



Benha University
Faculty of Medicine
Department of Medical Biochemistry

Course Specification

Course title: MEDICAL BIOCHEMISTRY AND MOLECULAR BIOLOGY
(Code) : 07 04

First Academic Year (2010 – 2011)

- Department offering the course: **MEDICAL BIOCHEMISTRY**
- Academic year of M.B.& B.Ch. program: **2010-2011**
- Date of specification approval: department council no 147., date 24 - 8 - 2010
 faculty council no 321 , date 20 – 9 - 2010

A) Basic Information:

- Allocated marks: 150 marks
- Course duration: 25 weeks of teaching
- Teaching hours: 6 hours/week = 135 total teaching hours

	Hours / week	Total hours
1- Lectures	3hrs/week for 25 weeks	75
2- Practical	3hours/week for 20 weeks	60
Total	25 weeks	135

B) Professional Information:

1- Overall Aim of the Course:

- 1.1. To understand the essential topics of biochemistry including biomolecules of carbohydrates, lipids, proteins, nucleotides ,nucleic acids and enzymes and some minerals
- 1.2. To make the student oriented with the physico-chemical basis of biological systems; and the related clinical problems.
- 1.3. To familiarize the students with basic principles of Molecular biology and protein synthesis.
- 1.4. To enable the student to be familiar with biotechnology methods and their clinical implications.

2- Intended Learning Outcomes (ILOs):

2.1. Knowledge and understanding:

By the end of the course, students should be able to:

- 2.1.1. **Describe** the structure and properties of carbohydrates, lipids and proteins of biological importance.
- 2.1.2. **Describe** the structure of heme and proteins of the extra-cellular matrix.
- 2.1.3. **Demonstrate** the structure and importance of immunoglobulins
- 2.1.4. **Describe** the chemistry of nucleotides and nucleic acids`
- 2.1.5. **Point out** the processes of replication, transcription and translation
- 2.1.6. **familiarize** the students with the components ,regulation and abnormalities of cell cycle together with the causes and different types of DNA mutation and repair , telomere and telomerase enzyme
- 2.1.7. **Identify** recombinant DNA biotechniques and their clinical implications.
- 2.1.8. **Point out** the significance of human genome and proteome projects and the principles of gene therapy.

2.2. Practical and Clinical Skills

By the end of the course, students should be able to:

- 2.2.1. **Perform** some basic chemical tests to identify different sugars and proteins
- 2.2.2. **Recognize** how DNA AND RNA are extracted and be aware of further techniques using the extracted DNA or RNA.

2.3. Professional Attitude and Behavioral skills:

By the end of the course, students should be able to:

2.3.1. Demonstrate respect and Work effectively as a member or a leader of an interdisciplinary team .

2.3.2. Establish good relations with colleagues to share all types of inter-professional activities including shared learning.

2.4. Communication skills:

By the end of the program the graduate will be able to:

2.4.1. Communicate clearly, sensitively and effectively with and their colleagues ,staff and co-staff.

2.4.2. Cope up with difficult situations

2.4.3. Respect superiors, colleagues and all members of the health profession.

2.5. Intellectual Skills:

By the end of the course, students should be able to:

2.5.1. **Determine** the biochemical basis of some physiological processes occurring in the body and some clinical problems

2.5.2. **Interpret** the observations of chemical tests to identify unknown sugar or protein solutions.

2.5.3. **Interpret** the photographs of electrophoresis runs of Polymerase chain reaction (PCR) products.

2.6. General and transferable Skills:

By the end of the course, students should be able to:

2.6.1. Establish life-long self-learning required for continuous professional development.

2.6.2. Use the sources of biomedical information and communication technology to remain current with advances in knowledge and practice.

2.6.3.Retrieve, manage, and manipulate information by all means, including electronic means.

2.6.4.Present information clearly in written, electronic and oral forms.

2.6.5.Establish effective interpersonal relationship to Communicate ideas and arguments .

2.6.6.Work effectively as a member or a leader of an interdisciplinary team and

3- Course contents:

Subject	Lectures (hrs)	Practical and Tutorial / Small group discussion (hrs)	Total (hrs)	% of Total
1- Physical chemistry	8	—		
2-Carbohydrate chemistry	12			
3-Lipid chemistry	12			
4-Protein chemistry	12			
5-Nucleotides and nucleic acid chemistry	2	—		
Cell cycle; regulatory factors, Apoptosis, Oncogens and Carcinogenesis	2	—		
DNA Replication and Repair	3	—		
Gene Expression and Transcription	3	—		
Protein Synthesis and Modifications	3	—		

Recombinant DNA Technology, Telomere, Gene Therapy and Human Genome and proteome projects	6			
Enzymes	8	—		
Minerals	4	—		
Total	75			100

4- Teaching and learning methods:

METHODS USED:

1. Lectures

2. Practical classes and Tutorials (small group teaching, practice of laboratory skills, AV aids):

2.1. **Identification of:**

1- Carbohydrates:

a. Monosaccharides: glucose, fructose.

b. Disaccharides: sucrose, maltose.

c. Polysaccharides: starch, dextrin.

