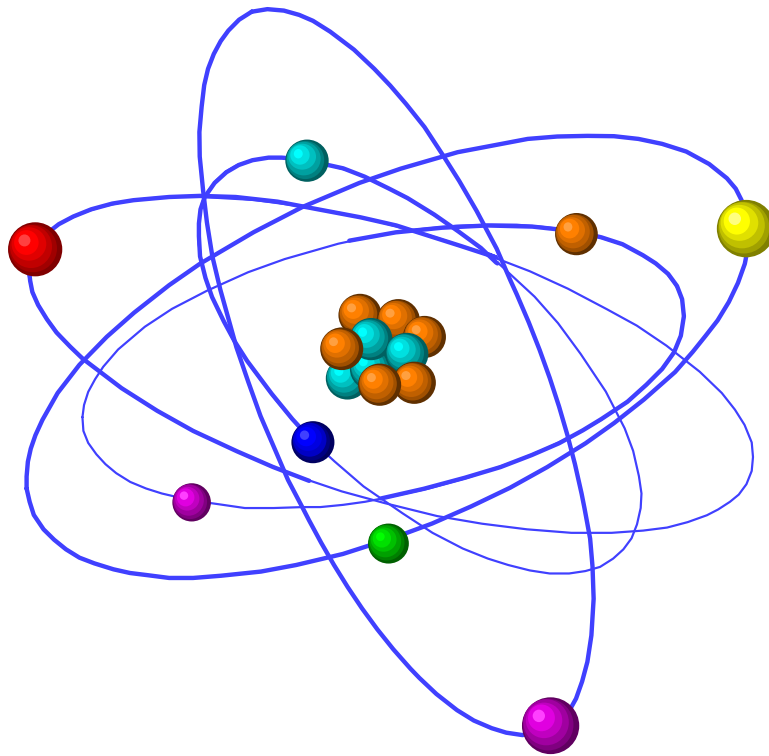


GRADUATE STUDENT HANDBOOK



**The University of Tennessee
Department of Nuclear Engineering**

2009/2010

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1. GRADUATE STUDY AT UTK

The Nuclear Engineering Department offers the M.S. and Ph.D. degrees, and two graduate certificates, one in Nuclear Criticality Safety and one in Maintenance and Reliability. For more information on the graduate certificate programs, see the current Graduate Catalog at <http://catalog.utk.edu/index.php?catoid=2>. The Department also participates in the interdepartmental Reliability and Maintainability M.S. program, which is described in the Graduate Catalog. Both M.S. programs and both certificate programs are also available to distance students via selected courses that are delivered synchronously over the web to the student's computer. More detailed information about this distance program is located at <http://www.anywhere.tennessee.edu/ne/default.htm>.

2. GENERAL UNIVERSITY REQUIREMENTS

The Graduate Catalog provides the requirements associated with graduate study. Students are referred to the section of the Catalog entitled "Requirements for Advanced Degrees" for information about Graduate School requirements and privileges. Additional information may also be found in the University Graduate Student Handbook.

3. ADMISSION POLICY

Admission to the Nuclear Engineering graduate program requires a minimum grade point average of 2.7 out of a possible 4.0, or a 3.0 during the senior year of undergraduate study. International students must have at least the equivalent of a B average on undergraduate courses and must have a score of at least 550 on the Test of English as a Foreign Language (TOEFL). The score of 550 is equivalent to a score of 213 on the new computer-based exam. Students must submit an application for admission to the Graduate School (application forms are included in the graduate catalog). Applicants must also take the General GRE examination and submit test scores. Applications for financial assistance (GRA, GA, or GTA) must be sent directly to the Nuclear Engineering Department. Transcripts, TOEFL, and GRE scores must be sent directly to the Graduate School.

4. GENERAL REQUIREMENTS FOR THE NUCLEAR ENGINEERING DEPARTMENT

The Graduate Catalog provides the requirements associated with graduate study in Nuclear Engineering including the M.S. program, the Ph.D. program, and both graduate certificates. Each applicant will be advised as to the necessary prerequisite courses before he/she enters the program.

5. FINANCIAL SUPPORT

Most graduate students receive fellowships, research assistantships, teaching assistantships, or graduate assistantships. The opportunities, stipends, and application procedures are given below:

Fellowships.

The Department, the U.S. Department of Energy, the U.S. Nuclear Regulatory Commission, and the Institute for Nuclear Power Operations provide attractive fellowships, which may be used in the Department by successful fellowship applicants.

Graduate Research Assistantships.

