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| **1** | **Course title** | Medicinal Chemistry III |
| **2** | **Course number** | 1201515 |
| **3** | **Credit hours** | 3 |
| **Contact hours (theory, practical)** | 8:30-9:45 SMTW |
| **4** | **Prerequisites/corequisites** | Medicinal Chemistry I |
| **5** | **Program title** | Pharmacy and PharmD |
| **6** | **Program code** |  |
| **7** | **Awarding institution** | The University of Jordan |
| **8** | **School** | School of Pharmacy |
| **9** | **Department** | Pharmaceutical Sciences |
| **10** | **Level of course** | Undergraduate |
| **11** | **Year of study and semester (s)** | Fifth year, Summer semester |
| **12** | **Final Qualification** |  |
| **13** | **Other department (s) involved in teaching the course** | NA |
| **14** | **Language of Instruction** | English |
| **15** | **Teaching methodology** | Online |
| **16** | **Electronic platform(s)** | Moodle Microsoft Teams |
| **17** | **Date of production/revision** | October 10th 2021 |

**18 Course Coordinator:**

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| Dr.Sanaa K. Bardaweel  Office Number 231  Phone Number 23318  Email s.bardaweel@ju.edu.jo |

**19 Other instructors:**

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| Name:  Office number:  Phone number:  Email:  Name:  Office number:  Phone number:  Email: |

**20 Course Description:**

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| This course includes detailed studies chemistry, biochemistry, pharmacology and metabolism of clinically important natural and synthetic steroidal and non-steroidal autocoids which also function as peripheral neurohormones. |

**21 Course aims and outcomes:**

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| A- Aims:  1‐To correlate physiochemical properties of molecules with their molecular pharmacological activity (SAR).  2‐To understand the function of drugs affecting autonomic nervous system at the molecular level.  3‐To appraise the drugs treating hypertension, angina according to pathophysiology of disease.  4‐To assess diabetes manifestations and target of drug therapy.  5‐To study molecular targets for treatment of dyslipidemia.  6‐To understand the receptor targets of CNS diseases and the drugs attributed with them.  B- Intended Learning Outcomes (ILOs):  Upon successful completion of this course, students will be able to:  **A. Knowledge and Understanding:**  Student is expected to  A1-Be able to discuss the structure activity relationships (SAR) that control the pharmacokinetics (drug absorption, distribution, metabolism and excretion) and pharmacodynamics (mechanism of action of drug with respective receptor) of significant fraction of clinically applicable Antihistamines, Parasympathomimetics, Parasympatholytics, Adrenergic agonists, Adrenergic antagonists, Anti angina, ACE inhibitors, Antihyperlipidemic agents, Hypoglycaemic agents, Diuretics Steroids, NSAIDs, General anesthetics, Sedative and hypnotics, Anxiolytics, Anti convulsants, Anti psychotics  A2- Be able to predict the mechanis of action, pharmacokinetic and pharmacodynamic properties of various pharmacological agents based on the molecular structures.  **B. Intellectual Analytical and Cognitive Skills:**  Student is expected to  B1- Employ acquired background knowledge (i.e., SAR) as appropriate for  understanding drug-drug interactions and some side effects of  pharmacological agents.  B2-Employ acquired background knowledge as appropriate for  understanding and suggesting appropriate clinically suitable combinations of pharmacological agents intended to reduce side effects or to avoid drug-drug interactions.  **C. Subject-Specific Skills:** Student is expected to  C1- Employ theoretical organic chemistry knowledge for the synthesis of  medicinal compounds.  C2- Employ background knowledge in purification techniques (i.e., crystallization) for purifying chemical structures during synthesis.  C3- Employ analytical techniques, i.e., infrared spectroscopy, thin layer chromatography and nuclear magnetic resonance (Demo), for characterizing chemical structures during synthetic steps.  **D. Transferable Key Skills:** Students is expected to  D1- Acquire “clinical-chemical” intuition by which the student can associate the therapeutic properties of certain medicinal agent and its corresponding chemical structure.  D2- Think in a multidisciplinary way through which the student ca n endeavor smoothly to correlate the mechanism of action of a therapeutic agent to its site of action, chemical structure and medicinal properties. |

