Kingdom of Saudi Arabia
Taibah University – Madinah
College of Applied Medical Sciences
Department of Clinical Laboratory Sciences

A- Course Title, Code, Academic Year:

Medical Biochemistry 2 (MLT 311) 1438-1439 H

B- Course Information:

Course Code	Course Title	Credit Units			Study Level	Pre-requisites
		Total	Theory	Practical		
MLT 311	Medical Biochemistry 2	3	2	1	5th	Medical Biochemistry 1 (MLT 212)
Course Coordinator		Extension		Email Address		
Dr. Saber Mohamed Eweda				seweda@taibahu.edu.sa		

C- Course Description:

This course gives theoretical background about nucleotides, mineral, hormone, vitamin and heme metabolism. Also, it will focus on mechanism of hormonal actions and metabolic function of hormones, vitamins and minerals. It teaches students how to handle the products to be measured in the laboratory. The student should be able to use the equipment in the laboratory to get an accurate result. The laboratorian can easily interpret the results of the parameters he tested in the laboratory.

Course duration: 1 academic semester (**15 weeks**). Total teaching hours: **60** hours (**Lectures 30 + Practical 30**).

D- Course Objectives:

1. Understand heme metabolism and hyperbilirubinemia.
2. Describe nucleotides metabolism especially in relation to inborn errors of metabolism and metabolic diseases.
3. Demonstrate structures, functions and mechanisms of action of hormones, vitamins and minerals.
4. Illustrate role of hormones in regulation of metabolism, cell proliferation and differentiation, ion homeostasis and GIT function.
5. List diseases caused by deficiency, excess or abnormal metabolism hormones and vitamins.
6. Outline the metabolism and imbalance of electrolytes.
7. Validate improvement in the affective traits of organizational skills, work habits, attitude, interpersonal skills, and problem-solving ability.

E- THEORY TOPICS:		
Week	Theory Topic	Contact Hours
1	❖ Biosynthesis of heme and its disorders. ❖ Catabolism of heme and bilirubin disorders.	1 1
2	❖ Biosynthesis of purine nucleotides and its disorders. ❖ Catabolism of purine nucleotides and its disorders.	1 1
3	❖ Biosynthesis of pyrimidine nucleotides and its disorders. ❖ Catabolism of pyrimidine nucleotides and its disorders.	1 1
4	❖ Classification and chemistry of hormones and mechanisms of hormonal actions.	1
5	❖ Regulation of hormonal secretions. ❖ Hypothalamus-pituitary axis.	1 1
6	❖ Hypothalamus-pituitary axis and its disorders. ❖ Adrenal cortex hormones and its disorders.	1 1
7	❖ Adrenal medulla hormones. ❖ Male and female sex hormones.	1 1
8	❖ Thyroid hormones and parathyroid hormones	2
9	❖ Pancreatic hormones. ❖ Gastrointestinal hormones.	1 1
10	❖ Mineral metabolism	2
11	❖ Trace element metabolism	2
12	❖ Water- soluble vitamins.	2
13	❖ Water-soluble vitamins and Fat- soluble vitamins	2
14	❖ Fat- soluble vitamins	2
15	Revision	2

F- PRACTICAL SESSIONS:		
Week	Practical Session	Contact Hours
1	Determination of serum total bilirubin	2
2	Determination of serum uric acid	2

3	Determination of serum sodium	2
4	Determination of serum potassium	2
5	Determination of serum calcium	2
6	Determination of serum phosphorus	2
7	Determination of serum magnesium	2
8	Determination of serum chloride	2
9	Determination of serum iron and iron binding capacity	2
10	Determination of TSH	2
11	Determination of T_3 and T_4	2
12	Determination of FSH and LH	2
13	Determination of prolactin	2
14	Pregnancy test	2
15	Revision	2

G- ASSESSMENT TASKS:

#	Type of assessment task	Week	Total Grades
1	Continuous assessment	Weeks 1-13	10%
2	Midterm examination (written)	Week 8	15%
3	Assignment submission	Week 10	5%
4	Final practical exam	Week 16	30%
5	Final written examination	Week 17-18	40%

H- LEARNING RESOURCES:

1- Required textbook:

- Said Oraby. Oraby's Illustrated reviews of Biochemistry, part. Twelfth edition. Egypt,
- Lippincotts Illustrated Reviews Biochemistry 4thEdition.
- Mayer et al., 2012. Harper`s biochemistry, Longman Press.

2- Essential references:

- Henry, L. B. et al. (1990). Clinical diagnosis and management of laboratory methods, 18th ed. V Saunders.

- BAUM, HAROLD. The Biochemists' Songbook. 2nd ed. Bristol PA: Taylor & Francis, 1995. 9780748404162.
- MCKEE, TRUDY, & JAMES R. MCKEE. Biochemistry: The Molecular Basis of Life. 4th ed. New York: Ox University Press, 2009. ISBN 978-0-19-530575-3.
- FERGUSON, JOHN B. Laboratory Manual — Biology 301: Biochemistry. Annandale-on-Hudson NY: College, 2007.
- Said Oraby. Oraby's Illustrated reviews of Biochemistry, Twelfth edition. Egypt, 2010.
- Ramnik Sood. Medical Laboratory Technology (MLT) Methods and Interpretations, Jaypee Ed., 2009

Notes:

- Assignments topics and requirements shall be announced by the end of Week-1, the deadline for submission is 12pm Thursday of Week-10 (each semester).
- Assignments and written assessment tasks must be verified against plagiarism, the maximum acceptable percentage is determined by the department (according to each level).
- Continuous assessments may include quizzes, internet searches, home-works, exercises, class activity, scratch cards, presentations, group work, etc.
- Practical exams may contain hands-on experiments, laboratory work, simulations, or demonstrations.
- Written exams will include multiple-choice questions (MCQ), short essay questions, and long essay questions.