**Course Syllabus**

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| **1** | **Course title** | Pathophysiology for pharmacy | |
| **2** | **Course number** | 1203301 | |
| **3** | **Credit hours** | 3 |  |
| **Contact hours (theory, practical)** | 3 (theory) | |
| **4** | **Prerequisites/corequisites** | Physiology 2 | |
| **5** | **Program title** | Pharmacy/PharmD | |
| **6** | **Program code** |  | |
| **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)** | Second semester of the 3rd year | |
| **12** | **Other department (s) involved in teaching the course** | NA | |
| **13** | **Main teaching language** | English | |
| **14** | **Delivery method** | ☐Face to face learning ☐Blended ☐Fully online | |
| **15** | **Online platforms(s)** | ☐Moodle ☐Microsoft Teams ☐Skype ☐Zoom  ☐Others………… | |
| **16** | **Issuing/Revision Date** | Fall 2021 | |

**17 Course Coordinator:**

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| Name: Ala Al-Laham, PhD Contact hours:    Office number: 217 Phone number: 5 355 000, Ext. 23345  Email: [ala.issa@ju.edu.jo](mailto:ala.issa@ju.edu.jo)  Name: Sara AlMarabeh, PhD Contact hours: 12:00-1:00 Sun/Tues and 11:00-12:00 Mon/Wed    Office number: 223 Phone number: 5 355 000, Ext. 23320  Email: [s.almarabeh@ju.edu.jo](mailto:s.almarabeh@ju.edu.jo) |

**18 Other instructors:**

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| Name:  Office number:  Phone number:  Email:  Contact hours:  Name:  Office number:  Phone number:  Email:  Contact hours: |

**19 Course Description:**

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| As stated in the approved study plan.  This module explains the pathophysiological basis of common diseases such as diabetes, heart failure, and asthma. It provides an essential understanding of the mechanism of such diseases. The module will also cover both symptoms and disease progression. |

**20 Course aims and outcomes:**

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| A- Aims:  1. To enhance student’s knowledge of pathophysiological basis of common diseases such as cellular response to injury/stress, inflammation, and angiogenesis.  2. To provide students with the ability to correlate the symptoms and progression of diseases with the pathophysiology of these diseases.  3. To provide students with the ability to utilize the knowledge of the disease to interpret clinical data and determine promising therapeutic targets.  4. To provide the students with the basis for more advanced courses in pharmacotherapy.  B- Students Learning Outcomes (SLOs):  Upon successful completion of this course, students will be able to:   |  |  |  |  |  | | --- | --- | --- | --- | --- | | SLOs  SLOs of the course | SLO (1) | SLO (2) | SLO (3) | SLO (4) | | 1 **Knowledge and understanding** | To understand the basic pathophysiological processes behind a certain disease. | To understand the clinical manifestations of diseases. |  |  | | 2 **Intellectual analytical and cognitive skill**s | To predict the effect of certain factors on disease progression based on their pathophysiological knowledge. | To expect what kind of long term complications can result from such pathophysiological changes. | To identify potential targets for therapy based on their understanding of pathophysiological mechanisms. |  | | 3 **Subject-Specific Skills** | Analyse clinical cases based on their knowledge | Predict the effect of certain parameters on common pathophysiological processes |  |  | | 4 **Transferable Key Skills** | Critical thinking | Communication |  |  | | 5 |  |  |  |  | | 6 |  |  |  |  | |

