s):

I- Faculty of pharmacy Departments:

- a) Medicinal Chemistry (main department for the programme and teaching general and elective courses)
- b) Pharmaceutical Analytical Chemistry (teaching general and elective courses)
- c) Pharmaceutical Organic Chemistry (teaching general courses)
- d) Pharmaceutics (teaching general courses)...

II- Faculty of Medicine Departments

- a) Pharmacology Department (participating in teaching elective course)
- b) Microbiology Department (participating in teaching elective course)

### III- Faculty of Science Departments

- a) Mathematics Department (teaching general courses)
- b) Chemistry Department (teaching general courses)

4- Coordinator: Dr Hamdy M. Abdel-Rahman

5- External Evaluator(s): Prof. Dr. Ahmed Abdel-Aziz

6- Last date of programme specifications approval: 2010

## **B- Professional Information**

### **2- Programme Aims**

By the end of the M. Pharm. Sci. programme, the graduate should be able to:

1. Use effectively the principles of Scientific research in dealing with the problems of drug design and synthesis
2. Design experiments to solve problems of drug molecules synthesis.
3. Understand the pharmacological interactions of the molecules
4. Apply the scientific methods in the evaluation and comparison of results
5. Accept scientific criticism
6. Commit to scientific honesty

### **2- Intended Learning Outcomes (ILOs)**

#### **a- Knowledge and Understanding:**

By the end of the M. Pharm. Sci. programme, the graduate should be able to:

- a1- Be aware of the basics of sciences related to the field of drug design and synthesis.
- a2- Define basics of good laboratory practice (GLP) in chemistry labs.
- a3- Be aware of concepts and basics of laboratory safety and waste disposal.
- a4- Be aware of basic research ethics.

#### **b- Intellectual Skills**

By the end of the M. Pharm. Sci. programme, the graduate should be able to:

- b1- Design a systematic research plan to study a Medicinal Chemistry project
- b2- Suggest the available approaches to solve drug design and synthesis problems
- b3- Evaluate risk factors and indicators of success of a suggested study in the field of the synthesis of drug molecules.
- B4- Self-evaluation of own research
- B5- Support decisions with documents and references.
- B6- Interpret the results and data

#### **c- Professional and Practical Skills**

By the end of the M. Pharm. Sci. programme, the graduate should be able to:

- c1- Master practical research procedures according to the good laboratory practice (GLP) basics in chemistry labs.
- c2- Write and present research data and reports efficiently.
- c3- Test equipments and methods used in chemistry research.
- c4- Perform experiments safely and environmentally hazardless.

**d- General and Transferable Skills**

By the end of the M. Pharm. Sci. programme, the graduate should be able to:

- d1- Use efficiently information technology software in the field of the computer-aided drug design.
- d2- Communicate efficiently with colleagues and coworkers.
- d3- Work in a team and offer expertise and advice to others.
- d4- Improve his knowledge continuously through self-learning.
- d5- Participate in scientific seminars and conferences
- d6- Manage time efficiently

**3- Academic Standards**

**3a External References for Standards (Benchmarks)**

Faculty of Pharmacy –Assiut University Reference Standards were adopted

**3b Comparison of Provision to External References:**

National Authority for Quality Assurance and Accreditation (NAQAA)

**4- Curriculum Structure and Contents**

4.a- Programme duration...3-5 years.....

4.b- Programme structure

4.b.i- No. of hours per week: Lectures  Lab./Exercise  total

4.b.ii- No. of credit hours: Compulsory  Elective  Optional

4.b.iii- No. of credit hours of basic sciences courses: No.  %

4.b.iv- No. of credit hours of courses of social sciences and humanities: No. ---

4.b.v- No. of credit hours of specialized courses: No.  %

4.b.vi- No. of credit hours of other courses: No. %

4.b.vii Practical/Field Training: 24 h

4.b.viii- Programme Levels (in credit-hours system):

**5- Programme Courses**

5.1- Level/Year of Programme...1..... Semester....

a. Compulsory

Code No.	Course Title	No. of Units	No. of hours /week			Programme ILOs Covered (By No.)
			Lect.	Lab.	Exer.	
1	Physical Chemistry	2	2	-----	-----	a1, b2, b5, b6, c2, d3, d4, d5
2	Statistics	2	2	-----	-----	a1, a4, b3, b4, b5, b6, c2, d2, d3
3	Computer Sciences	4	4	-----	-----	a1, b2, b3, b5, c2, d1, d3, d4

4	Laboratory Safety and Waste Disposal	2	2	-----	-----	a2, a3, b3,c1, c4, d3
5	Molecular Biology	4	4	-----	-----	a1, b2, b5, c2, d1
6	Instrumental analysis	4	4	-----	-----	a1, b2, b4, c1, d2, d6
Total		18	18			

b- Elective – number required

5.2- Level/Year of Programme...2..... Semester...

