

ESM/BME/EST/MEC 400 RESEARCH IN NANOTECHNOLOGY (ELECTIVE)

Credit: 3

COURSE CATALOG DESCRIPTION:

This is the capstone course for the minor in Nanotechnology Studies (NTS). Students learn primary aspects of the professional research enterprise through writing a journal-quality manuscript and making professional presentations on their independent research (499) projects in a formal symposium setting. Students will also learn how to construct a grant proposal (a typical NSF graduate fellowship proposal), methods to search for research/fellowship funding, and key factors in being a research mentor.

PRE- OR COREQUISITE(S): ESM 213; at least one semester of independent research(499)

TEXT(S) OR OTHER REQUIRED MATERIAL: None

COURSE LEARNING OUTCOMES	SOS	ASSESSMENT TOOLS
Professional development in research enterprise	b d g	Portfolio
Writing research articles	g	Report (manuscript)
Grant writing	g i j k	Report (proposal)
Presenting research at conferences	g	Presentation
Mentoring research	g d k	Portfolio, observation

COURSE TOPICS

Week 1. Introduction to the professional research enterprise

Week 2. Writing a journal-quality manuscript; begin manuscript project

Week3. Review of progress on manuscripts; presentation of research abstracts; discussion of mentorship

Week 4. Initial meeting with ESM 213 students, assignment of roles as research mentors; ethics in the context of professional research

Week 5. Review of progress on manuscripts; discussion of funding mechanisms in research; workshop on grant writing techniques

Week6. Workshop on professional presentation techniques; presentation project assigned; “request-for-proposals” handed out and grant proposal projects discussed and assigned

Week 7. Review of progress on manuscripts; follow-up on mentoring activities

Week 8. Rough draft of manuscripts due; review of outlines for presentations

Week 9. Review of progress on presentations; practice presentations in class and feedback on manuscripts provided.

Week 10. Discussion of progress on grant proposal and manuscripts

Week 11. Presentation at Nanotechnology Undergraduate Research Symposium

Week12. Manuscripts due; class presentations on grant proposal outlines (feedback provided)

Week 13. Updated grant proposals discussed in class

Week 14. Update on mentorship activities; grant proposal due

CLASS/ LABORATORY SCHEDULE

ESM	400	Nanotechnology	LEC	1	W	11:45 AM	2:45 PM
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Also separate meeting times set up for tutorial experiences.

CURRICULUM

This course contributes 3 credit hours toward meeting the required 48 hours of engineering topics.

STUDENT OUTCOMES (SCALE 1-3):

A	B	C	D	E	F	G	H	I	J	K
	2		3			3		2	2	3

3 – Strongly supported

2 – Supported

1- Minimally supported

LEAD COORDINATOR(S) WHO PREPARED THIS DESCRIPTION AND DATE OF PREPARATION:

Gary Halada, 7/13/2010