

The University of Jordan Accreditation & Quality Assurance Center



**COURSE Syllabus**

|  |  |  |
| --- | --- | --- |
| **1** | Course title | Case studies in pharmacokinetics |
| **2** | Course number | **1203476** |
| **3** | **Credit hours (theory, practical)** | **1 (practical)** |
| **Contact hours (theory, practical)** | **3 (practical)** |
| **4** | Prerequisites/corequisites | **1203475** |
| **5** | Program title | **BSc in Pharmacy and PharmD** |
| **6** | Program code |  |
| **7** | Awarding institution | **The University of Jordan** |
| **8** | Faculty | **Pharmacy** |
| **9** | Department | **Biopharmaceutics & Clinical Pharmacy** |
| **10** | Level of course | **4th year undergraduate** |
| **11** | Year of study and semester (s) | **Spring 2020/2021** |
| **12** | Final Qualification | **-** |
| **13** | Other department (s) involved in teaching the course | **-** |
| **14** | Language of Instruction | **English** |
| **15** | Date of production/revision | **February 2021** |

# Course Coordinator:

**Office numbers, office hours, phone numbers, and email addresses should be listed. Dr Mariam Abdel Jalil, PhD.**

**Office 109**

**E-mail:** [**m.abdeljalil01@ju.edu.jo**](mailto:moh.saleh@ju.edu.jo)

**Office hours: TBA**

1. **Other instructors**:

**Prof. Mutasim Al-Ghazawi, PhD.**

**Office 138**

**E-mail:** [**alghazam@ju.edu.jo**](mailto:alghazam@ju.edu.jo) **Office hours to be announced**

**Prof. Rana Abu Dahab, PhD.**

*Office 132.*

*E-mail:* [*abudahab@ju.edu.jo*](mailto:abudahab@ju.edu.jo)

*Office hours to be announced*

Dr Mohammad Saleh

*Office 130.*

*E-mail:* [*m.abdeljalil01@ju.edu.jo*](mailto:m.abdeljalil01@ju.edu.jo)

*Office hours to be announced*

1. **Course Description:**

This practical course in addition to the co-requisite course (1203476) provides students with a basic intuitive understanding of the pharmacokinetic principles, terminology, models, equations and factors affecting drug absorption, distribution , metabolism and excretion and its importance in drug therapeutic or toxic effects. Emphasis will be placed upon the prediction of plasma levels of drugs under varying conditions applying different pharmacokinetic parameters. Handling pharmacokinetic parameters of drugs in the body and solving problems

### Course aims and outcomes:

**A- Aims:**

* 1. Mathematical background for modeling of the concentration time relationships for the different routes of administration.
  2. Designing dosing regimens by relating plasma concentration of drugs to their pharmacological and toxicological action,
  3. Individualization of therapy for patients.
  4. Designing therapeutic drug monitoring plans for drugs with narrow therapeutic index or high toxicity.

### B- Intended Learning Outcomes (ILOs): Upon successful completion of this course students will be able to …

* + 1. **Knowledge and understanding**

A1) Understanding mathematics of the time course of Absorption, Distribution, Metabolism, and Excretion (ADME) of drugs in the body.

A2) Individualization of therapy and therapeutic drug monitoring.

### Intellectual skills (cognitive and analytical)

B1) Utilization of mathematics of the time course of Absorption, Distribution, Metabolism, and Excretion (ADME) of drugs in the body for dosage optimization.

B2) Developing dosing regimens for the individualization of therapy for the patient

### Subject specific skills

C1) Fitting concentration time profiles and estimating pharmacokinetic parameters. C2) Adjusting dosing regimens in case of renal and hepatic dysfunction.

### Transferable Skills

D1) Communicating dosage adjustment with physicians and patients. D2) Suggesting therapeutic monitoring plans for clinicians.

### Program Competencies Achieved:

1.4 Identify different routes of administration of medicines

1.13Advise patients on proper storage, usage and adherence of dispensed medicines

2.5 Identify basic principles of drug pharmacokinetics and recognize disease conditions and other factors that interfere with safety and efficacy of medicines

2.9 Advise patients and other health professionals on proper usage of medicines including their strength, frequency, dosage form and route of administration

