



Syllabus: Biochemistry Practical (#131702222) Second Semester 2022 /2023

COURSE INFORMATION	
Course Name: Biochemistry Practical (Blended education) Semester: Second Department: Clinical Pharmacy & Pharmacy Practice Faculty: Pharmaceutical Sciences	Course Code: 131702222 Section: according to the schedule Core Curriculum: 2013 and 2019 Study Plan
Day(s) and Time(s): According to the schedule Classroom: Pharmaceutical Sciences Lab 310	Credit Hours: 1 Prerequisites: 131702221 or co-current <b style="text-align: right;">(Biochemistry)
COURSE DESCRIPTION	
<p>This course aims to discuss the practical application of the basic methods used in the laboratory identification of sugars, proteins, and lipids. in addition to their methods of quantitative analysis in vitro and in biological specimens such as blood and urine and to study different enzymatic reactions and their analysis methods and applications. Gel electrophoresis (SDS-PAGE) for protein isolation is also studied.</p>	
DELIVERY METHODS	
<p>The course will be delivered through a combination of active learning strategies. These will include:</p> <ul style="list-style-type: none"> • PowerPoint recorded lectures and active classroom-based discussion • Collaborative learning through small groups acting in an interdisciplinary context. • White board will be used to solve problems and calculations • Relevant films and Video lectures • E-learning resources: e-reading assignments and practice quizzes through Moodle and Microsoft Teams 	
FACULTY INFORMATION	
Name	1- Dr. Iman Mansi

	2- Dr. Suhad Bani Melhim
Academic Title:	1- Associate Professor 2- Assistant Professor (respectively)
Office Location:	Third Floor (485), (408)
Telephone Number:	Extension: 3444 3408
Email Address:	1- Iman_mansi@hu.edu.jo 2- suhadmehim@hu.edu.jo
Office Hours:	<i>As announced per semester</i> <i>Please send an e-mail (as mentioned above) to meet at any other time.</i>

REFERENCES AND LEARNING RESOURCES

Required Textbook(s):

All compulsory weekly readings are available electronically on Moodle.

1. Biochemistry Laboratory Manual –2020

Suggested Additional Resources:

1. Lehninger's principles of Biochemistry, 8th edition, Nelson D.L. and Cox M.M., 2021 (W.H. Freeman) ISBN-10: 1319228003
2. Biochemistry, 9th edition, Lubert Stryer, 2019 (W.H. Freeman), ISBN-10: 1319114679

Useful Web Resources:

Moodle HU

STUDENT LEARNING OUTCOMES MATRIX

An alignment matrix of the **program** ILOs of the Bachelor of Pharmacy at The Hashemite University, the **course** ILOs and knowledge, skills and competencies as mentioned in the Jordan National Qualifications Framework (JNQF)

Core curriculum learning outcomes	B.Sc. Pharmacy Program ILOs	Course Objectives (1-7 as below)	Course Student ILOs				Assessment Method
			A	B	C	D	
Foundational Knowledge	Learner	1,2,5	A1-A2 A3 A4 A5 A6 A7 A8 A9				Class participation Reports Quizzes Laboratory work evaluation Assignment
Essentials for Practice and Care	Patient-centred care	3		B1 B.1.1 B.1.2			Laboratory work evaluation Class participation Report
Approach to Practice and Care	Creative Thinker & Problem-Solver Communicator	4,7			C1 C2		Laboratory work evaluation Class participation
Personal & Professional Development	Leader Collaborator	6,7				D1 D2 D3 D4 D5	Laboratory work evaluation Class participation
Pharmaceutical Product Expert (Manufacturer)	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Course Objectives

After course completion students are expected to:

1. Acquire basic knowledge of biochemistry especially the practical aspects for this course
2. Learn basic techniques used in biochemistry and demonstrate appropriate lab techniques
3. Work effectively and safely in a laboratory environment to perform experimental procedures and operate modern biochemical instruments.
4. Use effective writing and oral communication skills to demonstrate an understanding of the concepts and outcomes of laboratory experiments.
5. Able to differentiate between different macromolecules using chemical reactions
6. Complete work accurately, with attention to details.
7. Take responsibility for group work and to learn how to communicate and work effectively with peers.

Course Learning Outcomes (CLOs)

A. Knowledge and Understanding

A.1- Be familiar with and able to follow the safety procedures and lab instructions

A.2- Identify and efficiently use the glassware and equipment's in the lab

A.3- differentiate between accuracy and precision concepts.

A.4- Understand the concept of pka values of acids and the determination of its value.

A.5- be familiar with and perform the different qualitative tests used for identification of amino acids.

A.6- understand the concepts for some of the techniques used in the separation of proteins such as isoelectric point precipitation. And the study of different factors that affect the structure of proteins.

A.7- understand and apply the principles of measuring the activity of an enzyme and study the effect of several factors on enzyme activity.

