

Kingdom of Saudi Arabia

The National Commission for Academic Accreditation & Assessment

**Course Specifications
(CS)**

Medical Biochemistry-209 BCH 3 (209كيم3)

1437-1438 H

Course Specifications

Institution:- <i>Najran University</i>	Date of Report:- <i>/1438 H</i>
College/Department :- <i>College of Medicine/Department of Biochemistry</i>	

A. Course Identification and General Information

1. Course title and code: <i>Medical Biochemistry-209 BCH 3(3كم209)</i>			
2. Credit hours :- <i>3(2+1)</i>			
3. Program(s) in which the course is offered: <i>Bachelor of Medicine and Surgery.</i>			
4. Name of faculty member responsible for the course: <i>Biochemistry Department-Prof. Mohammed Helmy Faris Shalayel</i>			
5. Level/year at which this course is offered:- <i>Level 3 // 2nd Year</i>			
6. Pre-requisites for this course :- <i>None</i>			
7. Co-requisites for this course :- <i>None</i>			
8. Location if not on main campus:- <i>Main campus in Najran</i> University City – College Of Medicine			
9. Mode of Instruction (mark all that apply)			
a. Traditional classroom	<input type="text" value="Yes"/>	What percentage?	<input type="text" value="60"/>
b. Blended (traditional and online)	<input type="text"/>	What percentage?	<input type="text"/>
c. e-learning	<input type="text"/>	What percentage?	<input type="text"/>
d. Correspondence	<input type="text"/>	What percentage?	<input type="text"/>
f. Other	<input type="text" value="Yes"/>	What percentage?	<input type="text" value="40"/>
Comments:			

B Objectives

1. What is the main purpose for this course?

Upon successful completion of this course the students are expected to:-

- a. *Recognize the basic knowledge of general and organic chemistry for a better understanding of the biochemical basis of medicine.*
- b. *Describe the basic principles of biochemistry that give them a command of its concepts.*
- c. *Describe the basic chemical properties of the major classes of biological molecules which contribute to the human cell life.*
- d. *Describe the role of vitamins and minerals in biochemical processes.*

2. Briefly describe any plans for developing and improving the course that are being implemented. (e.g. increased use of IT or web based reference material, changes in content as a result of new research in the field):-

- a. *Continuous updating of the information, knowledge and skills included in the course through continuous search for new knowledge and skills available in recent publications (books, researches, internet and others).*
- b. *Continuous improvement of the teaching methods to encourage the students to participate effectively in the academic activities.*
- c. *Continuous evaluation of the course content, students' performance and establish plans accordingly.*

C. Course Description:-

The course will provide the students with the basic concepts of general and organic chemistry including structure of atoms, classification and reactions of organic compounds, stereochemistry, water and pH, and the structure and functions of biomolecules in living matter. It also contrasts the simplicity of the building blocks of macromolecules (amino acids, monosaccharides, fatty acids and purine and pyrimidine bases) with the enormous variety and adaptability of the different macromolecules they form (proteins, carbohydrates, lipids and nucleic acids). In addition, this course will highlight the nature of the electronic and molecular structure of macromolecules and their interactions within the cellular environment, and the role of vitamins and minerals in biochemical processes.

1. Topics to be Covered

List of Topics	No. of Weeks	Contact Hours
<i>Introduction</i>	<i>One week</i>	<i>2(1+1)</i>
<i>Water and pH</i>	<i>One week</i>	<i>2 (1 + 1)</i>
<i>Chemistry of carbohydrates</i>	<i>2 weeks</i>	<i>4(2+2)</i>
<i>Chemistry of lipids</i>	<i>2 weeks</i>	<i>4(2+2)</i>
<i>Chemistry of amino acids</i>	<i>2 weeks</i>	<i>4(2+2)</i>
<i>Structure and functions of proteins</i>	<i>One week</i>	<i>4(2+2)</i>
<i>Enzymes I</i>	<i>One week</i>	<i>4(2+2)</i>
<i>Enzymes II</i>	<i>One week</i>	<i>4(2+2)</i>
<i>Chemistry of nucleotides</i>	<i>One week</i>	<i>4(2+2)</i>
<i>Nucleic Acids</i>	<i>One week</i>	<i>4(2+2)</i>
<i>Water soluble vitamins</i>	<i>One week</i>	<i>4(2+2)</i>
<i>Fat soluble vitamins</i>	<i>One week</i>	<i>4(2+2)</i>
<i>Revision</i>	<i>One week</i>	<i>4(2+2)</i>