Code No.	Course Title	No. of Units	No. of hours /week			Programme ILOs Covered (By No.)
			Lect.	Lab.	Exer.	
1	Advanced Medicinal Chemistry-A	4	4	-----	-----	a1, b1, b2, b6, c2, d1, d4, d5, d6
2	Introduction to drug synthesis	3	3	-----	-----	a1, b2,b3, d6, c2, d1, d4, d5, d6
3	Pharmaceutical Analysis	2	2	-----	-----	a1, a2, b1, b2, b3
4	Practical course of fundamentals of organic reactions	2	-----	2		a1, a2, a3, a4, c4, b2, b3, b4, b5, b6, c1, c2, c3, c4, d1, d2, d3, d4, d6
Total		11	9	2		

c- Optional – No optional courses

## 6- Programme Admission Requirements

- 1) Holding a bachelor's degree in pharmaceutical sciences from a university in the Arab Republic of Egypt or an equivalent degree from another scientific institute recognized by the Supreme Council of Universities.  
Having a grade of “good” at least in the bachelor's degree, and “very good” at least in the programme specialty.
- 2) Submitting a registration form to the Department Board in the beginning of the academic year (on September), then to the Faculty Board after department’s approval.
- 3) Official approval of the student’s work organization on a full-time enrollment in this programme (for those not working in research centers or Universities)

## 7- Regulations for Progression and Programme Completion

First Year/Level/Semester

7.1. A minimum 60 % of the maximum grade is the passing grade for any course

7.2. A student fails in any course if attended less than 75% of the hours of the course

Second Year/Level/Semester

A minimum 60 % of the maximum grade is the passing grade for any course

1. A student must perform a research project approved by the department board

2. A student must present at least three seminars during his study including the one for thesis defense
3. A student must prepare and submit a research paper for a journal or a scientific conference.
4. After passing all courses, a student can submit a thesis to a discussion committee and discussed in public.

#### 8- Methods for evaluation of the programme students

Method	ILOs
Written exams	Knowledge and understanding and intellectual skills
Seminars	Intellectual, general and transferable skills
Published scientific research	Intellectual, professional and practical skills
Public discussion of thesis	Intellectual, professional, practical, general and transferable skills

#### 9- Evaluation of Programme Intended Learning Outcomes

Evaluator	Tool	Sample
1- Senior students	Periodic seminars	
2- Alumni	Questionnaire	
3- Stakeholders ( Employers)		
4-External Evaluator(s) (External Examiner(s))	Thesis evaluation Discussion Report	
5- Other		

**Programme Coordinator:** Dr. Hamdy M. Abdel-Rahman

**Head of Department:** Professor Dr. Farghaly A. Omar

**Date 10/10/2010**

# Course Specification

## Master of Pharmaceutical Science(Pharm. Med. Chem.) Introduction to Drug Synthesis

### 1-Basic Information

**Title: Introduction to Drug Synthesis**

**Code:**

**Level : M. of Pharm. Sci. (Pharm. Med. Chem.) year 2**

**Department: Medicinal Chemistry**

**Unit: 2 units.**

**Lecture: 2 hr/week**

**Tutorial / Practical:-----**

**Total: 2hr/week**

### 2- Aims of Course

Knowledge acquired after studying the titled course might add more detailed and deep information to postgraduate students (master degree) in the field of drug synthesis and tools supporting this area in the domain of medicinal chemistry. Mechanism of organic reactions, structure elucidation in organic chemistry using  $^1\text{H}$  &  $^{13}\text{C}$ -NMR technique (2D NMR), nomenclature of organic compounds, stereochemistry and design of organic synthesis are the main topics to be handled. This will enable students to apply the theoretical knowledge gained in solving their research problems.

