האוניברסיטה העברית בירושלים
THE HEBREW UNIVERSITY OF JERUSALEM

The Hebrew University of Jerusalem

Syllabus

Advanced Drug Delivery Systems - 64643

Last update 18-09-2022

HU Credits: 3

Degree/Cycle: 1st degree (Bachelor)

Responsible Department: Pharmacy

Academic year: 0

Semester: 1st Semester

Teaching Languages: Hebrew

Campus: Ein Karem

Course/Module Coordinator: Ofra Benny

Coordinator Email: ofra.benny@mail.huji.ac.il

Coordinator Office Hours: Sunday, 10:00-14:00

Teaching Staff:

Prof Ofra Benny

Course/Module description:

The course provides background in biomaterials (polymers) and Advanced drug delivery systems in clinical use are taught. The specific delivery systems are characterized by their formulation, mechanism of drug release and route of administration. The controlled delivery systems include delayed release, sustained release, particles, and implantable.

The second part of the course will discuss medical applications such as cardiology, brain disease, skin, cancer and more

Course/Module aims:

1. To know what are advanced drug delivery systems.
2. To be familiar with distinct formulations and to differentiate between mechanisms of drug release.
3.To integrate and combine critical considerations in developing advanced drug delivery systems.

Learning outcomes - On successful completion of this module, students should be able to:

- *To categorize drug delivery systems*
- *To compare between conventional and controlled delivery*
- *To assess the pros and cons of drug delivery systems*
- *To classify dosage forms by formulation, route of administration and mechanism of drug release*
- *To differentiate between kinetics of drug release*
- *To identify controlled rug delivery*
- *To design advanced delivery system for controlled drug delivery*

Attendance requirements(%):

80

Teaching arrangement and method of instruction: Filmed lectures that will be uploaded via Ponopto

Course/Module Content:

- *Introduction, polymers, dosage forms, routes of administration, controlled delivery systems, definitions, cons and pros, polymers used, regulations and pharmacopeial directives, consideration in developing drugs and delivery systems.*

• *Kinetics of delayed release, sustained and controlled release, diffusion, permeability, dissolution, pharmacopeial tests.*
• *Reservoir systems, zero order, rate limiting membrane, first order, demonstrations of tablets and capsules, osmotic delivery, demonstrations.*
• *Matrix delivery systems, Higuchi's equations, demonstration of tablets and capsules, Hydrophilic matrices, degradable matrices, demonstrations.*
• *Injectable and implantable delivery systems, demonstrations.*

Required Reading:
will be given during the course

Additional Reading Material:
Robinson, Joseph R.; Lee, Vincent H. L. Controlled drug delivery: Fundamentals and applications; Marcel Dekker
Remington, The science and practice of pharmacy; Lippincott Williams & Wilkins.
Sinko, PJ, Martin's physical pharmacy and pharmaceutical sciences :Physical chemical and biopharmaceutical principles in the pharmaceutical sciences; Lippincott Williams & Wilkins.
Allen, LV, Ansel's pharmaceutical dosage forms and drug delivery systems; Lippincott Williams & Wilkins

Course/Module evaluation:
End of year written/oral examination 80 %
Presentation 0 %
Participation in Tutorials 0 %
Project work 0 %
Assignments 20 %
Reports 0 %
Research project 0 %
Quizzes 0 %
Other 0 %

Additional information:
There will be lectures in class and some by recorded via moodle.

There will be weekly tasks (obligatory)

There will be one moodle exams during the semester

Final exam will be either by moodle or in campus according to Health Minister

guidelines