2. Course components (total contact hours and credits per semester):						
	Lecture	Tutorial	Laboratory	Practical	Other	Total
Contact Hours	32	-	32	-	-	64 <i>Not equal to above hours</i>
Credit	2 <i>Total credit</i>		1 <i>Total credit</i>			3

3. Additional private study/learning hours expected for students per week:- <i>5-10 hours</i> I think too long

4. Course Learning Outcomes in NQF Domains of Learning and Alignment with Assessment Methods and Teaching Strategy

Course Learning Outcomes, Assessment Methods, and Teaching Strategy work together and are aligned. They are joined together as one, coherent, unity that collectively articulate a consistent agreement between student learning, assessment, and teaching.

The **National Qualification Framework** provides five learning domains. Course learning outcomes are required. Normally a course has should not exceed eight learning outcomes which align with one or more of the five learning domains. Some courses have one or more program learning outcomes integrated into the course learning outcomes to demonstrate program learning outcome alignment. The program learning outcome matrix map identifies which program learning outcomes are incorporated into specific courses.

On the table below are the five NQF Learning Domains, numbered in the left column.

First, insert the suitable and measurable course learning outcomes required in the appropriate learning domains (see suggestions below the table). **Second**, insert supporting teaching strategies that fit and align with the assessment methods and intended learning outcomes. **Third**, insert appropriate assessment methods that accurately measure and evaluate the learning outcome. Each course learning outcomes, assessment method, and teaching strategy ought to reasonably fit and flow together as an integrated learning and teaching process. **Fourth**, if any program learning outcomes are included in the course learning outcomes, place the @ symbol next to it.

Every course is not required to include learning outcomes from each domain.

	NQF Learning Domains And Course Learning Outcomes	Course Teaching Strategies	Course Assessment Methods
1.0	Knowledge		
1.1	<i>By the end of the course, the students should be able to:-</i> <i>Define the concept of Biochemistry and its relationship to medicine.</i>	<i>Lectures</i> <i>Practical sessions</i>	<i>MCQ's, Practical</i>
1.2	<i>Describe the chemical structure of carbohydrates, lipids, amino acids, protein s, vitamins,nucleotides, general concept of enzymes and their mechanism of action.</i>		<i>MCQ's</i>
2.0	Cognitive Skills		
2.1	<i>By the end of the course, the students should be able to:-</i> <i>Correlates between the different Biomolecules and clinical diseases.</i>	<i>Interactive lectures</i> <i>Practical sessions.</i>	<i>MCQ's</i>

2.2	Evaluate some laboratory results& their clinical significance.		<i>Practical</i>
3.0	Interpersonal Skills & Responsibility		
3.1	<i>By the end of the course, the students should be able to:- Show ethical conduct in the lecture and practical classes with the staff, colleagues and environment like instruments, benches, and laboratory materials</i>	<i>Practical sessions</i>	<i>MCQ's, Practical</i>
3.2	<i>Act as an efficient team member.</i>	<i>Practical sessions</i>	<i>Practical</i>
4.0	Communication, Information Technology, Numerical		
4.1	<i>By the end of the course, the students should be able to:- Utilize efficiently the different knowledge resources including the library and websites.</i>	<i>Practical sessions</i>	<i>Practical, Assignments</i>
4.2	<i>Use computers, projectors and build up power point presentation</i>		<i>Assignments</i>
5.0	Psychomotor		
5.1	<i>By the end of the course, the students should be able to:- Employ ability to handle and process laboratory tubes, samples, equipments, and the test results</i>	<i>Practical sessions</i>	<i>Practical. Practical</i>
5.2			

