



Quality Assurance Unit



كلية الصيدلة - جامعة أسيوط



Assiut University  
Faculty of Pharmacy

Department of Pharmaceutics

Course Specification

### Course Specification

#### 1-Basic Information

Title: **Molecular Pharmaceutics**

Code:

Level: **Ph.D (Special courses)**

Department: **Pharmaceutics**

Unit: **Hour/week**

Lecture: Two hours per week

Tutorial:

Practical:

Total: 2hr/week

#### 2- Aims of the Course

The specific aim of this course is to familiarize the students with modern conception of cellular response to drugs in different dosage forms and drug delivery systems. The course will provide insight into the transport through biological barriers of different drug delivery forms, the main cellular signaling pathways triggered by various drugs and drug formulations, types of cell death induced by various types of modern drugs, cellular adaptation to the drug exposure, cellular mechanisms of multidrug resistance, interaction between drugs and DNA.

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

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

**The graduate should be able to:**

a7- Define the basic principles of pharmacogenomics and pharmacogenetics.

a7- List different transport through biological barrier of different drug delivery forms.

a7- Be aware of theory and application of DNA mutations and repair systems.

a6- Describe particulate and lipid systems for nucleic acid delivery.

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

**The graduate should be able to:**

b6- Design novel delivery systems that can enhance drug efficacy and reduce toxicity.

**c- Professional and practical Skills:**

**The graduate should be able to:**

c2- Encapsulate a certain drug or gene in a nano-delivery system and evaluate its properties.

**d- General and Transferable Skills:**

**The graduate should be able to:**

d2- Communicate efficiently with colleagues and coworkers.

d4- Offer counseling in all problems encountered in applying advanced preparation techniques.

d1- Participate in scientific seminars and conferences.

**Course Contents**

Topic	No. of hours	Lecture	Tutorial / Practical
Nucleic acid therapeutics	4		--
Uptake pathways and intracellular trafficking of macromolecular therapeutics	4		--
Targeting nucleic acid therapeutics	4		--
Candidate diseases for nucleic acid therapeutics	4		--
Theory and application of DNA mutations and repair system	4		--
Theory and application of gene down-regulation	2		--
Use of particulate and lipid systems for nucleic acid delivery	2		--
Total	24		--

**4- Teaching and Learning Methods**

4.1-Lectures

4.2- Discussion

4.3- Essay writing and reports.

**5- Teaching and learning methods for disables**

Extra time to help the disable students to understand the hard topics.

**6- Student Assessment**

**a- Student Assessment methods**

6.1-Written exam to assess understanding and knowledge

## **b- Student Assessment Schedule**

No.	Assessment	week
1.	Final written exam	In June
2.		

## **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-	<u>Other types of assessment</u>		
	<u>Total</u>	100	100%

## **7- List of References**

### **a- Course Notes**

.....

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

Pharmaceutical Biotechnology (Crommelin and Sindelar eds.) 2nd Edition Taylor and Francis Publishers 2002.

### **c- Recommended Books**

- Essential of molecular biology (George M.M Lacinski)
- Molecular Biology of the Cell (Alberts, Bray, Lewis, Raff, Roberts, Watson eds.) 3rd Edition Garland Publishers 1994

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

- Journal of molecular pharmaceutics

## **8- Facilities Required for Teaching and Learning**

.....

**Course Coordinator:** Dr. Ikramy Abdel-Rheam Khalil  
Dr. Dina Fathalla Mohamed

**Head of Department:** Professor Dr. Frgani Abdel-Hamid

**Date:** 12 / 10 /2010

**University**

**Assiut**

**Course Title**

**Molecular  
Pharmaceutics**

**Faculty**

**Pharmacy**

**Course Cod.**

.....

**Department**

**Pharmaceutics**

**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>
Nucleic acid therapeutics	1 <sup>st</sup> , 2 <sup>nd</sup>	a6			d1,d2, d4
Uptake pathways and intracellular trafficking of macromolecular therapeutics	3 <sup>rd</sup> , 4 <sup>th</sup>	a6,a7	b6	c2	d1,d2,d4
Targeting nucleic acid therapeutics	5 <sup>th</sup> , 6 <sup>th</sup>	a6,a7	b6	c2	d1,d2,d4
Candidate diseases for nucleic acid therapeutics	7 <sup>th</sup> , 8 <sup>th</sup>	a6,a7	b6	c2	d1,d2,d4
Theory and application of DNA mutations and repair system	9 <sup>th</sup> , 10 <sup>th</sup>	a6,a7	b6	c2	d1,d2,d4
Theory and application of gene down-regulation	11 <sup>th</sup>	a6,a7	b6	c2	d1,d2,d4
Use of particulate and lipid systems for nucleic acid delivery	12 <sup>th</sup>	a6,a7	b6	c2	d1,d2,d4

Course Coordinator: Dr. Ikramy Abdel-Rheam Khalil  
Dr. Dina Fathalla Mohamed

Head of Department: Professor Dr. Frgani Abdel-Hamid

Date: 12 / 10 / 2010