Most graduate students in the Department are supported with graduate research assistantships. These are funded by research contracts and grants. A student is assigned to a research project after discussions between the student and faculty members who have positions available on their research projects. A serious attempt is made to match the project to the student's interests and to assign research work, which will also satisfy thesis or dissertation requirements.

As of September 1, 2009, the graduate research assistantship stipends are as follows:

For beginning M.S. students \$1800 per month	\$1900 per month after receiving the M.S. degree	\$2000 per month for Ph.D. students (after passing the Ph.D. Qualifying Exam)
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These stipends are for standard appointments. Non-standard situations can result in appointments with stipends that are different than the standard rates. Rates lower than the standard rate can occur for the following situation:

1. Students fail to make satisfactory progress.
2. Students with certain deficiencies in their academic history are given partial support during a probationary period (usually one semester).
3. Funds for stipends in the Department decrease or become unavailable.

Tuition and maintenance fees are paid by research funding sponsors for graduate research assistants.

Students supported by research assistantships must submit monthly progress reports to their major professor with copies to their research committee, research co-workers, and financial sponsor(s) if appropriate. The copies should be made and distributed after approval of the progress report by the major professor (via his signature and the date of his signature). A typical monthly report is shown in the Appendix. Students are expected to work diligently and professionally on their research projects. They are also expected to

be present for classes, study, and research unless their advisor approves their absence. If a student fails to make satisfactory progress, the assistantship will be terminated.

Graduate Teaching Assistantships and Graduate Assistantships.

A limited number of graduate teaching assistantships and graduate assistantships are available. Students are assigned to work in laboratories or as helpers for faculty members. Typical work schedules are ten to twenty hours per week. This pays up to \$1800 per month. Tuition and maintenance fees are waived.

The Graduate School limits the length of time that a student may hold an assistantship. These limits are:

M.S. student - 3 years

Ph.D. student - 5 years after M.S. or 8 years after B.S.

Students holding graduate research assistantships cannot simultaneously hold another job. Students holding graduate teaching assistantships may hold another job only after receiving written approval from the Department Head. Finally, all graduate students are expected to make satisfactory progress in order to remain in the program.

6. RESEARCH REQUIREMENTS

Master of Science

1. A student must be admitted to candidacy for the Masters Degree (admission to Candidacy forms should be submitted to the Office of Graduate Admissions and Records after completing at least nine semester hours of graduate course work with a GPA of 3.0 or higher) and must form his/her Master's Committee before research is officially initiated. The committee must include at least three faculty members from the NE Department. The Department Head must approve the committee. The committee should be formed as soon as possible after the student enrolls.
2. The student must submit a written research proposal (see Section 7 of this Handbook) to the committee before officially starting work on a research project, either a thesis topic or an engineering practice project. The student's committee may require an oral presentation of the research proposal.
3. The committee should approve the proposal before the student registers for NE 500 or NE 598 and research work officially begins.
4. A final report (a thesis or one, two, three, or four engineering practice reports) must be written which meets the standards as described in the Graduate Catalog and must be approved by the faculty advisor before the oral examination is scheduled. The report(s) must be submitted to the committee members at least

two weeks prior to the final examination and should be in final form including Title Page, Acknowledgements, Abstract, Table of Contents with page numbers, List of Tables, List of Figures, Conclusions, Recommendations for Future Work, Vita, etc.

5. The committee conducts a final oral examination, which covers his/her research and all course work submitted to satisfy the degree requirements.
6. The committee votes on the acceptability of the student's research and performance in the examination. The possible decisions are:
 - Pass examination and research acceptable.
 - Pass examination and research unacceptable (the student will be given instructions by the committee on actions needed to correct deficiencies, the time allowed for corrections, and the means of reassessment by the committee).
 - Fail examination and research acceptable (the student will be given instructions by the committee on actions to correct deficiencies, the time allowed for corrections, and the means for reassessment by the committee). The student may reschedule the examination no sooner than the following semester.
 - Failure to pass the examination or to gain acceptance of the research on the second try constitutes a failure, and the student will be dismissed from the Nuclear Engineering Master of Science program.
7. The committee indicates its decision on the thesis approval form and the final examination form.

Ph.D.

1. The student must be admitted to candidacy for the Ph.D. degree and form his/her Ph.D. committee before a dissertation proposal is initiated. The student must pass the first part of the Ph.D. Comprehensive Examination, which is a written examination as described in the Graduate Catalog, in order to continue in the program. If the student fails the examination in the first attempt, he/she may take it a second time. If the second examination is failed, the student is dismissed from the program. The Ph.D. committee must include at least three members of the faculty from the Nuclear Engineering Department and at least one from another department.
2. The student must submit a written research proposal to the committee before starting work on a dissertation. The student must also make an oral

presentation on the research proposal to his graduate committee, which is the second part of the Ph.D. Comprehensive Examination.