### 3- Intended Learning Outcomes of Course(ILOs)

#### **a- Knowledge and Understanding:**

a1- Be aware of the basics of sciences related to the field of drug design and synthesis

#### **b- Intellectual Skills:**

b2- Suggest the available approaches to solve drug design and synthesis problems

b3-Evaluate risk factors and indicators of success of a suggested study in the field of the synthesis of drug molecules.

b6- Interpret the results and data

#### **c- Professional and practical Skills:**

c2-Write and present research data and reports efficiently.

#### **d- General and Transferable Skills:**

d1- Use efficiently information technology software in the field of the computer-aided drug design.

d4-Improve his knowledge continuously through self-learning.

d5- Participate in scientific seminars and conferences

d6- Manage time efficiently.

### 4-Course Contents

Topic	No. of hours	Lecture	Tutorial / Practical
Special topics related to thesis	6	6	-----
Structural elucidation	5	5	-----

Nomenclature	3	3	-----
Stereochemistry	8	8	-----
Mechanism of organic reactions	8	8	-----
Design of organic synthesis	6	6	-----

## **5- Teaching and Learning Methods**

5.1-Lectures

5.2- Self learning

## **6- Teaching and learning methods for disables**

## **7- Student Assessment**

### **a- Student Assessment methods**

7.1-Written exam to assess ILOs: a1,b2,b3,b6,c2,d1,d4,d5,d6

### **b- Student Assessment Schedule**

No.	Assessment	week
1.	Written exam.	32 <sup>th</sup>

### **c- Weighting of Assessments**

No.	Examination	Mark	%
1.	Mid- Term Examination	-----	----
2.	Final-Term Examination	100	100
3.	Oral Examination	----	----
4.	Practical Examination	-----	----
5.	Semester Work	-----	-----
6.	Other types of assessment	-----	----
	<u>Total</u>	100	100%

## **7- List of References**

### **a- Essential Books (Text Books)**

- Ernest L. Eliel, Samuel H. Wilen, Michael P. Doyle " Basic Organic Stereochemistry", 2001, Wiley Interscience, New York.
- Jerry March" Advanced Organic Chemistry, Reactions, Mechanisms and Structures, 2000, 4<sup>th</sup> edition, McGraw-Hill, International book Company, London, Paris, Madrid.
- Robert M. Silverstein, Francis X. Webster "Spectrometric Identification of Organic Compounds " 1998, 6<sup>th</sup> edition, USA.



## **c-Recommended Books**

a) Stuart Warren "Organic Synthesis The Disconnection Approach", 1985, John Wiley & Sons, New York, Toronto.

b) Michael B. Smith "Organic Synthesis" 1994, international edition, McGraw-Hill, INC, New York, Montreal, San Francisco, Toronto, London

### **d- Periodicals, Web Sites, .... etc**

Tetrahedron ( Review articles)

<http://www.sciencedirect.com.html>

<http://eulc.edu.eg/eulc/libraries/start.aspx>

**Course Coordinator: Dr. Nawal A. El-Koussi**

**Head of Department: Prof. Dr. Farghaly A. Omar**

**Program Director: Dr. Hamdy M. Abdel Rahman**

**Date: / /**

**University** Assiut

**Course Title** Introduction to drug synthesis

**Faculty** Pharmacy.

**Course Cod.**

**Department** Med. Chem..

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## Matrix of the Intended Learning Outcomes (ILOs) of the Course

<b>Topic</b>	<b>Week</b>	<b>Knowledge and Understanding</b>	<b>Intellectual Skills</b>	<b>Professional and Practical Skills</b>	<b>General and Transferable Skills</b>
Special topics related to thesis	1 <sup>st</sup> - 3 <sup>rd</sup>	a1	b2, b3	c 2	d1,d4,d5,d6
Structure elucidation	4 <sup>th</sup> - 5 <sup>th</sup>	a1	b2, b6	c 2	d1,d4
Nomenclature	6 <sup>th</sup> - 7 <sup>th</sup>	a1	b6	c 2	d1,d4
Stereochemistry	8 <sup>th</sup> - 11 <sup>th</sup>	a1	b2, b3, b6	c 2	d1,d4
Mechanism of organic reactions	12 <sup>th</sup> - 15 <sup>th</sup>	a1	b2, b6	c 2	d1,d4
Design of organic synthesis	16 <sup>th</sup> - 18 <sup>th</sup>	a1	b2, b3	c 2	d1,d4,d5,d6

**Course Coordinator :**  
**Dr. Nawal A. El koussi**

**Head of Department:**  
**Prof. Dr. Farghaly A. Omar**

**Date: 10 / 10 / 2010**

# Course Specification

Master of Pharmaceutical Science (Pharm. Med. Chem.)

