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| **1** | **Course title** | Pharmacology Practical |
| **2** | **Course number** | 1203365 |
| **3** | **Credit hours** | 1 hours |
| **Contact hours (theory, practical)** | - |
| **4** | **Prerequisites/corequisites** | Pharmacology I (1203363) |
| **5** | **Program title** | PharmD |
| **6** | **Program code** | - |
| **7** | **Awarding institution** | The University of Jordan |
| **8** | **School** | School of Pharmacy |
| **9** | **Department** | Biopharmaceutics and Clinical Pharmacy |
| **10** | **Level of course** | 3rd year |
| **11** | **Year of study and semester (s)** | - |
| **12** | **Final Qualification** | PharmD |
| **13** | **Other department (s) involved in teaching the course** | - |
| **14** | **Language of Instruction** | English |
| **15** | **Teaching methodology** | Blended Online |
| **16** | **Electronic platform(s)** | Moodle Microsoft Teams Skype Zoom  Others………… |
| **17** | **Date of production/revision** | First semester 2021-2022 |

**18 Course Coordinator:**

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| Name: *Dr. Oriana Awwad*  Office number:  Phone number:  Email: *:* [o.awwad@ju.edu.jo](mailto:o.awwad@ju.edu.jo) |

**19 Other instructors:**

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| Name: *Ph. Abeer Alkhresha*  Office number:  Phone number:  Email: [abeerkhresha@yahoo.com](mailto:abeerkhresha@yahoo.com)  Name: *Ph. Ban Qtaishat*  Office number:  Phone number:  Email: [qtaishatban@gmail.com](mailto:qtaishatban@gmail.com) |

**20 Course Description:**

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| As stated in the approved study plan Pharmacology Practical is a dry laboratory, dedicated to the advancement of clinical pharmacology through creation of virtual pharmacological experiments. The laboratory is concerned with the investigation of drugs’ action through *in vitro* animal preparations and *in vivo* animal models, and the evaluation of different methods for optimizing drug therapy. |

**21 Course aims and outcomes:**

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| A- Aims:  Provide students with state of the art virtual teaching methods to explore pharmacological behavior of drugs  The course will reinforce the knowledge of pharmacological mechanisms gained in the theoretical courses.  The course will also improve the students' ability to analyze and present experimental data.  B- Intended Learning Outcomes (ILOs):  Upon successful completion of this course, students will be able to:  1- Explain the basic principles of experimental pharmacology  2- Understand the safe animal handling techniques  3- Understand the safe animal injection techniques  4- Knowledge of the experimental conditions needed to carry on any experiments (physiological solutions, temperature etc.)  5- Apply key scientific principles underpinning the experimental models  6-Recognize the different heart sounds and be aware about the lung volume significance  7- Prepare different organ in vitro experiments  8- Set-up a particular tissue preparations (e.g. guinea-pig ileum, isolated heart)  9- Use the transducers and chart recorders to measure tension or length changes in smooth muscle preparations  10- An ability to perform dilutions of stock drug solutions and calculate appropriate volumes of injections or volumes added to organ baths to achieve the desired final concentrations.  11- Know how to obtain subjects specific information through the visit of libraries to answer questions presented in  the class.  12- Recognize different resources of pharmacology (books, professional sites and scientific journals) and know how to evaluate the big quantity of information available  13- Take responsibility for own work and to exercise substantial autonomy and initiative in a learning environment |

**22. Topic Outline and Schedule:**

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| |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | **Week** | **Lecture** | **Topic** | **Teaching Methods\*/platform** | **Evaluation Methods\*\*** | **References** | | 1 | 1.1 | Introduction to experimental pharmacology, handling of laboratory animals & drug administration | Synchronous lecturing/meeting |  |  | | 2 | 2.1 | Basic Instruments Used for Isolated Tissue Experiments and Dose Response Curve Construction / Agonist and Antagonist Theory **(workshop)** | Synchronous lecturing/meeting | Homework |  | | 3 | 3.1 | Basic introduction to cell culture **(workshop)** | Synchronous lecturing/meeting | Homework |  | | 4 | 4.1 | Heart Sounds | Synchronous lecturing/meeting |  |  | | 5 | 5.1 | Lung Volume **(workshop)** | Synchronous lecturing/meeting | Homework |  | | 6 | 6.1 | **Mid-term exam** |  |  |  | | 7 | 7.1 | Neuromuscular Transmission and The Autonomic nervous system | Synchronous lecturing/meeting |  |  | | 8 | 8.1 | Olfactory and taste sensory system | Synchronous lecturing/meeting |  |  | | 9 | 9.1 | GIT system\_ stomach | Synchronous lecturing/meeting |  |  | | 10 | 10.1 | Analgesics\_ general overview **(workshop)** | Synchronous lecturing/meeting | Homework |  | | 11 | 11.1 | Students Presentations | Synchronous lecturing/meeting | Presentations |  | | 12 | 12.1 | Students Presentations | Synchronous lecturing/meeting | Presentations |  | | 13 | 13.1 | Students Presentations | Synchronous lecturing/meeting | Presentations |  | | 14 | 14.1 | **Final Exam** |  |  |  | | 15 | 15.1 |  |  |  |  | |

* Teaching methods include: Synchronous lecturing/meeting; Asynchronous lecturing/meeting
* Evaluation methods include: Homework, Quiz, Exam, pre-lab quiz…etc

**23 Evaluation Methods:**

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| Opportunities to demonstrate achievement of the ILOs are provided through the following assessment methods and requirements:   |  |  |  |  |  | | --- | --- | --- | --- | --- | | **Evaluation Activity** | **Mark** | **Topic(s)** | **Period (Week)** | **Platform** | | Mid Exam | 30 |  |  |  | | Workshops and worksheets | 20 |  | 4 weeks |  | | Seminars | 10 |  | 3 weeks |  | | Final Exam | 40 |  |  |  | |  |  |  |  |  | |  |  |  |  |  | |  |  |  |  |  | |

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

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| Computers , and Internet connection. |

**25 Course Policies:**

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| A- Attendance policies: Attendance of the laboratory is expected and mandatory.Students who are more than 5-10 minutes late, or who leave early from the lab. will be counted as absent.Students are allowed maximum of 15% of scheduled class hours per term. Any single absence beyond that will be reported to the dean and student will be subjected to the rules and regulations of University of Jordan including course dismissal B- Absences from exams and submitting assignments on time:  Makeup exams: Makeup exams should not be given unless there is a valid excuse: student’s hospitilization or death of a first degree family member. Arrangements to take an exam at a time different than the one scheduled MUST be made prior to the scheduled exam time.  C- Health and safety procedures: None.  D- Honesty policy regarding cheating, plagiarism, misbehavior:   * Cheating policy: The participation, or the commitment of cheating will lead to applying ALL the following penalties: * 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)   E- Grading policy:  Mid-term Exam 30%  2.  Final Exam 40%  3.   others 30%  ( 10% seminar and behavior + 20% worksheets)  F- Available university services that support achievement in the course:  The lab will be online, and meetings will take place at Microsoft teams . |

**26 References:**

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| A- Required book(s), assigned reading and audio-visuals:   * Basic & Clinical & Pharmacology, 14th Ed. 2019 by Katzung (ISBN: 978-0071825054) * Pharmacology: Examination & Board review, 12th Ed. 2018 by Katzung & Trevor (ISBN: 978-0071789233) * Practical Pharmacology for the Pharmaceutical Sciences by Michael Salmon, 2014   B- Recommended books, materials and media: - |

**27 Additional information:**

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| None. |

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

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

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

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

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