3. The committee must approve the proposal before the student can register for NE 600 and dissertation work officially begins. Once the doctoral research proposal is approved, admission to candidacy is accepted and registration for NE 600 is begun, the student must register continuously in NE 600 until the dissertation is accepted by the Graduate School.
4. A dissertation must be written that meets the standards of the Graduate School and must be approved by the faculty advisor before the final oral examination is scheduled.
5. The dissertation must be submitted to the committee members at least two weeks prior to the final examination and should be in final form including Title Page, Acknowledgements, Abstract, Table of Contents with page numbers, List of Tables, List of Figures, Conclusions, Recommendations for Future Work, Vita, etc.
6. The committee votes on the acceptability of the student's dissertation and performance on the examination. The possible decision are:
 - Pass examination and dissertation acceptable.
 - Pass examination and dissertation unacceptable (the student will be given instructions by the committee on actions needed to correct deficiencies, the time allowed for corrections and the means of reassessment by the committee).
 - Fail examination and dissertation acceptable (the student may reschedule the examination no sooner than the following semester).
 - Fail examination and dissertation unacceptable (the student will be given instructions by the committee on actions to correct deficiencies in the dissertation, the time allowed for corrections, and the means for reassessment of the dissertation by the committee). The student may reschedule the examination no sooner than the following semester.
 - Failure to pass the examination or to gain acceptance of the dissertation in the second try constitutes a failure, and the student will be dismissed from the Nuclear Engineering Ph.D. program.
7. The committee indicates its decision on the dissertation approval form and the final examination form.

7. THESIS, ENGINEERING PRACTICE, AND DISSERTATION PROPOSALS

All graduate students must prepare written proposals, which define their research projects. These proposals, when approved by the student's committee, serve two purposes. First, the approved proposal is an indication that the faculty agrees that the content and scope of the proposed project is appropriate. Second, the student has a formal agreement that specifies the level of accomplishment required to satisfy thesis, engineering practice or dissertation requirements:

The proposal should include the following:

- Concise project description/definition
- Review of prior related work
- Importance of the work
- Methods to be used in the work
- Expected major accomplishments
- Originality of the work (required for Ph.D. proposals).
- Estimated time schedule.

The faculty advisor may require a meeting with the committee so the student can respond to questions about his/her proposal. The committee meeting is required for Ph.D. students (see section 9 of this handbook).

8. THESIS, ENGINEERING PRACTICE REPORTS, AND DISSERTATIONS

All theses, engineering practice project reports, and dissertations must conform to the highest standards. They must give clear documentation of research procedures and accomplishments. They must be well organized and the English should be flawless. Students must not expect their advisors to correct the English usage in the writing. The advisor may require that students with English language deficiencies take a technical writing course and/or engage a technical writing consultant. Thesis and dissertations must conform to requirements imposed by the Graduate School which can be found at <http://web.utk.edu/~thesis/thesisresources.shtml>.

There are no formal requirements on the outline for theses, engineering practice reports or dissertations, but the following scheme is usually acceptable and should be considered by students:

- Title Page
- Acknowledgements
- Abstract
- Table of Contents
- List of Tables
- List of Figures
- Introduction
- Concise Project Description
- Review of Literature

- Theoretical Considerations
- Experimental Program (if appropriate)
- Results
- Analysis and Interpretation of Results
- Conclusions
- Recommendations for Future Work
- Bibliography/List of References
- Appendices (containing documentation that is important, but too detailed for inclusion in the body).
- Vita

9. EXAMINATIONS

All examinations in NE courses will be the responsibility of the course instructor who is charged with maintaining high standards, fairness, and honesty in all aspects of the examination and its grading.

All graduate students must submit proposals for their engineering practice, thesis or dissertation research. Ph.D. students must defend their proposal in front of their dissertation committee.

Oral examinations associated with the M.S. or Ph.D. degrees will be given at the end of the student's program and will be managed by the student's faculty research advisor. The student is responsible for scheduling the examination at a time that is acceptable to all of his/her committee members and to the Department Head, who is to be invited to all M.S. and Ph.D. oral examinations. Students should avoid attempts to schedule examinations too close to the deadline, since scheduling conflicts could result in delayed graduation. The student must demonstrate to his/her advisor that he/she is ready for the examination. This may include advisor review of presentation material and/or practice presentations for the advisor. The advisor decides on the extent of preparation, but it is ultimately the student's responsibility. If the student uses power point slides, they must be concise and readable. They should be used as an aid in the oral presentation. The oral examination includes an exhaustive evaluation of the student's research, its documentation in the thesis, engineering practice reports or dissertation, and the oral presentation. Oral examinations may also include a period for questions on any aspect of the student's academic program such as coursework.