3.6 Demonstrate the ability to perform pharmaceutical calculations

5.1 Communicate effectively with patients and other healthcare professionals

5.7 Build positive relationships with patients and other healthcare professionals

7.5 Utilize information technology tools to enhance working experience

# Topic Outline and Schedule:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Topic | Wee k | Instructor | Achieved ILOs | Evaluation Methods | Reference |
| 1. Introduction | 2 | Dr Mohammad, Dr Mutasim, Dr Rana, Dr Mariam | A1, B1, C1 | Exams, Quizzes, and reports | Lab manual and Pharmacokinetic s class material |
| 2. The one-compartment open model with an intravenous bolus dose: calculating pharmacokinetic  parameters from plasma data | 3-4 | Dr Mohammad, Dr Mutasim, Dr Rana, Dr Mariam | A1, B1, C1 | Exams, Quizzes, and reports | Lab manual and Pharmacokinetic s class material |
| 3. The one-compartment open model with an intravenous bolus dose:  calculating pharmacokinetic parameters from urinary data | 5 | Dr Mohammad, Dr Mutasim, Dr Rana, Dr Mariam | A1, B1, C1 | Exams, Quizzes, and reports | Lab manual and Pharmacokinetic s class material |
| 4. The one-compartment open model with an intravenous infusion: calculating pharmacokinetic parameters from continues infusion, infusion with a bolus  dose, post infusion data | 6 | Dr Mohammad, Dr Mutasim, Dr Rana, Dr Mariam | A1, B1, C1 | Exams, Quizzes, and reports | Lab manual and Pharmacokinetic s class material |
| 5. The one-compartment open model with absorption and elimination: calculating pharmacokinetic parameters from plasma data | 7 | Dr Mohammad, Dr Mutasim, Dr Rana, Dr Mariam | A1, B1, C1 | Exams, Quizzes, and reports | Lab manual and Pharmacokinetic s class material |
| Midterm exam | 8 |  |  | Exams, Quizzes, and reports | Lab manual and  Pharmacokinetic s class material |
| 6. The one-compartment open model with absorption and elimination: calculating  pharmacokinetic parameters from plasma data | 9 | Dr Mohammad, Dr Mutasim, Dr Rana, Dr Mariam | A1, B1, C1 | Exams, Quizzes, and reports | Lab manual and Pharmacokinetic s class material |
| 7. The one-compartment open model with multiple dosing kinetics: multiple dosing IV | 10 | Dr Mohammad, Dr Mutasim, Dr Rana, Dr Mariam | A1, B1, C1 | Exams, Quizzes, and reports | Lab manual and Pharmacokinetic s class material |
| 8. The one-compartment open model with multiple  dosing kinetics: multiple dosing oral | 11 | Dr Mohammad, Dr Mutasim, Dr Rana, Dr Mariam | A1, B1, C1 | Exams, Quizzes, and reports | Lab manual and Pharmacokinetic s class material |
| 9. Designing dosing regimens | 12 | Dr Mohammad, Dr Mutasim, Dr Rana, Dr Mariam | A2, B2, C2 | Exams, Quizzes, and reports | Lab manual and Pharmacokinetic s class material |
| 10. The two-compartment open model with intravenous administration. | 13 | Dr Mohammad, Dr Mutasim, Dr Rana, Dr Mariam | A1, B1, C1 | Exams, Quizzes, and reports | Lab manual and Pharmacokinetic s class material |
| Final exam | 14 |  |  |  |  |

1. **Teaching Methods and Assignments:**

**Development of ILOs is promoted through the following teaching and learning methods:**

**Learning skills: Critical thinking Problem-solving skills Scientific reasoning Communication skills**

|  |  |  |
| --- | --- | --- |
| **ILO/s** | **Learning Methods** | **Evaluation Methods** |
| **A, B, C,**  **and D** | Lectures | Exams, Quizzes, and reports |
| **A, B, C,**  **and D** | Case discussion | Exams, Quizzes, and reports |

1. **Evaluation Methods and Course Requirements:**

**Opportunities to demonstrate achievement of the ILOs are provided through the following assessment methods and requirements:**

**Exams Quizzes Reports**

1. **Course Policies:**

A- Attendance policies:

***Attendance: Mandatory. First warning*** – with 1 absences ***Last warning*** – with 2 absences

Failing in the subject – with 3 absences

B- Absences from exams and handing in assignments on time:

Will result in zero achievement unless health report or other significant excuse is documented.

C- Health and safety procedures:

NA

D- Honesty policy regarding cheating, plagiarism, misbehavior:

The participation, the commitment of cheating will lead to applying all following penalties together

1)

2)

Failing the subject he/she cheated at

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

E- Grading policy:

Exams and Quizzes.

Mid Exam: 30 points

Quizzes, evaluation, and reports 30 points Final Exam: 40 points

Total 100 points

F- Available university services that support achievement in the course: Classrooms

1. **Required equipment:**

Data show and internet connection

1. **References:**

Applied biopharmaceutics and pharmacokinetics, Shargel and Yu, 7th edition, 2016

1. **Additional information:**

## Name of Course Coordinator: Dr. Mariam Abdel Jalil -Signature: Date: Feb, 07, 2021

Head of curriculum committee/Department: ------------------------- Signature: ---------------------------------

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

Head of curriculum committee/Faculty: ------------------------- Signature: ---------------------------------

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

Copy to: Head of Department

Assistant Dean for Quality Assurance Course File