

# **CHEM 719**

## **Drug Delivery Systems**

Instructor: Prof. Regina Wachenheim

Email: [regina.s.wachenheim@njit.edu](mailto:regina.s.wachenheim@njit.edu)

### **Objective**

This course emphasizes the importance of effective drug delivery to achieve specific therapeutic outcomes. Students will learn current trends in research on the design of drug delivery systems to release drug content in a controllable and targeted manner. This course focuses on disease-based targeting, organ-based targeting, cell- and cell organelle based targeting, physiochemical approaches for targeting, carrier-based approaches for delivery, characterization techniques, nanotoxicology and regulatory issues.

### **Required Textbook**

#### **Targeted Drug Delivery: Concepts and Designs**

Padma V. Devarajan & Sanyog Jain (2015)

### **Weekly Time Commitment**

It is estimated that students will spend an average of 9 to 12 hours per week on this course. The amount of time that will be required will vary week to week. This time commitment is consistent with the accepted standards for a three-credit, graduate-level course.

### **Term Paper**

Students are responsible for submitting the term paper on or before the due date. Papers will be reduced by 5 points for each day that they are late. Papers submitted one week late will not be accepted and will receive a grade of zero. Extenuating circumstances due to an emergency will only be considered at the discretion of the instructors with proper documentation. The paper must be a eight to ten pages in length, double spaced, excluding references, tables, figures, etc, and must be formatted according to the 6th Ed. American Psychological Association(APA) format. 6th edition APA Style Format can be found at:

<http://owl.english.purdue.edu/owl/resource/560/02/> .

All references must be sites. Any form of plagiarism will result in a failing grade on the paper and the violation will be reported to the department.

### **Academic Integrity**

All students must observe and support high standards of honesty and integrity in all aspects of education, practice, and research. For this reason, all students in this course are expected to abide by the School's Faculty/Student Honor Code and accept responsibility to help ensure that these standards are maintained by reporting violations of the Honor Code observed in others.

All academic integrity violations will be considered with gravest concern and may be punishable with sanctions as severe as suspension or dismissal.

**Grading**

10% Term Paper

40% Midterm Exam

40% Final Exam

**Topics to be Covered (This is a plan and may be subject to change)**

07-Sep	Basic concepts, strategies and challenges
14-Sep	Tumor Targeting
21-Sep	Infectious Diseases
28-Sep	Brian, Lung & Liver Targeting
05-Oct	Mitochondria & Nucleic Acid Therapeutics
12-Oct	Mucosal Vaccine and M Cell
19-Oct	Midterm
26-Oct	Physicochemical Approaches to Targeting
02-Nov	Functional Lipid Particulates, Nanoemulsions
09-Nov	Multifunctional Polymetric Nano-Carriers, Polymetric Micelles, & Dendritic Polymers
16-Nov	Inorganic Nanoparticles & Carbon-based Nanomaterials
21-Nov (Tuesday)	Characterization Techniques (Term Paper Due)
30-Nov	Nanotoxicology and Regulatory Issues Part 1
07-Dec	Nanotoxicology and Regulatory Issues Part 2
21-Dec	Final Exam