Practical Course of Fundamentals Organic Reactions

## 1-Basic Information

**Title: Practical Course of Fundamentals Organic Reactions**

**Code:.....**

**Level : M. Pharm. Sci. (Pharm. Med. Chem.) year 2**

**Department: Medicinal Chemistry**

**Unit: 1 unit**

**Lecture: ..... Tutorial / Practical: 2 hr/week Total: 2 hr/week**

## 2- Aims of Course

By the end of studying the titled course, the students should be able to perform the following laboratory techniques:

- 1- Assembling apparatus for experiments.
- 2- Solvents purification.
- 3-Separation techniques (chromatography, crystallization, distillation, extraction ... etc).
- 4- Characterization of reaction products.

## 3- Intended Learning Outcomes of Course(ILOs)

### **a- Knowledge and Understanding:**

- a1- Be aware of the basics of sciences related to the field of drug design and synthesis
- a2- Define basics of good laboratory practice (GLP) in chemistry labs.
- a3- Be aware of concepts and basics of laboratory safety and waste disposal.
- a4- Be aware of basic research ethics.

### **b- Intellectual Skills:**

- b2- Suggest the available approaches to solve drug design and synthesis problems
- b3-Evaluate risk factors and indicators of success of a suggested study in the field of the synthesis of drug molecules.
- b4- Self-evaluation of own research.
- b5- Support decisions with documents and references.
- b6- Interpret the results and data.

### **c- Professional and practical Skills:**

- c1- Master practical research procedures according to the good laboratory practice (GLP) basics in chemistry labs.
- c2-Write and present research data and reports efficiently.
- c3- Test equipments and methods used in chemistry research.
- c4- Perform experiments safely and environmentally hazardless.

### **d- General and Transferable Skills:**

- d1- Use efficiently information technology software in the field of the computer-aided drug design.
- d2- Communicate efficiently with colleagues and coworkers.
- d3- Work in a team and offer expertise and advice to others.
- d4-Improve his knowledge continuously through self-learning.
- d6- Manage time efficiently.

#### **4-Course Contents**

Topic	No. of hours	Lecture	Tutorial / Practical
Assembling apparatus for experiments	6	---	6
Solvents purification	6	---	6
Separation techniques	6	---	6
Characterization of the reaction products	6	---	6

#### **5- Teaching and Learning Methods**

- 5.1-Laboratory practice.
- 5.2- Report writing.
- 5.3- Presentation of results

#### **6- Teaching and learning methods for disables**

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#### **7- Student Assessment**

##### **a- Student Assessment methods**

- 7.1-Lab. experience to assess ILOs:  
a1,a2,a3,a4,b2,b3,b4,b5,b6,c1,c2,c3,c4,d1,d2,d3,d4,d6.
- 7.2- Report to assess ILOs: a2,a3,b3,b4,b5,b6,c1,c2,c4, d4,d6

##### **b- Student Assessment Schedule**

No.	Assessment	week
1.	Lab. experiments	1-24 <sup>th</sup>
2.	Report	32 <sup>th</sup>

##### **c- Weighting of Assessments**

No.	Examination	Mark	%
1.	Mid- Term Examination	---	---
2.	Final-Term Examination	---	---
3.	Oral Examination	---	---
4.	Practical Examination	50	100
5.	Semester Work	---	---
6.	Other types of assessment	---	----
	<u>Total</u>	50	100%

#### **7- List of References**

##### **a- Essential Books (Text Books)**

a) Vogel's "Textbook of Practical Organic Chemistry" 2006 fifth edition, Pearson Education, London.

**c-Recommended Books**

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**d- Periodicals, Web Sites, .... etc**

<http://www.sciencedirect.com.html>

<http://eulc.edu.eg/eulc/libraries/start.aspx>

Course Coordinator:

Dr. Nawal A. El-Koussi

Head of Department:

Prof. Dr. Farghaly A. Omar

Program Director

Dr. Hamdy Abdel-Rahman

Date: 10 /10 /2010

**University** Assiut. **Course Title** Practical course of  
Fundamentals Organic  
Reactions  
**Faculty** Pharmacy **Course Cod.**  
**Department** Med. Chem.

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## Matrix of the Intended Learning Outcomes (ILOs) of the Course

<b>Topic</b>	<b>Week</b>	<b>Knowledge and Understanding</b>	<b>Intellectual Skills</b>	<b>Professional and Practical Skills</b>	<b>General and Transferable Skills</b>
Assembling apparatus for experiments	1 <sup>st</sup> -6 <sup>th</sup>	a2	b4	c 1,c3,c4	d2,d3,d4,d6
Solvents purification	7 <sup>th</sup> -12 <sup>th</sup>	a1,a2,a3	b3	c 1	d2,d3,d4,d6
Separation techniques	13 <sup>th</sup> -18 <sup>th</sup>	a1,a2,a3	b2, b6	c 1, c4	d2,d3,d4
Characterization of the reactions	19 <sup>th</sup> -24 <sup>th</sup>	a1,a4	b2, b4,b5,b6	c 1,c2	d1,d2,d3,d4

Course Coordinator :  
Dr. Nawal A. El Koussi

Head of Department:  
Prof. Dr. Farghaly Omar

Date:10 /10/ 2010

# Course Specification

*Master of Pharmaceutical Science (Pharm. Med. Chem.)  
Advanced Medicinal Chemistry-A*

## 1-Basic Information

**Title: Advanced Med. Chem. A**

**Code:**

**Level : M. Pharm. Sci. (Pharm. Med. Chem.) year 2**

**Department: Medicinal Chemistry**

**Unit: 3 units**

**Lecture: 2hr/week Tutorial: 1hr/week Practical: -- Total: 3hr/week**

## 2- Aims of Course:

The title course builds on the undergraduate Medicinal Chemistry course delivered through four semesters of total contact hours: 110 hrs and 60 laboratory classes (3hr each). Knowledge acquired after studying the titled course might add more detailed and deep information in the field of drug design and tools supporting this area of Medicinal Chemistry. Drug metabolism, isosterism, combinatorial Chemistry, computer aided lead design and mathematical approaches (QSAR models) are the main topics to be handled. Attention was drawn to the theme of project assigned to the student. Lectures given by other departments aimed to widen the angle of viewing the problem at hand and get more close to interface specialization reviewed in the plan of work.

An up to date survey of literature about the research problem is to be presented by the student and reviewed for evaluation by the Faculty.

## 3- Intended Learning Outcomes (ILOs) of the course

After studying the titled course the student must acquire the following skills.

### **a- Knowledge and Understanding:**

a1- Be aware of the basics of sciences related to the field of drug design and synthesis.

### **b- Intellectual Skills:**

b1- Design a systematic research plan to study a Medicinal Chemistry project.

b2- Suggest the available approaches to solve drug design and synthesis problems.

b6- Interpret the results and data

### **c- Professional and practical Skills:**

c2- Write and present research data and reports efficiently.

### **d- General and Transferable Skills:**

d1- Use efficiently information technology software in the field of the computer-aided drug design.

d4- Improve his knowledge continuously through self-learning.

d5- Participate in scientific seminars and conferences

d6- Manage time efficiently.

## **4- Course Contents**

Topic	No. of hours	Lecture	Tutorial / Practical
Drug metabolism	6	6	----
Isosterism & bioisosterism	4	4	----
Special topics related to thesis	5	5	----
Essay subject	6	---	6
Computer aided lead design	5	5	----
Combinatorial Chemistry in drug development	6	6	----
Mathematical approaches (QSAR)	7	7	----
Biotechnology in drug development	4	4	----
Physicochemical properties and drug action	5	5	----

## **5- Teaching and Learning Methods**

5.1- Lectures

5.2- Tutorial

5.3- Self learning

## **6- Teaching and learning methods for disables**

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.....  
.....

