

ME 498 NanoManufacturing for Sustainable Energy

Professor Cai

Syllabus

Spring 2025

LECTURE: Tu & Th 11:00 AM – 12:20 PM, Sidney Lu Mech Engr Bldg 2045.

OFFICE; EMAIL: 4414 MEL; lilicai@illinois.edu

OFFICE HOURS: Tue 1:30 – 2:30 PM on Zoom or by appointment

Zoom Link

<https://illinois.zoom.us/j/82505814493?pwd=R1VJMG5tZnBBZFFtNkIrb0NDNWtoUT09>

Meeting ID: 825 0581 4493

Password: 359517

GRADING:	LC3		LC4	
	Homework	40%	Homework	30%
	Midterm	30%	Midterm	30%
	Final Project	30%	Final Project	20%
			Review Paper	20%

Letter grades are assigned according to the following scale:

$97\% \leq A+ \leq 100\%$	$93\% \leq A < 97\%$	$90\% \leq A- < 93\%$
$87\% \leq B+ < 90\%$	$83\% \leq B < 87\%$	$80\% \leq B- < 83\%$
$77\% \leq C+ < 80\%$	$73\% \leq C < 77\%$	$70\% \leq C- < 73\%$
$67\% \leq D+ < 70\%$	$63\% \leq D < 67\%$	$60\% \leq D- < 63\%$
	$00\% \leq F < 60\%$	

WEBSITE: All course info (lecture notes, homework, etc.) will be posted at:
<https://canvas.illinois.edu>

PARTICIPATION: Class attendance and participation are required.

EXAMS: The **Midterm Exam** will be on **Tuesday, Mar 25**, in class.

OBJECTIVES: Meeting the world's growing energy needs in a sustainable fashion is one of the most pressing problems today. This course will introduce the scope of the energy problems, define some of the options for sustainable energy generation and storage, and look into the basic physics and chemistry of emerging sustainable energy technologies including batteries, electrolysis, thermal management, *etc.* The focus is to provide a basic understanding of the impacts of nanotechnology on emerging energy systems. Topics including the fundamental mechanisms and state-of-the-art techniques related to nano-manufacturing and advanced characterization of functional nanomaterials for sustainable energy applications will be discussed.

General Rules:

- 1) Class attendance and participation are required. Absence is not an excuse for missing class announcements or assignments.
- 2) Homework problems will be assigned every 1 – 2 weeks. You should complete the homework problems in order to prepare for the exams in the course.
- 3) You must provide official documentation on exam conflicts to the instructor **at least 1 week before the exam date.**
- 4) Any discussion of grading will be handled by the primary instructor (*i.e.*, Prof. Cai). **There is a 2-week limit on grade discussions.** There will be no discussions after the graded item after two weeks from when it was returned to the class.
- 5) *All students are responsible for knowing and understanding the University policies on academic integrity (see studentcode.illinois.edu).*