**Course Syllabus**

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| **1** | **Course title** | Practical Biochemistry |
| **2** | **Course number** | 1203252 |
| **3** | **Credit hours** | 1(Practical) |
| **Contact hours (theory, practical)** | 45 (Practical) |
| **4** | **Prerequisites/corequisites** | (1203251) Biochemistry I |
| **5** | **Program title** | Pharmacy & PharmD |
| **6** | **Program code** | NA |
| **7** | **Awarding institution** | The University of Jordan |
| **8** | **School** | Pharmacy |
| **9** | **Department** | Biopharmaceutics & Clinical Pharmacy |
| **10** | **Course level** | Undergraduate |
| **11** | **Year of study and semester (s)** | The First and second semester of the 2nd year |
| **12** | **Other departments (s) involved in teaching the course** | NA |
| **13** | **Main teaching language** | English |
| **14** | **Delivery method** | ☒face to face learning ☐Blended ☐Fully Online |
| **15** | **Online platform(s)** | ☐Moodle ☐Microsoft Teams ☐Skype ☐Zoom  ☐Others………… |
| **16** | **Issuing/ Revision Date** | 14.2.2022 |

**17 Course Coordinator:**

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| Name: **Dr. Shereen Aleidi** Contact hours: to be announced  Office number: 325 Phone number: 23374  Email: [s.aleidi@ju.edu.jo](mailto:s.aleidi@ju.edu.jo) |

**18 Other instructors:**

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| **Prof. Dr. Nancy Hakooz**  E-mail: [nhakooz@ju.edu.jo](mailto:nhakooz@ju.edu.jo)  Office No.: 213  **Prof. Dr. Areej Assaf**  E-mail: [areej\_assaf@ju.edu.jo](mailto:areej_assaf@ju.edu.jo)  office No 132,  **Prof. Dr. Violet Kassabri**  E-mail: [V.Kasabri@ju.edu.jo](mailto:V.Kasabri@ju.edu.jo)  Office No.: 135 Office hours to be announced  **Ph. ph. Ghada Kamal Ali**- ( master )  [Ghada.k@yahoo.com](mailto:Ghada.k@yahoo.com) |

**19 Course Description:**

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| This practical course provides hands-on-bench and complementary practices reacted to principle information concerning the chemical and physical properties of biomolecules (carbohydrates, lipids, amino acids, and proteins) and their interrelated functioning in a biological system. The topics of enzymes and relevant enzyme inhibitors are also covered. In addition, a demonstration on how to separate proteins using SDS-PAGE –western analysis is presented. |

**20 Course aims and outcomes:**

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| 1. **Aims:**   This course is a practical course in support of a two-semester sequence in biochemistry theory. The students are expected to:  1. Demonstrate a good awareness and understanding of biochemical principles  2. Understand the main concepts regarding the chemical and physical properties of key organic molecules used by living systems (proteins, amino acids, and peptides, carbohydrates, fatty acids, and lipids)  3. Know the basic concepts and kinetics of enzymes, protein structure and function, regulatory strategies in enzymes, and lipids’ classes.  4. Recognize main physiological and biochemical principles that govern normal body functioning   1. **Students Learning Outcomes (SLOs): Upon successful completion of this course students will be able to**   **A) Foundational knowledge**  Develop, integrate, and apply knowledge from the foundational sciences in biochemistry (learner)  **Remember**   1. Describe the principle involved in the measurement of analytes and molecules in the clinical biochemistry laboratory. 2. Describe the Key organic molecules are used by living systems 3. Outline how biochemical analysis can be employed to differentiate between normal and diseased conditions.   **Understand**   1. Understand the Buffering against pH Changes in Biological Systems 2. Understand the principles of Ionization of Water, Weak Acids, and Weak Bases 3. Describe how chemical and biochemical analysis are applied to the study of disease. 4. Understand the principle of the different identification tests for carbohydrate, lipids, and proteins 5. Understand the principle of The Michaelis-Menten Model Accounts for the Kinetic Properties of Many Enzymes   **Applying**   1. Outline a step-by-step approach to the use of the laboratory test 2. Use Spectrophotometric determination of serum albumin and other analytes such as lipoproteins and cholesterol levels 3. Correlate laboratory findings in clinical samples to pathological processes. 4. Perform complex data handling exercises associated with biochemical analysis. 5. Perform different calculation exercises for the determination of analytes concentrations using beer- lambert law.   **B) Skills essential to practice for pharmacy**  Proactively investigates new knowledge, approaches or behavior and takes steps to evaluate and improve performance (Self-learner)   1. Proactively investigate, collect and interpret lab results through browsing the internet-based professional websites, medical guidelines & journal databases (MEDLINE, e-library) 2. Able to handle and deal with biochemical reactions 3. Able to differentiate between different macromolecules using chemical reactions   **C) Attitudes and behaviors necessary for personal and professional development**  Exhibit behaviors and values that are consistent with the trust given to the profession by patients, other healthcare providers, and society (Professional)  10. Demonstrate integrity by not cheating and not committing plagiarism  11. Demonstrate respect to professors and classmates by observing active listening inside the lab.  **D) Learning skills:**   * 1. Critical thinking   2. Digital literacy   3. Problem-solving skills   4. Self-directed learning   5. Communication skills |

