

CBE:5300

DRUG DELIVERY DEVICES

Spring 2017

Time and Place

9:30 AM-10:45 AM Tuesday-Thursday
2133 Seamans Center for the Engineering Arts & Sciences

Course Description

This course will discuss the history of drug delivery devices and their role in medicine, and will review the design of several clinical device categories (implantable, transdermal, inhalation), as well pre-clinical technologies on the horizon.

Instructors

Prof. Eric Nuxoll
eric-nuxoll@uiowa.edu, 4140 SC
Prof. Jennifer Fiegel
jennifer-fiegel@uiowa.edu, 4128 SC

Course Format

Lectures with in-class discussion.

Instructional materials

- Required text(s): none
- Reading materials assigned or uploaded to course website (ICON)

Tentative Course Timeline:

Week 1: Introduction to drug delivery systems
Week 2: Implantable devices
Week 3: Degradable polymers
Week 4: Responsive delivery (hydrogels)
Week 5: Microelectromechanical Systems (MEMS)
Week 6: Formulation Devices
Week 7: In-class Midterm exam
Week 8: Dermal biology, drug delivery through the skin
Week 9: First generation transdermal systems
Week 10: Second generation transdermal systems
Week 11: Microneedles
Week 12: Pulmonary biology, drug delivery to the lungs
Week 13: Pulmonary devices, e-cigarettes
Week 14: In-class Final exam
Week 15: Student presentations
Finals Week: Student presentations

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Grading

The following criteria will be used to evaluate each student's performance in the course:

1. Homework assignments (35% of grade)
2. Midterm and final exams (40% of grade)
3. Final paper and presentation (25% of grade)

All assignments are due by 5 PM on date indicated and should be uploaded to the appropriate ICON dropbox (<https://icon.uiowa.edu/index.shtml>). Late or missed assignments: Unless prior arrangements are made with the instructor, 10 pts will be deducted from the final score for each day an assignment is overdue.

Reading Assignments

Reading assignments related to the material discussed in class will be posted at least 2 days prior to each class. Students are expected to come to class prepared to discuss material from the reading assignments.

Scheduling conflicts

Students anticipating a scheduling conflict should contact the instructor as soon as possible. Exams will be offered at alternative times as consistent with the University's exam policies. These policies can be viewed at www.registrar.uiowa.edu/exams/exampolicy.aspx

Accommodations for Disabilities

If you feel that you may need an accommodation based on the impact of a disability please contact Prof. Nuxoll or Prof. Fiegel privately to discuss your specific needs. You may also contact the Office of Student Disability Services (319-335-1462) to discuss the accommodations that are available for students with documented disabilities.

This course is housed in the College of Engineering, therefore class policies on matters such as requirements, grading, and sanctions for academic dishonesty are governed by the College of Engineering. Students wishing to add or drop this course after the official deadline must receive the approval of the Dean of the College of Engineering. Details of the University policy of cross enrollments may be found at:

<http://www.uiowa.edu/~provost/deos/crossenroll.doc>