Suggested Guidelines for Learning Outcome Verb, Assessment, and Teaching

NQF Learning Domains	Suggested Verbs
Knowledge	list, name, record, define, label, outline, state, describe, recall, memorize, reproduce, recognize, record, tell, write
Cognitive Skills	estimate, explain, summarize, write, compare, contrast, diagram, subdivide, differentiate, criticize, calculate, analyze, compose, develop, create, prepare, reconstruct, reorganize, summarize, explain, predict, justify, rate, evaluate, plan, design, measure, judge, justify, interpret,

	appraise
Interpersonal Skills & Responsibility	demonstrate, judge, choose, illustrate, modify, show, use, appraise, evaluate, justify, analyze, question, and write
Communication, Information Technology, Numerical	demonstrate, calculate, illustrate, interpret, research, question, operate, appraise, evaluate, assess, and criticize
Psychomotor	demonstrate, show, illustrate, perform, dramatize, employ, manipulate, operate, prepare, produce, draw, diagram, examine, construct, assemble, experiment, and reconstruct

Suggested **verbs not to use** when writing measurable and assessable learning outcomes are as follows:

Consider	Maximize	Continue	Review	Ensure	Enlarge	Understand
Maintain	Reflect	Examine	Strengthen	Explore	Encourage	Deepen

Some of these verbs can be used if tied to specific actions or quantification.

Suggested assessment methods and teaching strategies are:

According to research and best practices, multiple and continuous assessment methods are required to verify student learning. Current trends incorporate a wide range of rubric assessment tools; including web-based student performance systems that apply rubrics, benchmarks, KPIs, and analysis. Rubrics are especially helpful for qualitative evaluation. Differentiated assessment strategies include: exams, portfolios, long and short essays, log books, analytical reports, individual and group presentations, posters, journals, case studies, lab manuals, video analysis, group reports, lab reports, debates, speeches, learning logs, peer evaluations, self-evaluations, videos, graphs, dramatic performances, tables, demonstrations, graphic organizers, discussion forums, interviews, learning contracts, antidotal notes, artwork, KWL charts, and concept mapping.

Differentiated teaching strategies should be selected to align with the curriculum taught, the needs of students, and the intended learning outcomes. Teaching methods include: lecture, debate, small group work, whole group and small group discussion, research activities, lab demonstrations, projects, debates, role playing, case studies, guest speakers, memorization, humor, individual presentation, brainstorming, and a wide variety of hands-on student learning activities.

5. Schedule of Assessment Tasks for Students During the Semester

	Assessment task (e.g. essay, test, group project, examination, speech, oral presentation, etc.)	Week Due	Proportion of Total Assessment
1	<i>Test (MCQ's)</i>	<i>1st -7th</i>	<i>5%</i>

2	Midterm exam. Theory Practical	8 th	20 10
3	Essay (Assignment)	9 th -16 th	5
4	Final exam. Theory Practical	17 th and 18 th	40 20

D. Student Academic Counseling and Support

1. Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice. (include amount of time teaching staff are expected to be available each week):-

- Allocation of office hours by the departments
- Academic supervision
- Academic surveillance.

