



NAVAL
POSTGRADUATE
SCHOOL

DOCTORAL STUDENT POLICY

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Department of Mechanical & Aerospace
Engineering

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1. Introduction

This document provides a guide to the Department Doctoral Program. Each PhD student will have a unique program depending on their background, interests and proposed area of research. The MAE Department faculty and staff are here to help you succeed.

For questions please see the following people:

LCDR Richard Arledge Program Officer Curriculum 573(rkarledg@nps.edu)

LCDR Richard Arledge (Interim) Program Officer Curriculum 597(rkarledg@nps.edu)

Prof. Garth V. Hobson Department, Chairman (gvhobson@nps.edu)

Prof. Marcello Romano Chair of the Dept PhD Committee (mromano@nps.edu)

2. Welcome Aboard

2.1. *Message from the Chairman*

Welcome to the Department of Mechanical and Aerospace Engineering. This guide will help you with planning your doctoral studies in the MAE Department at NPS. The PhD degree is the terminal degree in the American University System and has special meaning for those in the field. It generally indicates that a person who holds this degree is a true expert and scholar in the field and has a great understanding in the literature and practice of their discipline.

While there are course work requirements in both your major and minor field, the doctoral degree is really focused on original research. You should during your studies obtain a complete and deep understanding of the narrow area that is the focus of your studies and create some new and original contribution to the field that can be included in the archive literature as a journal publication.

I recommend that you read this document in its entirety, so you better understand the complete program, including the requirements and necessary paperwork. This will provide you the opportunity to start exploring your options early

Professor Garth V. Hobson, Ph.D.
Chairman, Dept of Mechanical & Aerospace Engineering

2.2. Message from the Chair of the Dept. PhD Committee

Welcome to this prestigious program.

I will be your advisor until you have decided on your area of study and have selected a faculty member to serve as your dissertation supervisor (a.k.a. dissertation advisor). I will initially provide you with advises and coordinate for you to meet other faculty members in your area of interest to determine whom your dissertation supervisor will be. I will arrange for an office space for you in coordination with the dept chairman. Once your dissertation supervisor has been chosen and your dissertation committee established, you will be under their responsibility, with final oversight from the Dept PhD Committee.

Going through a Ph.D. program -albeit having the potential to be one of the most professionally satisfying time in one's life- is a very strenuous endeavor. The probability of success in a Ph.D. program is -in my experience- proportional to the level of passion that you have in your field of study.

I sincerely wish you a successful outcome.

Professor Marcello Romano, Ph.D.

Chairman, Mechanical and Aerospace Engineering Dept Ph.D. Committee

3. Degree Requirements

Sequence of Events Leading to a PhD

The following is a general outline of a student's progress through the program, with amplification in subsequent paragraphs:

1. The student applies for admission to the program.
2. The student is accepted to the program.
3. The Chairman of the Dept Ph.D. Committee gives guidance to the student as his/her temporary advisor until a dissertation supervisor is chosen.
4. The departmental PhD committee nominates, for approval by the Academic Council, a *dissertation committee*, which henceforth bears the responsibility for the study program, and for general guidance in research program. Until the dissertation committee is named, the departmental PhD committee has the responsibility to oversee the student's study program. The departmental PhD committee nominates a member of the dissertation committee to be the *dissertation supervisor* and certifies to the Academic Council that the individual so named is qualified under the

guidelines of this Policy Manual. The departmental PhD committee nominates also a *dissertation committee chair*.

5. The study program will include one minor, which can be either obtained in another department (usually) or within the Mechanical and Aerospace engineering department.

6. Upon successful completion of the study program and any minor requirements, the dissertation committee administers a written and oral qualifying examination. