

**UNIVERSITY OF ARIZONA**  
**DEPARTMENT OF CHEMICAL AND ENVIRONMENTAL ENGINEERING**  
**CHEE 489/589. Trends in Nanomedicine Engineering- Fundamentals of Therapeutics**  
**and Drug Delivery Systems.**

**SPRING 20xx**

**Location / Day(s) / Time TBD**

**Instructor:** Roberto Guzmán, Harshbarger 134D  
Phone: 520-621 6041  
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**Office Hours:** TBD or by appointment.

**Course Objectives:**

1. Provide the foundations in nanomedicine engineering and drug delivery systems.
2. Review methods of drug delivery platforms.
2. Discuss concepts concerning applications and development of drug delivery systems.
3. Introduce approaches for the preparation and characterization of drug delivery systems.
4. Overview steps for clinical translation of nanomedicine and drug delivery products.
5. Provide specific case-studies in nanomedicine and drug delivery research and development.

**Expected learning outcomes:**

1. Ability to design polymeric particles for drug delivery carriers
2. Capacity to encapsulate pharmaceuticals into polymer drug carriers
3. Ability to analyze release of pharmaceuticals from drug delivery carriers in vitro.
4. Ability to design studies to evaluate different drug delivery carriers in vitro and in vivo.

**Textbook requirements:**

There will not be a standard textbook. In the course we will use a combination of lecture notes produced from several textbooks and recent research articles from the literature. References will be provided for the Lectures. Course notes will be placed on the course web site (in D2L).

**Number of required examinations and papers**

There will be three examinations and one term paper (and presentation) will be required in this course.

## Grade policies

### Undergraduate Credit:

**20% Homework assignments.** There will be homework assignments approximately every two weeks. The final homework average will correspond to 20% of the final grade.

**45% Midterm examinations.** . There will three midterms each will correspond to 15% on the final grade.

**35% Term Paper.** A term paper concerning a topic in the area of nanomedicine and drug delivery will be required and presented to the class at the end of the semester. Grade distribution will be 20% written paper and 15% oral presentation.

**Final Exam-**A Final Term paper and Presentation will be completed during the Final Exam and will account for 35% of the final grade.

### Graduate Credit:

**15% Homework assignments.** There will be homework assignments approximately every two weeks. The final homework average will correspond to 15% of the final grade.

**45% Midterm examinations.** There will three midterms each will correspond to 15% on the final grade.

**40% Term Paper.** A term paper in the form of a research proposal concerning a topic in the area of nanomedicine and drug delivery will be required and presented to the class at the end of the semester. Grade distribution will be 25% written paper and 15% oral presentation.

**Final Exam-**A Final Term paper and Presentation will be completed during the Final Exam date (on May 7<sup>th</sup>).

**Course Final Grade:** Combination of HW, Midterms, Final Exam and Term paper and Presentation.

### Tests

First Test (date TBD) Tentative	15%
Second Test (date TBD) Tentative	15%
Third Test (date TBD) Tentative	15%

U-Final Term Paper (Date/time TBD) -	20%
(G-Final Term Paper (Date/time TBD) -	25%)

**Course Grade Distribution**

A > 90%	B > 80%	C > 70%	D > 60%
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**Absence Policy, Missed Examinations, Homework and Incompletes**

**Absence policy I:** Students are expected to be regular and punctual in class and participate in ALL class sessions. The University believes that students themselves are primarily responsible for attendance; however, **at the discretion of the instructor excessive or extended absences from class are sufficient reason for the instructor to recommend that the student be administratively dropped from the course.** Extenuating circumstances causing absence should be discussed with the instructor before the absence occurs, not post-facto.

**Addendum on attendance:**

**Attendance and Professional Conduct:**

Regular class attendance is required and active participation is expected. Professional conduct is assumed in this class. Students that are disruptive (e.g., talking, using cell phones, playing games or any other inappropriate behavior) will be asked to leave the class. Scholastic dishonesty of any kind (e.g. cheating, plagiarism, etc) will not be tolerated in this course. Students in violation of the University policy on scholastic dishonesty will be dealt with to the fullest extent.

Refer to the University policies at:

<http://deanofstudents.arizona.edu/policies-codes>

<http://deanofstudents.arizona.edu/policies-and-codes/code-academic-integrity>

<http://azregents.asu.edu/rrc/Policy%20Manual/5-308-Student%20Code%20of%20Conduct.pdf>

<http://deanofstudents.arizona.edu/policies-and-codes/student-disciplinary-procedures>

Threatening behavior by students is also not tolerated. Refer to the University policy at:

<http://policy.arizona.edu/threatening-behavior-students>

<http://www.hr.arizona.edu/policy/classified-staff/401.1>

*Disabled students must first register with "Disability Resources" i.e. the Disability Resource Center (DRC) and be identified to the course instructor through the University's online process in order to use reasonable accommodations. If you have any questions regarding DRC services, contact via DRC Website: <http://drc.arizona.edu> and Disability Resources (520-621-3268)*

*Information contained in the course syllabus may be subject to change with reasonable advance notice, as deemed appropriate by the instructor.*

**Absence Policy II:** All holidays or special events observed by organized religions will be honored for those students who show proper affiliation with that particular religion. Absences pre-approved by the University of Arizona Dean of Students (or Dean's designee) will be honored.

**Missed Examinations:** In principle, there will not be make-up exams. If you miss one class exam, (if justified) you should talk to the instructor to make arrangements and take the exam as soon as possible. If you miss any of the exams, an explanation of your absence must be provided within one week of the date of the exam or you will be administratively dropped from the course.

**Homework is not optional.**

**Incompletes:** To qualify for an incomplete, you must have taken the two class exams, submitted all the homework and have obtained an average score in those exams and HW at least equal to the lowest passing score in the course. If you then miss the final for a reason that can be appropriately and reasonably documented you may receive a grade of I. Situations not covered by the above will be treated on an individual basis, but you should expect incompletes to be rare.

**Textbook requirements:**

There will not be a standard textbook. In the course we will use a combination of lecture notes produced from several textbooks and recent research articles from the literature. Course notes will be placed on the course web site (in D2L).

**Number of required examinations and papers**

There will be three examinations and one term paper required in this course.

**Policies regarding expected classroom behavior (e.g., use of pagers/cell phones).**

No cell phone or pagers use or texting during class is permitted.

**Policies against plagiarism, etc., within the Student Code of Academic Integrity.** All students are expected to abide by the Student Code of Conduct and Academic Integrity and dishonesty such as plagiarism, cheating, etc. as defined by the National Academy of Sciences and specifically in the University of Arizona Student Code of Conduct:

<http://deanofstudents.arizona.edu/policiesandcodes/studentcodeofconduct>

**Policies against threatening behavior by students: Threatening Behavior by Students and Disruptive Behavior in an Instructional Setting.** All students are expected to abide by the Student Code of Conduct regarding classroom behavior as described in the University of Arizona Student Code of Conduct:

<http://deanofstudents.arizona.edu/codeofacademicintegrity>

**There are no required extracurricular activities in this course.**

**There are no special materials required for the class.**

**Accessibility and Accommodations:** It is the University's goal that learning experiences be as accessible as possible. If you anticipate or experience physical or academic barriers based on disability or pregnancy, please let me know immediately so that we can discuss options. You are also welcome to contact Disability Resources (520-621-3268) to establish reasonable accommodations.

Please be aware that the accessible table and chairs in this room should remain available for students who find that standard classroom seating is not usable.

**Guidelines subject to change.** The information contained in the course syllabus, other than the grade and absence policies, may be subject to change with reasonable advance notice, as deemed appropriate by the instructor.