10. HONESTY AND PROFESSIONALISM

The Nuclear Engineering Department has no special rules about honesty and professionalism. Absolute honesty is expected and all students are subject to university-wide policies on honesty. Professionalism in nuclear engineering means a commitment to the application of nuclear science for the benefit of mankind. This commitment is expected of Nuclear Engineering students.

11. ADVISING

The Department Head will serve as academic advisor for all graduate students. Students will meet with his/her faculty research advisor or the Department Head every semester to plan and monitor their academic programs.

The Department Head will assign every graduate student a faculty research advisor. The appointment will be made after mutual agreement of the student and the faculty member. The faculty advisor will direct the student's M.S. or Ph.D. research. The student will meet often with his/her advisor during the research work period. Typically, this will range from daily to weekly. The faculty advisor must approve the student's thesis or dissertation before it is submitted to the committee. In this way, the research advisor bears major responsibility for the quality of the student's work.

12. STUDENT APPEALS *reprinted from Graduate Council Appeals Procedure*

The student with a grievance to be appealed must first follow the existing department procedures. At a minimum, the student must confer with the appropriate faculty member, advisor, and/or major professor, and then with the department head. If the appeal is determined to be outside the purview of the department, the student must confer with the Dean of the College and then with the Dean of the Graduate School. If the issue is still unresolved, the student may initiate the formal Graduate Council appeals procedure.

To initiate the formal appeals procedure the student must submit a letter of the Dean of the Graduate School, with copies to the Department Head and the Dean of the College. The Dean of the Graduate School will forward this letter to the Appeals Committee of the Graduate Council.

The parties involved in the appeal are entitled to the following procedural rights: (1) a written notice of the time and place of the hearing and (2) the opportunity to present all pertinent evidence, including witnesses. A member of the faculty or a student representative of choice may assist the students involved in the appeal at the hearing.

The appeals Committee may require the student and appropriate university officials to provide, in advance of the hearing, written statements, records and other documentation's bearing on the issue under consideration.

The Appeals Committee will (1) conduct a hearing in closed session as soon as reasonably possible, (2) prepare a summarized record of the entire hearing to be forwarded to the Graduate Council for inclusion in the next possible meeting agenda, (3) make finding of facts, and a recommendation concerning disposition of the appeal to the Graduate Council, and (4) maintain a recording of the entire hearing.

At an appropriate meeting of the Graduate Council, the members will review the summarized record of the hearing together with findings and recommendations of the Appeals Committee, and reach a decision regarding the appeal. Within 10 working days, the chairperson of the Graduate Council will notify the student in writing of the Graduate Council's decision and, if applicable, of the right to further appeal in accordance with Article 5, Section 7, of the University by-laws:

Officers, faculty and staff members, students, and employees, alumni, and all other officers who feel that they may have a grievance against the University shall have the right of appeal through the appropriate Chancellor and the President of the Board of Trustees.

An appeal to the Chancellor must be filed within 60 days of the Graduate Council decision.

The full text of the appeals process is available at
<http://gradschool.utk.edu/GraduateCouncil/AcadPoli/appealprocedure.pdf>

13. APPENDIX: Typical Monthly Progress Report

To: Dr. H.L. Dodds [student's major professor]
From: L.S. Paschal
Date: January 31, 1996
Subject: Progress Report for January 1995 on Y-12 Criticality Safety Work.

During the month of January, input files for the TWODANT sample problems supplied by Y-12 were created. The first sample problem consists of a cylinder of uranyl nitrate positioned in the center of a concrete walled room. The calculated value of k_{eff} for this critical experiment is 1.124. This higher than expected value can be attributed to the use of cylindrical concrete walls of one thickness for the TWODANT model in place of the rectangular walls of various thickness in the actual experimental configuration. This was done in order to model the experiment in the R-Z coordinates of TWODANT. Further refinement of the model should yield better results. The second sample problem is an array of LWR-type fuel rods. Modeling of this array is underway.

Cc: C.L. Bentley [student colleague]
D. D'Aquila [potential future financial sponsor]
M.E. Dunn [student colleague]
S. Goluoglu [student colleague]
C.F. Haught [student colleague]
K. Lewis [technical oversight person for the financial sponsor]
R.E. Pevey [student's graduate committee member]
A.E. Ruggles [student's graduate committee member]