**22. Topic Outline and Schedule:**

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| |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | **Week** | **Lecture** | **Topic** | Synchronous lecturing (On campus, MS teams) | **Evaluation Methods\*\*** | **References** | | 1 | 1.1 | Antihistamine | Synchronous lecturing (On campus, MS teams) | Quiz +Exam | 1+2 | | 1.2 | H1 Blockers | Synchronous lecturing (On campus, MS teams) | Quiz+ Exam | 1+2 | | 1.3 | H2 Blockers | Synchronous lecturing (On campus, MS teams) | Quiz +Exam | 1+2 | | 2 | 2.1 | PPI | Synchronous lecturing (On campus, MS teams) | Exam | 1+2 | | 2.2 | Parasympathomimetics | Synchronous lecturing (On campus, MS teams) | Exam | 1+2 | | 2.3 |  | Synchronous lecturing (On campus, MS teams) |  |  | | 3 | 3.1 | Parasympatholytics | Synchronous lecturing (On campus, MS teams) | Exam | 1+2 | | 3.2 | Parasympatholytics | Synchronous lecturing (On campus, MS teams) | Exam | 1+2 | | 3.3 |  | Synchronous lecturing (On campus, MS teams) |  |  | | 4 | 4.1 | Adrenergic agonists | Synchronous lecturing (On campus, MS teams) | Exam | 1+2 | | 4.2 | Adrenergic antagonists | Synchronous lecturing (On campus, MS teams) | Exam | 1+2 | | 4.3 | Anti angina | Synchronous lecturing (On campus, MS teams) | Assignment +Exam | 1+2 | | 5 | 5.1 | ACE inhibitors | Synchronous lecturing (On campus, MS teams) | Assignment +Exam | 1+2 | | 5.2 | Antihyperlipidemic agents, | Synchronous lecturing (On campus, MS teams) | Assignment+ Exam | 1+2 | | 5.3 | Steroids | Synchronous lecturing (On campus, MS teams) | Exam | 1+2 | | 6 | 6.1 | NSAIDs | Synchronous lecturing (On campus, MS teams) | Exam | 1+2 | | 6.2 |  | Synchronous lecturing (On campus, MS teams) |  |  | | 6.3 | Diuretics | Synchronous lecturing (On campus, MS teams) | Exam | 1+2 | | 7 | 7.1 | Hypoglycaemic agents | Synchronous lecturing (On campus, MS teams) | Exam | 1+2 | | 7.2 |  | Synchronous lecturing (On campus, MS teams) |  |  | | 7.3 | CNS agents | Synchronous lecturing (On campus, MS teams) | Exam | 1+2 | | 8 | 8.1 | CNS agents | Synchronous lecturing (On campus, MS teams) | Exam | 1+2 | | 8.2 |  | Synchronous lecturing (On campus, MS teams) |  |  | | 8.3 |  |  |  |  | |

* 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** | | Quiz | 10 | 1 | 3ed week | Online (LM system) | | Assignment | 10 | 4&5 | Week 10 | Online (LM system) | | Midterm | 30 | 1-5 | Week 8 | On Campus | | Final | 50 | 1-8 | Week 12 | On Campus | |  |  |  |  |  | |  |  |  |  |  | |  |  |  |  |  | |

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

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**25 Course Policies:**

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| A- Attendance policies:  Attendance is required per UJ regulations  B- Absences from exams and handing in assignments on time:  No make up for quizzes under all circumstances  Midterm and final exams make up are per UJ regulations, strictly  Any task submitted after its announced deadline will be rejected regardless of any excuse  C- Health and safety procedures:  No food or beverages are to be admitted into the classroom  D- Honesty policy regarding cheating, plagiarism, misbehavior:  All acts of plagiarism and or cheating are not tolerated and will be punished per UJ regulations  E- Grading policy:  (tentative course scale)  F- Available university services that support achievement in the course: |

**26 References:**

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| 1. Required book (s), assigned reading and audio-visuals:   Main Reference/s:   1. An Introduction to Medicinal Chemistry, 4th edition; Graham L. Patrick; Oxford University Press Inc., New York, 2008. 2. Wilson and Gisvold’s text book of Organic, Medicinal and Pharmaceutical Chemistry; Delgado, J.N.; Remers, W.A., Lippincott-Raven press, Philadelphia, 11th Ed. 3. Foye's Principles of Medicinal Chemistry, 5th edition; David A. Williams, William O. Foye, Thomas L. Lemke; Lippincott Williams & Wilkins: Philadelphia, 2002.   References:  1;Burger's Medicinal Chemistry, 6th ed., Vol. 1-6; D.J. Abraham, Ed.  2.Burger's Medicinal Chemistry, 5th edition, Vol. 1-5; M.E. Wolff, Ed.  3.Burger's Medicinal Chemistry, 4th edition, Vol. 1-3; M.E. Wolff, Ed.  4.Organic Chemistry of Drug Synthesis, Vol. I-6, Daniel Lednicer and Lester A.  Mitscher  5.Goodman & Gilman's the Pharmacological Basis of Therapeutics, 10th ed., Joel G.  6.Hardman & Lee L. Limbird, Eds.; Alfred Gilman, Contrib. Ed  The Pharmacological Basis of Therapeutics, 4th ed., Louis S. Goodman and Alfred Gilman   1. Recommended books, materials, and media: |

**27 Additional information:**

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

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

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

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

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