## **7- Student Assessment**

### **a- Student Assessment methods**

7.1- Written exam. to assess: a1, b1, b2, b6, d6

7.2- Oral presentation & discussion of the Essay  
to assess: c2, d4, d5, d6

7.3- Evaluation of the Essay to assess: c2, d1, d6

### **b- Student Assessment Schedule**

No.	Assessment	week
1.	Essay discussion & Evaluation	25
2.	Written Exam.	32

### **c- Weighting of Assessments**

No.	Exam.	Mark	%
1.	Mid-Term Examination	----	-----
2.	Final-Term Examination	75	75
3.	Semester Work and Oral Examination	25	25
4.	Practical Examination	----	----
5.	<u>Other types of assessment</u>	----	----



	<u>Total</u>	100	100%

## **8- List of References**

**a-Course Notes:** Not applicable

**b- Essential Books (Text Books):**

- 1) William O. Foye "Principle of Medicinal Chemistry, 6<sup>th</sup> edition (2008), Lippencott, Williams & Wilkins, London.
- 2) M. E. Wolff Burger's Medicinal Chemistry and Drug Discovery" 6<sup>th</sup> edition (2005), Wiley-interscience Publication, New York.

**c-Recommended Books:**

Annual Reports in Medicinal Chemistry (Volumes 1- 44)

**d- Periodicals:**

- 1) J. Med. Chem.
- 2) Eur. J. Med. Chem.
- 3) Bioorg. & Med. Chem.

**e- Web Sites:**

- 1) <http://www.Sciencedirect.com.html>
- 2) <http://eulc.edu.eg/eulc/libraries/start.aspx>
- 3) <http://depts.washington.edu/medchem/420temp.html>
- 4) <http://depts.washington.edu/medchem/courses.html>
- 5) <http://www.personal.umich.edu/~rww/>
- 6) <http://www.nottingham.ac.uk/pharmacy/undergraduate/modules.html>
- 7) <http://www.pharmacy.purdute.edu/-mcm408/sylabus.PDF>
- 8) <http://www.rci.rutgers.edu/-layla/medchem/AMCI.htm>
- 9) <http://www.neurosci.pharm.utoledo.edu/MBC3320.html>

**Course Coordinator: Prof. Dr/ Adel F. Youssef**

**Head of Department: Prof. Dr/ Farghaly A. Omar**

**Program Coordinator: Dr/ Hamdy M. Abdel-Rahman**

**Date: 10/10 /2010**

## Matrix of the Intended Learning Outcomes (ILOs) of the Course

Topic	Week	Knowledge and Understanding	Intellectual Skills	Professional and Practical Skills	General and Transferable Skills
Drug metabolism	1- 3	a1	b2	---	d1, d4
Isosterism & bioisosterism	4- 5	a1	b1, b2	---	d4, d5
Special topics related to thesis	6- 8	a1	b2, b6	---	d1, d4, d5, d6
Essay subject	8- 11	a1	b6	c2	d1, d4, d5,d6
Computer aided lead design	11- 13	a1	b2, b6	---	d1, d4, d5, d6
Combinatorial Chemistry in drug development	14- 16	a1	b1, b2, b6	---	d1, d4, d5, d6
Mathematical approaches (QSAR)	17- 20	a1	b2, b6	c2	d4, d6
Biotechnology in drug development	20- 22	a1	b1, b2, b6	c2	d1, d4, d d65
Physicochemical properties and drug action	22- 24	a1	b2, b6	c2	d4, d6

**Course Coordinator : Prof. Dr/ Adel F. Youssef**

**Head of Department: Prof. Dr/ Farghaly A. Omar**

**Date: 10/ 10 /2010**

# Course Specification

## *Master of Pharmaceutical Science (Pharm. Anal. Chem.) Advanced Medicinal Chemistry-B*

### 1-Basic Information

**Title: Advanced Med. Chem. B      Code:**

**Level : M. Pharm. Sci. (Pharm. Anal. Chem.) year 2**

**Department: Medicinal Chemistry**

**Unit: 1**

**Lecture: 1hr/week      Tutorial: ----      Practical: -----      Total: 1hr/week**

### 2- Aims of Course:

The title course is addressed to postgraduates engaged in research other than Medicinal Chemistry. The items to be focused are drug metabolism, physicochemical properties and chirality related to drug action, mathematical approaches as well as the concepts of isosterism and bioisosterism.

### 3- Intended Learning Outcomes of Course(ILOs)

After studying the titled course the student must acquire the following skills.