E. Learning Resources

1. List Required Textbooks:- Victor W. Rodwell, Peter J. Kennelly, David A. Bender, Kathleen M. Botham, P. Anthony Weil (eds). Harper's Illustrated Biochemistry. 30 th edition, (A Lange Medical Book).
2. List Essential References Materials (Journals, Reports, etc.):- http://www-medlib.med.utah.edu/NetBiochem/NetWelco.htm http://web.indstate.edu/thcme/mwking/home.html http://www.biology.arizona.edu/biochemistry/biochemistry.html http://www.rpi.edu/dept/bcbp/molbiochem/MBWeb/mb1/MB1index.html
3. List Recommended Textbooks and Reference Material (Journals, Reports, etc) - Stryer, L. (Berg, Tymoczko and Stryer) Biochemistry 6 th ed. W.H. Freeman Co., NY 2007 - Campbell, MK and Farrell, SO (2003). Biochemistry. 4th ed. Harcourt Brace and Company, San Orlando, Fl.
4. List Electronic Materials(eg. Web Sites, Social Media, Blackboard, etc.) a. NetBiochem:- http://www-medlib.med.utah.edu/NetBiochem/NetWelco.htm b. BioChem Links:- http://biochemlinks.com/bclinks/bclinks.cfm

<p>c. <i>On-line courses:-</i> http://web.indstate.edu/thcme/mwking/home.html http://www.biology.arizona.edu/biochemistry/biochemistry.html http://www.rpi.edu/dept/bcbp/molbiochem/MBWeb/mb1/MB1index.html</p>
<p>5. Other learning material such as computer-based programs/CD, professional standards or regulations and software.</p> <p>A copy of the Power point teaching resource is provided each week to the students in order to relate to the discussed topics with the recommended text books.</p>

F. Facilities Required

Indicate requirements for the course including size of classrooms and laboratories (i.e. number of seats in classrooms and laboratories, extent of computer access etc.)
<p>1. Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)</p> <p>a. <i>Lecture room suitable for 25 students.</i></p> <p>b. <i>Biochemistry Laboratory suitable for 25 students.</i></p>
<p>2. Computing resources (AV, data show, Smart Board, software, etc.):-</p> <p>a. <i>Computers, multimedia in lecture room, and laboratory.</i></p>
<p>3. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list)</p> <p>a. <i>Library supplied with references, text books, and electronic resources.& Digital library</i></p>

G Course Evaluation and Improvement Processes

<p>1 .Strategies for Obtaining Student Feedback on Effectiveness of Teaching</p> <p>a. <i>Continuous and immediate feedback from the students.</i></p> <p>b. <i>Questionnaire at the end of the course.</i></p>
<p>2. Other Strategies for Evaluation of Teaching by the Program/Department Instructor</p> <p>a. <i>Observations from colleagues.</i></p> <p>b. <i>Class observation by supervisors</i></p> <p>c. <i>Student's feedback.</i></p>
<p>3 Processes for Improvement of Teaching:-</p> <p>a. <i>Continuous updating of course contents.</i></p> <p>b. <i>Regular intra- and interdepartmental meetings where problems are discussed and recommendations made.</i></p> <p>c. <i>Workshops on teaching methods.</i></p>

<p>d. <i>Review of recommended teaching strategies.</i></p> <p>4. Processes for Verifying Standards of Student Achievement (e.g. check marking by an independent member teaching staff of a sample of student work, periodic exchange and remarking of tests or a sample of assignments with staff at another institution):-</p> <p>a. <i>External examiners.</i></p> <p>b. <i>Check marking of a sample of student work by an independent faculty member.</i></p>
<p>5 Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement.</p> <p><i>Plans for course improvement will be done according to the feedback about the course from students results and questionnaire, external examiner report, other colleagues and the dean, and will be discussed with the curriculum committee and academic office and any approved recommendation will be implemented. As well the course will be reviewed annually.</i></p>

Faculty or Teaching Staff: *Prof.Dr.MohammedHelmyFaris Shalayel.*

Signature: *Mohammed Shalayel* _____ **Date Report Completed:** */1438 H*

Received by: Dr. ElfatihYagoub _____ **Dean/Department Head** (Coordinator of Department)

Signature: _____ *ElfatihYagoub* _____ **Date:** */1438 H*