2- Protein: Peptone, gelatin, caseinogen, egg white (albumin and globulins)

3- Uric acid and urea.

2.2. DNA and RNA extraction and further techniques using the extracted DNA or RNA.

2.3. How to interpret photographs of electrophoresis runs of Polymerase chain reaction (PCR) products.

TEACHING PLAN:

Lectures: 75 Lectures divided into 3 lectures /week. Every lecture is of 1 hour duration. Time from 9 a.m. to 12 p.m. according to the current time table in general lecture halls.

Practical classes and tutorials: The students are divided into 4 groups. Each group has a 3-hour practical and tutorial class once per week. Students of each group are divided into 2 subgroups. Both

subgroups rotate between tutorial class and practical class.

Time plan:

Item	Time schedule	Teaching hours	Total hours
Lectures	<u>3</u> times/week; one hour each between 9 a.m. to 12 p.m.	75 hours	55.56%
Practical And tutorials	<u>3</u> hours / week week	60 hours	44.44%
Total	6 hours/week	135 hours	100%

5- Students Assessment methods:

5-A) **ATTENDANCE CRITERIA:** Faculty bylaws

5-B) **Assessment TOOLS:**

Tool	Purpose (ILOs)
Written examination	To assess knowledge, understanding, intellectual skills and presentation of information
Oral examination	To assess knowledge, understanding, intellectual skills, attitude and presentation
Practical examination	To assess practical and intellectual skills

5-C) **TIME SCHEDULE:** Faculty bylaws

Exam	Week or month
1- First half of the academic year	7 th week
2- Mid-year exam	17 th week
3- Second half of the academic year	21 st week
4- Practical exam	
5- Final exam	<ul style="list-style-type: none"> 1st in May — 2nd in September for students who failed to pass any course.

5-D) **Weighting System:**

Examination	Marks allocated	% of Total Marks
1- Shock exams		
2- First half		
3- Mid-year		
4- Second half		
5- Final exam: a- Written	75	50%
b- Practical		
c- Oral	10	
6- Assignments & other activities		
Total		

- The minimum passing & Passing grades (Faculty bylaws).

FORMATIVE ASSESSMENT:

Student knows his marks after the Formative exams.

5-E) Examinations description:

Examination	Description
1- Shock exams	During lectures in the form of short question , clinical case, MCQ , right or wrong questions or choose questions
2- First half	One hour written paper composed of short essay questions and MCQ
3- Mid-year	two hour written paper composed of short essay questions and MCQ
4- Second half	One hour written paper composed of short essay questions and MCQ
5- Final exam: a- Written	three hour written paper composed of short essay questions and MCQ.
b- Practical	Identification of provided solutions and short questions on DNA or RNA extraction and further techniques used on the extracted DNA or RNA and the electrophoresis photograph of PCR run
c- Oral	oral examination station with 2 staff members(10-15 min) or Cards
6- Assignments & other activities	Assignments on the biochemical &/or molecular basis of medical subjects or problems + practical books .

6- List of references:

6.1- Basic materials:

- Department book
- Overhead projections and computer presentations used during teaching in Lectures or tutorial classes.
- Practical notes

6.2- Essential books (text books):

- Text book of biochemistry for medical students by DM Vasudevan and Sreekumari S
- Lippincott's Illustrated Biochemistry.

6.3- Recommended books:

- Harper's biochemistry

6.4- Periodicals, Web sites:

7- Facilities required for teaching and learning:

Facilities used for teaching this course include:

- Lecture halls: Faculty lecture hall and department lecture hall
- Department equipped laboratories: 3
- Information technology / AV aids

Course coordinator: Prof. Dr, Azza El- Baramawy

Head of Department: Prof. Dr, Azza El- Baramawy

Date: 2010-2011

<i>TEMPLATE FOR COURSE REPORTS</i>

Benha University
 Faculty of Medicine
 Department of

Course Report
Academic Year 2009 – 2010

A-Basic Information:

