



Quality Assurance Unit



**Tanta University
Faculty of Medicine**

Department of Medical Biochemistry

Course Specifications

Biochemistry second year

2011-2012

Biochemistry second Year Course specifications

University: T anta

Faculty: Medicine

Department: Biochemistry

1- Administrative Information

- **Course title: Medical Biochemistry-II**
- **Code: TMED.02:04**
- **Department offering the course: Medical Biochemistry**
- **Program (s) on which this course is given: M.B.B.Ch**
- **Departments offering the program:**
- **Academic year/ Level : ...second.... year of M.B.B.Ch**
- **Semester in which the course is given: 2 semesters**
- **Date of specifications /revision:**
- **Date of approval by departmental/faculty council : 14/9/2011 - 24 / 9 / 2011**
- **Taught hours:**
 - **Lectures : 75 /30 weeks = 2.5 hours / week**
 - **Tutorial &practical : 60 2 hours / week**
 - **Others: -**
 - **Total : 135 = 4.5 hours / week**

2 – Overall Course Aims

- To give the students insight into appreciating how understanding of metabolic processes occurring in the human body, could contribute to the understanding and explanation of pathological phenomena.
- To make students familiar with the various control and integrating mechanisms of diverse biochemical events in different metabolic processes, and to understand normal and abnormal human metabolism.
- Knowledge of basic chemical constituents of biological fluids in health and disease, with the ability to determine the relevant investigations for their applications in clinical diagnosis.
- To enable the student to illustrate and/or describe the metabolic pathways of purines and pyrimidines bases.
- To enable the student to point out the bioenergetics of the concerned metabolic pathways under different physiological circumstances.

- To give students experience in biochemical methodology in order to be aware with the clinical biochemistry techniques as diagnostic tools and to be able to interpret the results for appropriate diagnosis.
- To make students familiar with structure, function and mode of action of hormones in health and disease.
- To enable the student to identify the free radicals and their participation in the etiology of chronic disorders. The student will be gain knowledge about antioxidant family and its role in prevention and treatments of chronic disease and cancer.
 - To enable the student to identify vitamins and their participation in the etiology of chronic disorders
 - To enable the student to identify the structure of cell membrane & ion transport.

3- Intended learning outcomes (ILOs):

a-knowledge and understanding:

- a1-Define the metabolic pathways of carbohydrates, lipids, proteins, nucleotides and their micro-molecules and determine the site of each.
- a2- define the mechanisms of ATP production & electron transport chain.
- a3-Illustrate the steps and regulatory mechanisms of these pathways.
- a4-define the related metabolic disorders and their clinical prints on biochemical and molecular basis.
- a5-define the functions of vitamins, hormones and minerals, their biochemical, clinical and laboratory importance and deficiency manifestations of each.
- a6-Describe the structure of cell membrane & define the transport across cell membrane .
- a7-define the metabolism of heme & associated types of porphyria .
- a8-Understand the role of antioxidants in prevention and treatment of chronic diseases.

b- Intellectual skills

- b1- Interpret symptoms, signs and biochemical laboratory findings of some metabolic disorders.
- b2-Interpret urine report outcome
- b3- summarise the clinical significance of determination of plasma levels of glucose, total proteins, albumin, cholesterol, creatinine and uric acid
- b4- Diagnose the type of abnormality of pathological glucose tolerance curve.
- b5- summarise the etiology of metabolic disturbance in a given case study report.

c- Professional &practical skills

- c1- Identify the physical and chemical characters of normal urine under different physiological conditions.
- c2- Perform chemical tests to detect abnormal constituents of urine.

c3- Estimate serum levels of glucose, total proteins, albumin, cholesterol, creatinine and uric acid by colorimetric methods.

c4- Assess glucose tolerance by glucose tolerance test.

d-General transferable skills

d1 Adopt the principles of lifelong learning

d2- Able to deal with information technology

d.3- Collaborate with his colleagues in a team work inside the lab, as well as solving problems

d-4 Utilize the resources of biomedical information including the available electronic facilities to update his/her knowledge

d-5 Communicate effectively with a group in lab or during preparation of seminars.

4- Topics (Contents of the course)

Topic	No. of hrs.		
	Lectures	Practical/Small groups	Total
Bioenergetics	4	4	8
Carbohydrate Metabolism	12.5	10	22.5
Lipids metabolism	12.5	6	18.5
Protein & amino acids metabolism	12.5	10	22.5
Metabolic Integration	4	4	8
Purine & Pyrimidine Metabolism	5	4	9
Vitamins	5	4	9
Cell membrane & transport	4	4	8
Biochemistry of endocrine glands	7.5	6	13.5
Free Radical and antioxidants	4	4	8
Metabolism of heme	4	4	8

