

ESM/BME/EST/MEC 400 Research and Nanotechnology (Elective)

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.

3 credits

Pre- or Corequisite(s): ESM 213; at least one semester of independent research (499)

Text(s) or other required material: None

Course learning outcomes:

Professional development in research enterprise; writing research articles; grant writing; presenting research at conferences; mentoring research

Topics Covered:

- Week 1. Introduction to the professional research enterprise
- Week 2. Writing a journal-quality manuscript; begin manuscript project
- Week 3. 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
- Week 6. 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
- Week 12. 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, i.e. number of sessions each week and duration of each session:

ESM	400	Nanotechnology	LEC	1	W	11:45 AM	2:45 PM
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Contribution of Course to meet requirement of Criterion 5:

Engineering science (65%); laboratory experience (25%); general education (10%)

Relationship of course to program outcomes:

Person(s) who prepared this description and date of preparation: