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 HU courses timetable/semester **Classroom: Pharmaceutical Sciences Building- Lab 310**	**Credit Hours:** 1 **Prerequisites**: 131702221 or co-current **(Biochemistry)**

COURSE DESCRIPTION

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.

DELIVERY METHODS

The course will be delivered through a combination of active learning strategies. These will include:

- 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. Suhad Bani Melhim**

	2- Dr. Eman Alharahsheh
Academic Title:	**1- Assistant Professor** **2- lecturer (respectively)**
Office Location:	**Third Floor**
Telephone Number:	**Extension:**
Email Address:	**1- suhadmelhim@hu.edu.jo** **2- emanA_Su@hu.edu.jo**
Office Hours:	***As announced per semester*** ***Please send an e-mail (as mentioned above) to meet at any other time.***

REFERENCES AND LEARNING RESOURCES

Required Textbook(s):

All compulsory weekly readings are available electronically on Moodle.

1. **Biochemistry Laboratory Manual –2023**

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

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. Able to differentiate between different macromolecules using chemical reactions
5. Understand how blood glucose, cholesterol and triglyceride measurements are performed.
6. Use effective writing and oral communication skills to demonstrate an understanding of the concepts and outcomes of laboratory experiments.
7. Complete work accurately, with attention to details.
8. 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- Extend the knowledge about the different calculations of concentrations used in biochemistry laboratory and recognize differences between accuracy and precision concepts used in biochemistry laboratory.

A.2- Relate the basic biochemical principle behind each test performed in each experiment with the outcome of each experiment, such as the concepts and techniques used in protein separation and enzyme activity measurement and the different factors that affect them

A.3- Recognize different qualitative and quantitative tests used for identification of amino acids, carbohydrates and lipids.

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

B.1- Provide patient-centred care (Caregiver) and make use of laboratory results to help examine various disease such as gout (enzymatic inhibition assay), hyperlipidemia and hyperglycemia

B.2 Correlate biochemical units calculation and the various preperation that may be used amd applied in community pharmacy or industires.

B.3- Summarize and analyse experimental observations and data obtained from experiment using appropriate methods (Microsoft Excel, Microsoft Word, Report sheet).

C. Approach to Practice Pharmacy:

C.1- Solve problems that appears while performing experiments (Creative Thinker and Problem Solver): design and develop potential strategies to reach a viable solution.
C.2- Employ effective communication skills (Communicator): interact with collegues/teachers by using verbal or written methods as well as interpersonal skills. Additionally produce reports of experimental results that are clear and concise using handwritten, or computer-assisted tools to generate reports and assignments.

A. Personal and Professional Development:

D.1- Build collaboration with group members (Collaborator):
Adapt to team-work environment and shows respect for contributions from other colleagues, discuss results with other colleagues and make critical evaluation of own work and that of peers to build a team-based decision making and effectively transmit ideas and conclusions and to show positive self-esteem, confidence, 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 laboratory session, 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 pre-lab recordings, if you have a question, ask your instructor. You will find the course material/recordings at the course team.

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 disconduct, 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:

Course Assessment Plan						
Assessment	**Grade Weighting**	**Deadline Assessment**	**CILOs**			
			A	**B**	**C**	**D**
Quizzes	15%	*Every week*	A	B	C	D
Reports	10%	*Every week*	A	B	C	D
Evaluation	10%	*Every week*	A	B	C	D
Mid-term Exam	25%	*8th week*	A	B	C	D
Final Exam	40%	~ 14th /15th week	A	B	C	D

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

Lecture hours and weeks are approximate and may change as needed"

Note: The course is provided as 1 laboratory per week (Sunday, Tuesday, Monday, Wednesday, Thursday), one laboratory period covers 2 practical hours in addition to a pre-lab recorded lecture. This practical lab is **delivered as a blended learning .**

Course Content					
Week Numbe	**No. of Hours /lectures**	**CILOs**	**Subject**	**Delivery Methods**	**Assessment Methods**
1	**2 practical hours**	A,B,C,D	**Lab instructions & Biochemical calculations**	Practical work Class participation recorded lectures	laboratory work evaluation
2	**2 practical hours**	A,B,C,D	**Experimental applications on laboratory calculations.**	Practical work Class participation recorded lectures	Exams, reports, quizzes, laboratory work evaluation, assignment
3	**2 practical hours**	A,B,C,D	**Use of micropipette.**	Practical work Class participation recorded lectures	Exams, reports, quizzes, laboratory work evaluation, assignment
5	**2 practical hours**	A,B,C,D	**Qualitative determination o proteins**	Practical work Class participation recorded lectures	Exams, reports, quizzes, laboratory work evaluation, assignment
6	**2 practical hours**	A,B,C,D	**Quantitative determination of proteins**	Practical work Class participation recorded lectures	Exams, reports, quizzes, laboratory work evaluation, assignment
7	**2 practical**	A,B,C,D	**Isolation of casein from**	Practical work	Exams,

	hours		**milk and its evaluation**	Class participation recorded lectures	reports, quizzes, laboratory work evaluation, assignment
8	**Mid-term Exam (theoretical), week 8**				
9	**2 practical hours**	A,B,C,D	**Xanthine oxidase enzyme inhibition with allopurinol-IC50 protocol.**	Practical work Class participation recorded lectures	Exams, reports, quizzes, laboratory work evaluation, assignment
10	**2 practical hours**	A,B,C,D	**Qualitative determination o sugars.**	Practical work Class participation Recorded lectures, Active Classroom-Based Discussions	Exams, reports, quizzes, laboratory work evaluation, assignment
11	**2 practical hours**	A,B,C,D	**Qualitative determination o lipids.**	Practical work Class participation Recorded lectures, Active Classroom-Based Discussions	Exams, reports, quizzes, laboratory work evaluation, assignment
12	**2 practical hours**	A,B,C,D	**Quantitative determination of sugar and lipids from clinical samples (reagents and kits).**	Practical work Class participation Recorded lectures, Active Classroom-Based Discussions	Exams, reports, quizzes, laboratory work evaluation, assignment
Final Exam, week 14					