#### **a- Knowledge and Understanding:**

a1- Be aware of the basics of sciences related to the field of drug design and synthesis.

#### **b- Intellectual Skills:**

b4- Self-evaluation of own research

b5- Support decisions with documents and references.

b6- Interpret the results and data

#### **c- Professional and practical Skills:**

c2- Write and present research data and reports efficiently.

#### **d- General and Transferable Skills:**

d4- Improve his knowledge continuously through self-learning.

d5- Participate in scientific seminars and conferences.

d6- Manage time efficiently.

### 4- Course Contents

Topic	No. of hours	Lecture	Tutorial / Practical
Drug metabolism	6	6	----
Physicochemical properties and drug action	6	6	-----
Chirality and activity	4	4	----
Isosterism& bioisosterism	4	4	----
Mathematical approaches (QSAR)	4	4	----

## 5- Teaching and Learning Methods

5.1- Lectures

5.2- Self learning

## 6- Teaching and learning methods for disables

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## 7- Student Assessment

### **a- Student Assessment methods**

7.1-Written exam. to assess: a1, b6, c2, d4,d6

### **b- Student Assessment Schedule**

No.	Assessment	week
1.	Written Exam.	32

### **c- Weighting of Assessments**

No.	Exam.	Mark	%
1.	Mid-Term Examination	----	-----
2.	Final-Term Examination	100	100
3.	Oral Examination	----	---
4.	Practical Examination	----	----
5.	Semester Work	----	----
6-	Other types of assessment	----	----
	<u>Total</u>	100	100%

## 8- List of References

**a-Course Notes:** Not applicable

### **b- Essential Books (Text Books):**

- 3) William O. Foye "Principle of Medicinal Chemistry, 6<sup>th</sup> edition (2008), Lippencott, Williams & Wilkins, London.
- 4) M. E. Wolff Burger's Medicinal Chemistry and Drug Discovery" 6<sup>th</sup> edition (2005), Wiley-interscience Publication, New York.

### **c-Recommended Books:**

- Annual Reports in Medicinal Chemistry Series (1-44)

### **d- Periodicals:**

- 4) J. Med. Chem.
- 5) Eur. J. Med. Chem.
- 6) Bioorg. & Med. Chem.

**e- Web Sites:**

- 1) <http://www.Sciencedirect.com.html>
- 2) <http://eulc.edu.eg/eulc/libraries/start.aspx>
- 3) <http://depts.washington.edu/medchem/420temp.html>
- 4) <http://depts.washington.edu/medchem/courses.html>
- 5) <http://www.personal.umich.edu/-rww/>
- 6) <http://www.nottingham.ac.uk/pharmacy/undergraduate/modules.html>
- 7) <http://www.pharmacy.purdute.edu/-mcm408/sylabus.PDF>
- 8) <http://www.rci.rutgers.edu/-layla/medchem/AMCI.htm>
- 9) <http://www.neurosci.pharm.utoledo.edu/MBC3320.html>

**Course Coordinator: Prof. Dr /Adel F. Youssef**

**Head of Department: Prof. Dr /Farghaly A. Omar**

**Program Coordinator: Dr /Hamdy M. Abdel-Rahman**

**Date: 10/10 /2010**

**University** Assiut **Course Title** Advanced Med. Chem. B  
**Faculty** Pharmacy **Course Code.**  
**Department** Medicinal Chemistry

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**Matrix of the Intended Learning Outcomes (ILOs) of the Course**

<b>Topic</b>	<b>Week</b>	<b>Knowledge and Understanding</b>	<b>Intellectual Skills</b>	<b>Professional and Practical Skills</b>	<b>General and Transferable Skills</b>
Drug metabolism	1- 6	a1	b6	c2	d4, d5, d6
Physicochemical properties and drug action	7-12	a1	b4, b6	c2	d4, d6
Chirality	13-16	a1	b4, b6	c2	d4, d5, d6
Isosterism & bioisosterism	17-20	a1	b6	c2	d4, d5, d6
Mathematical approaches (QSAR)	21-24	a1	b5, b6	c2	d4, d6

**Course Coordinator : Prof. Dr/Adel F. Youssef**

**Head of Department: Prof. Dr/Farghaly A. Omar**

**Date: 10/10 /2010**