

CALIFORNIA INSTITUTE OF TECHNOLOGY
Mechanical Engineering

M. Hunt

ME 90/91
Course Regulations and
Schedule

Fall 2006

The purpose of this memo is to provide the administrative information necessary for ME 90/ME91. The information contained in this memo is based on recommendations from the ME faculty. For the 2006-07, the ME Undergraduate Thesis Committee (UTC) is chaired by Melany Hunt.

I. Course Regulations

1. All thesis work will be done on campus under the direct supervision of the faculty thesis supervisor or another faculty member (e.g. a post-doc working in collaboration with a faculty member). The student is responsible for finding a supervisor to support the work. The project may be performed at JPL under a JPL staff member; however, a faculty member must be the supervisor for the project.
2. Letter grades will be given for the three terms of work; the registration specified in the catalogue is three terms, 9 hours per term. For ME 90 laboratory credit is not given for the first term, laboratory credit is given for the full 9 units in the winter and spring terms. There are no laboratory units for ME91.
3. All students must obtain and use a laboratory notebook. This notebook should contain ideas, notes, data, drawings, notations of articles read, summaries of articles, dates of meetings with the adviser, etc. Students should use the notebook to keep a record of the number of hours worked on the research project.
4. Late work will not be accepted unless prior approval has been given by the thesis supervisor and the chair of the UTC.
5. The final draft of the thesis is to be completed by Friday, June 1, 2007.
6. The length of the thesis will not exceed 50 pages including figures and references. Brevity and concise expression are noble attributes. All theses should look like professional documents.
7. In addition to the supervisor, one other faculty member will read and grade the thesis.
8. We expect that students will work at least *9 hours per week* on the thesis. However, we also note that the work is for a *senior thesis* and not for a graduate degree. Success and failure, therefore, do not rest primarily on original, publishable research. We feel very strongly that the major purpose of the course is to provide students with the opportunity to produce a well-written document and a well-organized presentation based on individual research work.
9. The choice of topics for a senior thesis must be strongly biased to the modest end of spectrum in order to guarantee, as nearly as possible, success with the laboratory work in the limited time available. This premise does not exclude opportunities for

unlimited originality, both of ideas and in the experimental work. Grading of the thesis will accommodate considerations of originality.

10. Oral presentations at the end of each term will be given. These presentations are important and count heavily in the grading. Careful preparation is essential. Each presentation should begin with title, supervisor's name, and a brief description of the work, its purpose, etc. easily understandable by non-experts. Visual aids are limited to five viewgraphs or slides for the first two presentations (fifteen minutes long, including questions); there are no such rules for the final presentation.
11. To decrease the amount of procrastination, students will be asked to provide to their mentor and to the chair of the UTC regular progress reports. Each quarter, there will be approximately 2-3 reports plus the midterm.

II. Major design experience

The ME undergraduate program requires a major design experience, which may be fulfilled by completing ME 90. If you are interested in using ME 90 to fulfill this requirement, please inquire with the undergraduate option representative and your adviser as to whether your thesis project is appropriate as a major design experience. A major design experience must include considerations such as economic, environmental, sustainability, manufacturability, ethical, health and safety, social and political (as appropriate to the topic). Hence, the written thesis and presentations must include sections that address these considerations.

III. Research Teams

Rarely is a research project carried out by a single investigator. Instead, research is often done in a research group or team environment involving other undergraduates, graduate students, faculty members, postdoctoral scholars, technicians, etc. At the end of each quarter, students will be asked to provide feedback about their interactions with their research group. Has the student been able to interact with other members of the group? To whom does the student turn when there are questions or needed materials? Is the student able to provide assistance to others in the group?

IV. Schedule for the Academic Year 2006-07

1. Project topic and faculty sponsor: Each student must submit the proposed topic, name of faculty sponsor, and an indication if this is intended to fulfill design project requirement to the UTC chair by *Friday, September 29*.
2. 1st term Progress Reports: A half-page update is due to the research mentor and the chair of the UTC by *October 13* and *November 10*.
3. Mid-term, First Term: Each student must submit a short summary (one page) of the proposed thesis project, including some references. This outline is due *October 27, 2006*.
4. End of First Term: There will be a meeting of all thesis students and advisors, at which each student will give a 10-15 minute oral report. The student will also submit a two-page document that outlines the work to be completed for the thesis. This

document is due *December 8, 2006*. The presentations will be scheduled December 6-8.

5. 2nd-term Progress Reports: *January 12, February 9, March 2* (1/2 page update).
6. Mid-term, Second Term: Each student will submit to the chair of the UTC a 4-5 page document serving as a first draft of the introduction and experimental (analytical) method of thesis; this should include a few references. Due date *February 2, 2007*.
7. End of Second Term: There will be another general meeting for short oral reports. Presentations will be scheduled March 14-16, 2007.
8. Progress Reports: *April 6, April 27, May 18, 2007* (1/2 page update).
9. Mid-term, Third Term: A completed first draft of the thesis is due on *May 4, 2007*.
10. End of Third Term: The final draft of the thesis is due at 5 pm, *June 1, 2007*. Each thesis will be read and graded by the supervisor and one other member of the faculty. Final presentations will be scheduled May 30 to June 1, 2007.

V. Format and Style of the Thesis

We do not wish to dictate the details of the thesis document. We do expect a well-organized paper, following the general scheme given in item 1 below. Check grammar and spelling and do not use colloquialisms or any sort of local dialects. Every student will benefit from reading and applying *The Elements of Style* by Strunk and White.

1. General Organization
 - Title Page
 - Acknowledgements
 - Abstract (one page at most; this is a short summary)
 - Table of Contents
 - Introduction (including a discourse providing a context for the thesis, and a very brief summary description of the thesis work)
 - Main Text (including major design considerations, if appropriate)
 - Conclusions
 - List of Symbols
 - List of References
 - Appendices, if any
2. The thesis should include references to appropriate documents. A list of references should appear at the end of the document as shown above.
3. SI units are required.
4. In contrast to a practice quite common in journals, use the full titles of all references cited in the reference list.