**21. Topic Outline and Schedule:**

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| **Week** | **Topics** | **Students Learning Outcomes** | **Learning Methods**  **(Face to face, fully online, Blended)** | **Evaluation Methods** | **Reference** |
| **1** | Basic Techniques | A,B,C,D | Face to face | Lab. Reports, Quizzes | Lab. Manual |
| **2** | Buffer Solution | A,B,C,D | Face to face | Lab. Reports, Quizzes |
| **3** | Spectrophotometry | A,B,C,D | Face to face | Lab. Reports, Quizzes |
| **4** | Measurement of plasma glucose +cholesterol +TG | A,B,C,D | Face to face | Lab. Reports, Quizzes |
| **5** | **Midterm Exam\*** |  | **Theory and practical**  **(**Face to face) | **Exam, Lab. Reports** |
| **6** | Lipids & Measurement of (total plasma protein+ albumin +bilirubin ) | A,B,C,D | Face to face | Lab. Reports, Quizzes |
| **7** | Electrophoresis theory & measurement of (uric acid + urea +creatinine) | A,B,C,D | Face to face | Lab. Reports, Quizzes |
| **8** | Identification of Carbohydrates | A,B,C,D | Face to face | Lab. Reports, Quizzes |
| **9** | Identification of Proteins and Amino acids | A,B,C,D | Face to face | Lab. Reports, Quizzes |
| **10** | Enzymes | A,B,C,D | Face to face | Lab. Reports, Quizzes |
| **11** | **final exam** |  | **Theory and practical**  **(**Face to face) | **Exam, Lab. reports** |

**22 Evaluation Methods:**

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| Opportunities to demonstrate achievement of the SLOs are provided through the following assessment methods and requirements:   |  |  |  |  |  | | --- | --- | --- | --- | --- | | **Evaluation Activity** | **Mark** | **Topic(s)** | **Period (Week)** | **Platforms** | | short Quizzes | 10 ( average of 3) | To be announced | Every week | Face to face | | reports | 10 | To be announced | Week 4 | | Evaluation | 10 | NA | Every week | | Midterm | 15 practical+15 theory (30) | To be announced | Week 7-7 | | Final Exam | 20 practical+20 theory (40) | All topics | Week 16 | |

**23 Course Requirements (e.g: students should have a computer, internet connection, webcam, account on a specific software/platform…etc):**

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| **Students should have:**   * Lab coat * Lab manual * Gloves, mask, eye goggles * cleaning stuff |

**24 Course Policies:**

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| 1. Attendance policies:   **As per the applicable university regulations**   1. Absences from exams and submitting assignments on time:   **As per the applicable university regulations**   1. Health and safety procedures:   **Students should be vaccinated against COVID-19 in order to get their exams**   1. Honesty policy regarding cheating, plagiarism, misbehavior:   **As per the applicable university regulations**   1. Grading policy:   **As per the applicable school bylaw**   1. Available university services that support achievement in the course:   **Moodle (e-learning) website-** |
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**25 References:**

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| 1. Required book (s), assigned reading, and audio-visuals:   **Laboratory Manual.** |

**26 Additional information:**

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Name of Course Coordinator: **Dr. Shereen Aleidi**----------Signature: ----------------------- Date: 14.2.2022-----------

Head of Curriculum Committee/Department: ----- - Signature: ------------------------------------

Head of Department: --------- Prof.Nancy Hakooz ------------------------------- Signature: ------------------------------

Head of Curriculum Committee/Faculty: ---------------- Signature: ---------------------------

Dean: ---Prof.Rana Abu Dahab---------------- Signature: -------------------------------------------