A.8- understand and apply tests to identify different carbohydrates including monosaccharides disaccharides and polysaccharides

A.9- Identify properties of lipids and fat and perform experiments on the chemical properties of lipid such as solubility, saponification, salting out and emulsification.

B. Essential for Practice and Care (Intellectual Skills):

B.1- Patient-centred care (Caregiver) - provide patient-centred care by collecting and interpreting biochemical reading by understanding how to:

B.1.1- Interpret enzymatic data and enzyme inhibition reaction

B.1.2- Determine and evaluate concentrations of blood samples' using spectrophotometry (blood glucose, blood cholesterol and triglycerides)

C. Approach to Practice Pharmacy:

C.1- Creative thinking and Problem Solving (Creative Thinker and Problem Solver) – recognise problems; explore and prioritize potential strategies; and design, implement, and evaluate a viable solution. make detailed experimental observations, and record, analyse and evaluate experimental and other scientific data; analyse experimental data using appropriate methods (Microsoft Excel).

C.2- Communication (Communicator) – Effectively communicate verbally and nonverbally when interacting with an individual colleagues or a group using effective writing, visual, vocal, verbal and nonverbal communication and interpersonal skills. And also to communicate experimental work by means of written, or computer-assisted, reports and assignments

Personal and Professional Development:

D.1- Leadership (Leader) - Demonstrate responsibility for creating and achieving shared goals, regardless of position.

D.2- Interprofessional collaboration (Collaborator):

Communicate in a manner that values team-based decision making and shows respect for contributions from other colleagues in the groups assigned by using oral communication to effectively transmit ideas and conclusions.

D.3- Work both independently and in a team as a workgroup and discuss results with other colleagues; be able to make critical evaluation of both their own work and that of their peers; and reflect upon their skills development during the course.

D.4- Display positive self-esteem and confidence when working with others.

D.5 Time management and commitments to deadlines.

ACADEMIC SUPPORT

It is The Hashemite University policy to provide educational opportunities that ensure fair, appropriate and reasonable accommodation to students who have disabilities that may affect their ability to participate in course activities or meet course requirements. Students with disabilities are encouraged to contact their instructor to ensure that their individual needs are met. The University through its Special Need section will exert all efforts to accommodate for individual's needs.

Special Needs Section:

Tel: 00962-5-3903333

Extension: 4209

Location: Students Affairs Deanship/ Department of Student Welfare Services

Email: amalomoush@hu.edu.jo

amalomoush@staff.hu.edu.jo

COURSE REGULATIONS

Participation

Class participation and attendance are important elements of every student's learning experience at The Hashemite University, and the student is expected to attend all classes. A student should not miss more than 15% of the classes during a semester. *Those exceeding this limit of 15% will receive a failing grade regardless of their performance.* It is a student's responsibility to monitor the frequency of their own absences. **Attendance record begins on the first day of class irrespective of the period allotted to drop/add and late registration. It is a student's responsibility to sign-in; failure to do so will result in a non-attendance being recorded.**

In exceptional cases, the student, with the instructor's prior permission, could be exempted from attending a class provided that the number of such occasions does not exceed the limit allowed by the University. The instructor will determine the acceptability of an absence for being absent. A student who misses more than 25% of classes and has a valid excuse for being absent will be allowed to withdraw from the course.

On average, students need to spend 2 hrs of study and preparation weekly. At the beginning of the lectures, be on time and don't leave before the end of the lecture without an accepted excuse. **If you missed a class, it is your responsibility to find out about any announcements or assignments you have missed.** For any clarification, please communicate your instructor at her posted office hours or by appointment. Listen well to the lecture, if you have a question, ask your instructor. You will find the course material at the course team after the lecture.

Sharing of course materials is forbidden. No course material including, but not limited to, course outline, lecture hand-outs, videos, exams, and assignments may be shared online or with anyone outside the class. Any suspected unauthorized sharing of materials, will be reported to the university's Legal Affairs Office. If a student violates this restriction, it could lead to student misconduct procedures.

Plagiarism

Plagiarism is considered a serious academic offence and can result in your work losing marks or being failed. HU expects its students to adopt and abide by the highest standards of conduct in their interaction with their professors, peers, and the wider University community. As such, a student is expected not to engage in behaviours that compromise his/her own integrity as well as that of The Hashemite University.

Plagiarism includes the following examples, and it applies to all student assignments or submitted work:

- Use of the work, ideas, images, or words of someone else without his/her permission or reference to them.
- Use of someone else's wording, name, phrase, sentence, paragraph or essay without using quotation marks.
- Misrepresentation of the sources that were used.

The instructor has the right to fail the coursework or deduct marks where plagiarism is detected

Late or Missed Assignments

In all cases of assessment, students who fails to attend an exam, class project or deliver a presentation on the scheduled date without prior permission, and/or are unable to provide a medical note, will automatically receive a fail grade for this part of the assessment.

- Submitting a term paper on time is a key part of the assessment process. Students who fail to submit their work by the deadline specified will automatically receive a 10% penalty. Assignments handed in more than 24 hours late will receive a further 10% penalty. Each subsequent 24 hours will result in a further 10% penalty.
- In cases where a student misses an assessment on account of a medical reason or with prior permission; in line with University regulations an incomplete grade for the specific assessment will be awarded and an alternative assessment or extension can be arranged.

Missed Assessments

In all cases of assessment, students who fails to attend an exam on the scheduled date without prior permission, and/or are unable to provide a medical note, will automatically receive a failure grade for this part of the assessment

- In cases where a student misses an assessment on account of a medical reason or with prior permission; in line with university regulations an incomplete grade for the specific assessment will be awarded and an alternative assessment or extension can be arranged.

Cheating

Cheating, academic misconduct, fabrication and plagiarism will not be tolerated, and the university policy will be applied. Cheating policy: The participation, the commitment of cheating will lead to applying all following penalties together:

- Failing the subject, he/she cheated at
- Failing the other subjects taken in the same course
- Not allowed to register for the next semester
- The summer semester is not considered as a semester

Student Complaints Policy

Students at The Hashemite University have the right to pursue complaints related to faculty, staff, and other students. The nature of the complaints may be either academic or non-academic. For more information about the policy and processes related to this policy, you may refer to the students' handbook.

COURSE ASSESSMENT

Course Calendar and Assessment

Students will be graded through the following means of assessment and their final grade will be calculated from the forms of assessment as listed below with their grade weighting taken into account. The criteria for grading are listed at the end of the syllabus

Students will be graded through the following means of assessment:

Assessment	Grade Weighting	Deadline Assessment
Quizzes	15%	<i>Every week</i>
Reports	5%	<i>Every week</i>
Mid term Exam	25%	<i>8th week</i>
Evaluation	15%	Every week
Final Exam	40%	~ 15 th /16 th week

Description of Exams

Test questions will predominately come from material presented in the lectures. Semester exams will be conducted during the regularly scheduled lecture period. Exam will consist of a combination of multiple choice, short answer, match, true and false and/or descriptive questions.

Quizzes: Unannounced quizzes will be given every week.

Reports: for every experiment, report should be handed in the same lab.

Description of Exams

Test questions will predominately come from material presented in the lectures and the lectures themselves. Semester exams may be conducted during the regularly scheduled lecture period. Exam may consist of a combination of multiple choice, short answer, match, true and false, and/or descriptive questions.

No make-up exams, homework or quizzes will be given. Only documented absences will be considered as per HU guidelines. Make-up exams may be different from regular exams in content and format.

Grades are not negotiable and are awarded according to the following criteria:

Letter Grade	Description	Grade Points
A+	Excellent	4.00
A		3.75

A-		3.50
B+	Very Good	3.25
B		3.00
B-		2.75
C+	Good	2.50
C		2.25
C-		2.00
D+	Pass	1.75
D	Pass	1.50
F	Fail	0.00
I	Incomplete	-

WEEKLY LECTURE SCHEDULE AND CONTENT DISTRIBUTION

<u>Topic 1</u>	<u>Lab instructions & Biochemical calculations</u>	<u>Week 2</u>	<u>1 lecture + practical</u>
<u>Topic 2</u>	<u>Use of micropipette</u>	<u>Week 3</u>	<u>1 lecture + practical</u>
<u>Topic 3</u>	<u>Acid-base behavior of amino acids</u>	<u>Week 4</u>	<u>1 lecture + practical</u>
<u>Topic 4</u>	<u>Qualitative determination of proteins</u>	<u>Week 5</u>	<u>1 lecture + practical</u>
<u>Topic 5</u>	<u>Quantitative determination of proteins</u>	<u>Week 6</u>	<u>1 lecture + practical</u>
<u>Topic 6</u>	<u>Isolation of casein from milk and its evaluation</u>	<u>Week 7</u>	<u>1 lecture + practical</u>
	<u>Mid-term Exam (theoretical)</u>	<u>Week 8</u>	
<u>Topic 7</u>	<u>Enzyme kinetics and inhibitors</u>	<u>Week 9</u>	<u>1 lecture + practical</u>
<u>Topic 8</u>	<u>Determination of sugars (reagents and kits)</u>	<u>Week 10</u>	<u>1 lecture + practical</u>
<u>Topic 9</u>	<u>Determination of lipids (cholesterol and triglycerides)</u>	<u>Week 11</u>	<u>1 lecture + practical</u>
<u>Topic 10</u>	<u>Enzymatic assay (Glucose dehydrogenase)</u>	<u>Week 12</u>	<u>1 lecture + practical</u>
<u>Topic 11</u>	<u>SDS-PAGE and agarose gel electrophoresis</u>	<u>Week 13</u>	<u>1 lecture + practical</u>
	<u>Final Exam (theoretical and practical)</u>	<u>Week 14</u>	