**21. Topic Outline and Schedule:**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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| | **Week** | **Lecture** | **Topic** | **Student Learning Outcome** | **Learning Methods (Face to Face/Blended/ Fully Online)** | **Platform** | **Synchronous / Asynchronous Lecturing** | **Evaluation Methods** | **Resources** | | --- | --- | --- | --- | --- | --- | --- | --- | --- | | 1 | 1.1 | Cellular responses to stress and toxic insults +apoptosis |  | Face to Face | Microsoft teams + Classroom | Synchronous | Exams, Quizzes | Pathologic basis of disease | | 1.2 | Cellular responses to stress and toxic insults +apoptosis |  | Face to Face | Synchronous | Exams, Quizzes | | 1.3 | Cellular responses to stress and toxic insults +apoptosis |  | Face to Face | Synchronous | Exams, Quizzes | | 2 | 2.1 | Cellular responses to stress and toxic insults +apoptosis |  | Face to Face | Microsoft teams + Classroom | Synchronous | Exams, Quizzes | Pathologic basis of disease | | 2.2 | Inflammation: Definition, classification and involvement in other diseases. |  | Face to Face | Synchronous | Exams, Quizzes | | 2.3 | Inflammation: Definition, classification and involvement in other diseases. |  | Face to Face | Synchronous | Exams, Quizzes | | **Week** | **Lecture** | **Topic** | **Student Learning Outcome** | **Learning Methods (Face to Face/Blended/ Fully Online)** | **Platform** | **Synchronous / Asynchronous Lecturing** | **Evaluation Methods** | **Resources** | | 3 | 3.1 | Acute inflammation. |  | Face to Face | Microsoft teams + Classroom | Synchronous | Exams, Quizzes | Pathologic basis of disease | | 3.2 | Acute inflammation. |  | Face to Face | Synchronous | Exams, Quizzes | | 3.3 | Acute inflammation. |  | Face to Face | Synchronous | Exams, Quizzes | | 4 | 4.1 | Chronic inflammation |  | Face to Face | Microsoft teams + Classroom | Synchronous | Exams, Quizzes | Pathologic basis of disease | | 4.2 | Chronic inflammation |  | Face to Face | Synchronous | Exams, Quizzes | | 4.3 | Chronic inflammation |  | Face to Face | Synchronous | Exams, Quizzes | | 5 | 5.1 | Angiogenesis |  | Face to Face | Microsoft teams + Classroom | Synchronous | Exams, Quizzes | Pathologic basis of disease | | 5.2 | Thrombosis |  | Face to Face | Synchronous | Exams, Quizzes | | 5.3 | Thrombosis |  | Face to Face | Synchronous | Exams, Quizzes | | 6 | 6.1 | Thrombosis |  | Face to Face | Synchronous | Exams, Quizzes | | 6.2 | Dyslipidemia |  | Face to Face | Microsoft teams + Classroom | Synchronous | Exams, Quizzes | 1- Pharmacotherapy a pathophysiologic approach  2- Pathologic basis of disease | | 6.3 | Dyslipidemia |  | Face to Face | Synchronous | Exams, Quizzes | | 7 | 7.1 | Dyslipidemia |  | Face to Face | Synchronous | Exams, Quizzes | | 7.2 | Atherosclerosis |  | Face to Face | Microsoft teams + Classroom | Synchronous | Exams, Quizzes | 1- Pharmacotherapy a pathophysiologic approach  2- Pathologic basis of disease | | 7.3 | Atherosclerosis |  | Face to Face | Synchronous | Exams, Quizzes | | 8 | 8.1 | Atherosclerosis |  | Face to Face | Synchronous | Exams, Quizzes | | 8.2 | Ischemic heart diseases |  | Face to Face | Microsoft teams + Classroom | Synchronous | Exams, Quizzes | 1- Pharmacotherapy a pathophysiologic approach  2- Pathologic basis of disease | | 8.3 | Ischemic heart diseases |  | Face to Face | Synchronous | Exams, Quizzes | | 9 | 9.1 | Ischemic heart diseases |  | Face to Face | Synchronous | Exams, Quizzes | | 9.2 | Hypertension |  | Face to Face | Microsoft teams + Classroom | Synchronous | Exams, Quizzes | 1- Pharmacotherapy a pathophysiologic approach  2- Pathologic basis of disease | | 9.3 | Hypertension |  | Face to Face | Synchronous | Exams, Quizzes | | 10 | 10.1 | Hypertension |  | Face to Face | Synchronous | Exams, Quizzes | | 10.2 | Heart failure |  | Face to Face | Microsoft teams + Classroom | Synchronous | Exams, Quizzes | 1- Pharmacotherapy a pathophysiologic approach  2- Pathologic basis of disease | | 10.3 | Heart failure |  | Face to Face | Synchronous | Exams, Quizzes | | **Week** | **Lecture** | **Topic** | **Student Learning Outcome** | **Learning Methods (Face to Face/Blended/ Fully Online)** | **Platform** | **Synchronous / Asynchronous Lecturing** | **Evaluation Methods** | **Resources** | | 11 | 11.1 | Heart failure |  | Face to Face | Microsoft teams + Classroom | Synchronous | Exams, Quizzes | 1- Pharmacotherapy a pathophysiologic approach  2- Pathologic basis of disease | | 11.2 | Heart failure |  | Face to Face | Synchronous | Exams, Quizzes | | 11.3 | Diabetes mellitus |  | Face to Face | Synchronous | Exams, Quizzes | | 12 | 12.1 | Diabetes mellitus |  | Face to Face | Microsoft teams + Classroom | Synchronous | Exams, Quizzes | | 12.2 | Arrhythmia |  | Face to Face | Synchronous | Exams, Quizzes | 1- Pharmacotherapy a pathophysiologic approach  2- Pathologic basis of disease | | 12.3 | Arrhythmia |  | Face to Face | Synchronous | Exams, Quizzes | | 13 | 13.1 | Rheumatoid arthritis |  | Face to Face | Microsoft teams + Classroom | Synchronous | Exams, Quizzes |  | | 13.2 | Rheumatoid arthritis |  | Face to Face | Synchronous | Exams, Quizzes | | 13.3 | Rheumatoid arthritis |  | Face to Face | Synchronous | Exams, Quizzes | | 14 | 14.1 | Asthma+COPD |  | Face to Face | Microsoft teams + Classroom | Synchronous | Exams, Quizzes | 1- Pharmacotherapy a pathophysiologic approach  2- Pathologic basis of disease | | 14.2 | Asthma+COPD |  | Face to Face | Synchronous | Exams, Quizzes | | 14.3 | Asthma+COPD |  | Face to Face | Synchronous | Exams, Quizzes | |

