COURSE SPECIFICATION

Medical Biochemistry &Molecular Biology

Endocrinology, Diabetes, Clinical Nutrition and Metabolism

MD

Faculty of Medicine– Mansoura University

(A) Administrative information

(1) Programme offering the course:	Postgraduate MD program of **Endocrinology, diabetes ,clinical nutrition and metabolism. EDCNM600**
(2) Department offering the programme:	Internal medicine department **(Endocrinology , diabetes and metabolism unit)**
(3) Department responsible for teaching the course:	Internal medicine department **(Endocrinology , diabetes and metabolism unit)** Biochemistry & molecular biology department
(4) Part of the programme:	First part (first semester)
(5) Date of approval by the Department`s council	12/7 / 2016
(6) Date of last approval of programme specification by Faculty council	9/8 /2016
(7) Course title:	Biochemistry & molecular biology
(8) Course code:	EDCNM 604 /EDCNM 610 BC
(9) Credit hours	2 hours

(10) Total teaching hours:	30

(B) Professional information

(1) Course Aims:

Provide candidate with a basic knowledge in modern biochemistry and molecular biology necessary for an understanding of diabetes, endocrine, clinical nutrition and metabolism at the molecular level

(2) Intended Learning Outcomes (ILOs):

On successful completion of the course, the candidate will be able to:

A- Knowledge and Understanding

A1 Recognise basics and biomedical importance of carbohydrate metabolism
A2 Recognise basics of lipid metabolism
A3 Recognise basics of protein metabolism
A4 Recognise basics of Enzymes and biologic catalysis
A5 Recognize Metabolic interrelation & minerals
A6 Define Bioenergetics; fuel oxidation and the generation of ATP
A7 Discuss Biochemical basis of mechanisms of action of hormones
A8 Explain the biochemical basis of commonly occurring endocrine diseases with stress on insulin resistance, obesity
A9 Recognize Biotechnology and concepts of molecular biology
A10 Recognize Basic techniques in molecular biology
A11 Define cytokine and growth factors
A12 Recognize type of nutrient and molecular aspects of nutrition

B- Intellectual skills

B1 Point-out the application of molecular biology in hormonal diseases
B2 Interpret the clinical significance of plasma levels of glucose

(3)Course content:

Subject	Lectures	Seminar
1.Carbohydrate metabolism. Regulation and Biomedical importance of • glucose metabolism • glycogen metabolism • Fructose metabolism • Galactose metabolism	3	
2. Lipid metabolism • Lipogenesis • Lipoprotein metabolism • Fatty acid oxidation • Ketone bodies metabolism • Cholesterol metabolism • Phospholipid metabolism • role of adipose tissue in lipid metabolism with stress hormonal regulation	3	2
3. Protein metabolism • Essential and non essential AA • Nitrogen balance	2	
4. Enzyme and biologic catalysis	1	
5. Metabolic interrelation & minerals • enzyme change in fed &fasting state • role of (liver-adipose tissue-muscle-brain)in fed &fasting state • macroelements & trace elements . • type of nutrients	2	
6.Bioenergetic and fuel oxidation • electron transport chain • oxidative phosphorylation • bioenergetics (definition, first law o	1	

thermodynamics, gibbs free energy and standard free energy(		
7.Mechanism of hormonal action • Hormone Receptors • Classification of hormones • Mechanism of action of hormones that bind to intracellular receptors • Mechanism of action of hormones that bind to cell surface receptors • Hormones that act through cAMP • Hormones that act through cGMP • Hormones that act through a kinase or phosphatase cascade (Intrinsic protein tyrosine kinase activities – Associated protein tyrosine kinase activities)	**4**	**2**
8. Molecular biology • Basics of molecular biology • Molecular analysis of endocrine diseases • techniques in molecular biology	**4**	**1**
9.cytokine and growth factors	**2**	
10.Biochemical and Molecular aspects of nutrition	**2**	
Total teaching hours	**30**	

(4) Teaching methods:

4a Lecture

4b Seminar

(5) Assessment methods:

Written exam	160 marks
MCQ Exam	40 marks

To be eligible for the final exam , the candidate must have , fulfilled the credit hours of the courses and log book activities .

The candidate must earn 60% of the marks to pass the exam.

(6) References of the course:

6a. Text books:

1. Williams textbook of endocrinology

2. Harper's Illustrated Biochemistry: 28th edition by Murray RK, Granner DK, Mayes PA, Rodwell VW, McGraw-Hill companies New York, 2009.

6b. Websites: http://www.medlib.iupui.edu/ref/biochem.htm

- Harvard Department of Molecular & Cellular Biology Links: http://mcb.harvard.edu/BioLinks.html

(7) Facilities and resources mandatory for course completion:

- Lecture rooms: available in the department
- library
- Computer laboratories with a wide range of software
- Intranet with a wide range of learning support material

Course coordinator:

Prof Nagy Shaaban, Head of endocrinology and diabetes unit

Prof Manal Tarshoby, Professor of internal medicine, endocrinology and diabetes unit.

Head of the department:

Prof Salah Elgamal, Professor of internal medicine

Date: 23 /4/2016