- 1- Course title and code:
- 2- _____ year of M.B. & B.Ch. Program
- 3- Allocated marks
- 4- No. of hours:
- 5- Teaching staff:

Similar to Course Specification

- a- Number of teaching staff categories (Professors, Assistant professors, Lecturers and assistant staff (Assistant lectures and demonstrators).
- b- Student / staff / course Ratio (Academic year or round for clinical departments)

- 6- Course coordinator
- 7- External evaluator

B- Statistical Information:

Number of students starting the course		
Number of students completing the course		Number (% of starting No.)
Number of fail students		Number (% of completing)
Number of pass students		Number (% of completing)
Grades	Excellent	Number (% of pass)
	Very good	Number (% of pass)
	Good	Number (% of pass)
	Fair	Number (% of pass)

C- Professional Information:**1- Course topics taught:**A) Lectures:

Topics	Specified hours	Actual hours	Lecturer(s)
1-			
2-			
Etc			

- Percent of specified topics actually covered (> 90% or 70 – 90% or < 70%)
- Specified topics that were not taught and justification (Reasons in details):
-
-
- Taught topics other than those specified & justification (Reasons in details):
-
-

B) Practical:

Topics	Specified hours	Actual hours	Lecturer(s)
1-			
2-			
Etc			

- Percent of specified topics actually covered (> 90% or 70 – 90% or < 70%)
- Specified topics that were not taught and justification (Reasons in details):
-
-
- Taught topics other than those specified & justification (Reasons in details):
-
-

C) Tutorials / small group discussions:

Topics	Specified hours	Actual hours	Lecturer(s)
1-			
2-			
Etc			

- Percent of specified topics actually covered (> 90% or 70 – 90% or < 70%)
- Specified topics that were not taught and justification (Reasons in details):
-
- Taught topics other than those specified & justification (Reasons in details):

-

2- Teaching and learning methods:

Method specified	Applied or not	Comments
1- lectures		
2- Practical		
3- Tutorials		
4- etc		

- Methods that were not used and justify:
-
- Methods used other than those specified and justify:
-

3- Student assessment:

a- Methods of assessment

Method specified	Total Marks (% of Total Marks)	
	Specified	Actual
1- Written examination		
2- Oral examination		
3- Practical		
4- etc		
Total		

- Justify any deviation from specified

b- State the rules applied for the selection of the examination committee.

State the names of the members of the examination committee.

c- State the involvement of the external evaluator in:

- The match between the examination and the topics taught.
- The existence of grading criteria in examination sheets
- The allocation and distribution of marks and weighting
- Effectiveness of the overall assessments in measuring the achievement of the intended learning outcomes (ILOs).

4- Facilities and teaching materials:

Facilities & Teaching Materials	Totally Adequate	Partially Adequate	Inadequate	Impact on Delivery of the course Or achieving ILOs
1- Lecture halls				
2- A-V aids				
3- Laboratories				
4- Equipments				
5- Specimens				
6- Library				
7- etc				

Identify inadequacies, together with any problems in the delivery of the course or achieving the ILOs.

5- Administration constraints:

State any administrative constraints related to teaching and learning e.g. lack of:

- Some facilities or funds
- Teaching aids
- Site visits
- Qualified personnel for laboratory and administration
- Management problems or regulations, which impeded the delivery of the course and the achievement of the ILOs.

6- Results of course evaluation by students:

- Method used e.g. Questionnaires, interviews, focus group etc.
- State the main points e.g. teaching, facilities, assessments.....
- Achievement of Course's ILOs.
- Response to any criticisms by the faculty members delivering the course, together with their proposals for dealing with those issues.

7- External evaluator's comments:

- State the issues raised by the external evaluator
- Responses from the faculty members delivering the course, together with their proposals for dealing with those issues.

8- Course enhancement:

a- Previous Action Plan

Specified Action	Status Completed or Not	Reasons for non-completion
1-		
2-		

Write the issues not handled from those raised in the previous report and the reasons for overlooking such issues.

b- Action plan for program enhancement over the next academic year (200X – 200Y):

Action Required	Completion date Or Time Schedule	Person Responsible
1-		
2-		

- **Add actions not completed in the previous action plan.**
- **The action plan is fundamental to the success of the quality system.**
- **It appears at the end of the report, because it is the result of all of prior analysis.**
- **Enhancement can only take place if issues are identified and then acted upon and resolved.**

- The action plan identifies the issues, prioritizes them and dictates the necessary action to be taken.
- It is also clearly places the responsibility for the implementation of the action and the resolution of the associated issues, in a given time scale on named individuals.

Course Coordinator:

Signature

Date: / / 200