**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)** | **SLOs** | **Period (Week)** | **Platform** | | Quiz | 10 | To be determined |  | To be determined | Classroom | | Assignment | 10 | To be determined |  | To be determined | Report | | Mid-term exam | 30 | Till the end of the 7th week of semester |  | 8th week of the semester | Classroom | | Final exam | 50 | All topics |  | Weeks 15-16 | Classroom | |  |  |  |  |  |  | |  |  |  |  |  |  | |

**23 Course Requirements**

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| **(e.g: students should have a computer, internet connection, webcam, account on a specific software/platform…etc):**  Students should have a computer, internet connection and email account for E-learning. |

**24 Course Policies:**

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| 1. Attendance policies:   Attendance: Mandatory.  First warning – with 4 absences  Last warning – with 5 absences  Failing in the subject – with 6 absences   1. Absences from exams and submitting assignments on time:   Will result in zero achievement unless health report or other significant excuse is documented.   1. Health and safety procedures:   NA   1. Honesty policy regarding cheating, plagiarism, misbehavior:   The participation, the commitment of cheating will lead to applying all following  penalties together  1) Failing the subject he/she cheated at  2) Failing the other subjects taken in the same course  3) Not allowed to register for the next semester. The summer semester is not  considered as a semester   1. Grading policy:   Mid Exam: 30 points  Quiz: 10 points  Assignment: 10 points  Final Exam: 50 points  Total: 100 points  F- Available university services that support achievement in the course:  Classrooms, internet and text-books. |

**25 References:**

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| A- Required book(s), assigned reading and audio-visuals:   1. Pathologic basis of disease, professional edition. Robbins and Cotran. 10th Edition. Saunders Elsevier. 2. Pharmacotherapy; A pathophysiologic approach. Joseph T. DiPiro et al. Eighth Edition. McGraw Hill. 2011   B- Recommended books, materials, and media:  Up to date database |

**26 Additional information:**

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| Students will work on an assignment about a less common disease and/or pathophysiological mechanisms that are not discussed within the wide frame of course topics. |

Name of Course Coordinator: -----------------------------------Signature: ----------------------- Date: -------------------

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

Head of Department: ------------------------------------------------------------ Signature: ------------------------------

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

Dean: ---------------------------------------------------------- Signature: -------------------------------------------