5-Teaching and learning methods

5.1- Formal Lectures

5.2- Practical classes

5.3- Tutorial classes

6-Teaching plan -

Item	Time schedule	Teaching hours
Lectures	<u>2</u> times/week; 2.5 hour each for weeks	75
Practical classes	One /week; 2 hours each for week	60
Total		135

7-Student Assessment :

a) Methods used

- .1 Written examination to assess A1-8, b1-5 c1-4 d1-5
- .2 Oral examination to assess A1-8, b1-4 c1-4 d1-5
- .3 Practical examination to assess b1-4 c1-4 d1-5

b)- Assessment schedule التوقيت

Assessment	Week
1-Periodical Examination	Quiz 1 : 4 th week Quiz 2 : 8 th week Quiz 3 : 12 th week
2-A Mid-year examination.	February. It includes: one hour written examination composed of short essay-type questions & case study.
3- Final examination	The end of the academic year (May- June). It includes: <ul style="list-style-type: none"> • Written examination: A 3-hour written paper composed of short essay-type questions & case study. • Oral examination: One oral examination station with 2 staff members (15-20 minutes: 4-5 questions). • Practical examination: Urine report with comment on the results and theoretical question in Spectro photometric analysis

c- Weighing of assessments (توزيع الدرجات)

Exam	Marks	% of Total
Mid term examination	22.5	15%
Final term examination	75	50%
Oral examination	30	20%
Practical/laboratory work	15	10%
Periodical examinations	5	3.5%
Semester work		%
Other types of assessment Practical attendance	2.5	1.5 %
Total	150	100%

d) Attendance criteria:

1. Practical attendance
2. Practical books

e) Grading System

Examination	Topic	Description	Marks
Periodical Examinations	Sheet examinations	Case study	7.5 marks
Midterm exam	written	Case study & short note	22.5 marks
Final Examination	Written	Short questions	75 marks
	Practical exam	Urine report & Spectrophotometric analysis	15 marks
	Oral exam	One setting	30 marks
Total			150 marks

8- List of references

8.1 Course notes

Lectures notes in medical biochemistry for first year medical students by staff members of Department of Medical Biochemistry, Faculty of Medicine, Tanta University, Tanta University Press, 2010

8.2 Text book

- Lippincott's Reviews of Biochemistry, 3rd edition by Champe PC, Harvey RA, Ferrier DR, Lippincott William & Wilkins London, 2007
- Text book of Biochemistry with Clinical Correlations 5th Ed, Devlin TM Ed. Wiley -Liss New York 2002
- Harper's Illustrated Biochemistry: 26th Ed by Murray RK, Granner DK, Mayes PA, Rodwell VW, McGraw-Hill companies New York, 2003.

8.3 Recommended books

1. Lobert Stryer...fundamentals of biochemistry
2. Leininger Biochemistry...
3. Thomas Develin Biochemistry

8.4 Periodicals and web sites

<http://www.kumc.edu/biochemistry/resource.html>

<http://www.medlib.iupui.edu/ref/biochem.htm>

Course coordinator

Name---- Prof Dr/ Ayman Wagih -----

signature....._Date.....

Head of department

name..... Prof Dr/ Thanaa Elsheikh

.....signature.....Date.....

Topics of the course and Intended learning outcomes of the program

The name of course	Medical Biochemistry 2nd Year	University: Tanta academy Faculty: medicine Department: Medical Biochemistry
Code of course	TMED 02: 04	

Topics of the course	Week Study	Knowledge & Understanding	Intellectual Skills	Professional Skills	General transferable skills
Bioenergetics	1 st -2 nd week	a2	b1	c1	d1,d2
Carbohydrate Metabolism	3 rd -8 th week	a1,a3,a4	b1,b2,b3 ,b4,b5	c1,c3,c4	d3,d4,d5
Lipids metabolism	9 th -12 th week	a1,a3,a4	b1,b3,b5	c3	d1,d2,d5
Protein & amino acids metabolism	13 th – 16 th week	a1,a3,a4	b1,b2,b3 ,b4,b5	c1,c2,c3	d2,d3,d4
Metabolic Integration	17 th week	a1,a5,a7	b1,b2, b5	c1,c2	d3,d4,d5
Purine & Pyrimidine Metabolism	18 th – 19 th week	a1,a3,a4	b1, b3, b5	c3	d4,d5
Vitamins	20 th -22 nd week	a5	b1, b5	c1,c2	d3,d4,d5
Cell membrane & transport	23 rd week	a6	b1, b3	c1,c2,c3	d1,d2,d3
Biochemistry of endocrine glands	24 th – 26 th week	a5	b1, b5	c1,c2,c3	d1,d2,d3
Free Radical and antioxidants	27 th – 28 th week	a8	b1,b2	c1,c2,c3	d2,d3,d5
Metabolism of heme	29 th – 30 th week	40	b1,b2	c1,c2,c3	D3,d4,d5

Course coordinator: Prof Dr/ Ayman Wagih
Head of the department: Prof Dr/ Thanaa ElSheikh