

Spring 2022

## **CHEM 719-102: Drug Delivery Systems**

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## **CHEM 719-Drug Delivery Systems** *Spring 2022 Course Syllabus*

### [NJIT Academic Integrity Code:](#)

The shift to remote and converged teaching due to the COVID-19 pandemic has required that both instructors and students make changes to their normal working protocols for courses. Students are asked to practice extra care and attention in regard to academic honesty, with the understanding that all cases of plagiarism, cheating, multiple submission, and unauthorized collaboration are subject to penalty. Students must properly cite and attribute all sources used for papers and assignments. Students may not collaborate on exams or assignments, directly or through virtual consultation, unless the instructor gives specific permission to do so. Posting an exam, assignment, or answers to them on an online forum (before, during, or after the due date), in addition to consulting posted materials, constitutes a violation of the university's Honesty policy. Likewise, unauthorized use of live assistance websites, including seeking "expert" help for specific questions during an exam, can be construed as a violation of the honesty policy.

All Students should be aware that the Department of Chemistry & Environmental Science (CES) takes the University Code on Academic Integrity at NJIT very seriously and enforces it strictly. This means that there must not be any forms of plagiarism, i.e., copying of homework, class projects, or lab assignments, or any form of cheating in quizzes and exams. Under the University Code on Academic Integrity, students are obligated to report any such activities to the Instructor.

### **COURSE INFORMATION**

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.

#### **Instructor:**

Prof. Amir K. Varkouhi  
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#### **Required Reading**

#### **Suggested Text Books (Not required - for your reference only)**

[Drug delivery : fundamentals & applications](#)

Hillery, Anya M.; Park, Kinam  
ISBN: 978-1-4822-1771-1

#### **Term Paper**

Students are responsible for submitting/presenting the term paper on or before the due date. Extenuating circumstances due to an emergency will only be considered at the discretion of the instructors with proper

documentation. The paper must be 4-6 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/> .

The term paper will be written and presented by students. Any form of plagiarism will result in a failing grade on the paper and the violation will be reported to the department.

**Number of Credits:** 3

## **POLICIES**

**All CES students must familiarize themselves with, and adhere to, all official university-wide student policies. CES takes these policies very seriously and enforces them strictly.**

**Grading Policy:** The final grade in this course will be determined as follows:

<b>Homework</b>	As extra score
<b>Quizzes</b>	As extra score
<b>Midterm Exam</b>	35%
<b>Final Exam</b>	35%
<b>Term paper and presentation</b>	30%

Your final letter grade in this course will be based on the following tentative curve:

<b>A</b>	<b>C</b>
<b>B+</b>	<b>D</b>
<b>B</b>	<b>F</b>
<b>C+</b>	

**Attendance Policy:** Attendance at classes will be recorded and is **mandatory**. Each class is a learning experience that cannot be replicated through simply “getting the notes.”

**Homework Policy:** Homework is an expectation of the course. The homework problems set by the instructor are to be handed in for grading and will be used in the determination of the final letter grade as described above.

**Exams:** There will be two midterm exams held in class during the semester and one comprehensive final exam. The following exam periods are tentative and therefore possibly subject to change:

Midterm Exam I	23 February
Term paper presentation	20-27 April
Final Exam	11 May

The final exam will test your knowledge of all the course material taught in the entire course.

**Makeup Exam Policy:** There will normally be **NO MAKE-UP QUIZZES OR EXAMS** during the semester. In the event that a student has a legitimate reason for missing a quiz or exam, the student should contact the Dean of Students office and present written verifiable proof of the reason for missing the exam, e.g., a doctor’s note, police report, court notice, etc. clearly stating the date AND time of the mitigating problem. The student must also notify the CES Department Office/Instructor that the exam will be missed so that appropriate steps can be taken to make up the grade.

**Cellular Phones:** All cellular phones and other electronic devices must be switched off during all class times. Such devices must be stowed in bags during exams or quizzes.

## Course Outline

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

Date	Topic	Assignment
19 Jan	Introduction of the course, Basic Concepts	
26 Jan	Principles of Controlled Release	
2 Feb	Transdermal Drug Delivery	
9 Feb	Long Acting Injections and Implants	
16 Feb	Nasal Drug Delivery	
23 Feb	Midterm exam	
2 March	Nanotechnologies for Drug Delivery and Targeting 1	
9 March	Nanotechnologies for Drug Delivery and Targeting 2	
16 March	-----	Spring break
23 March	Gene delivery: Viral and Nonviral Delivery Systems	
30 March	Theranostic Nanoagents	
6 Apr	Oral Drug Delivery	
13 Apr	Application of Cells and Exosomes for drug delivery	
20 Apr	Presentation and discussion of the Term paper	
27 Apr	Presentation and discussion of the Term paper	
4 May	-----	Reading day
11 May	Final exam	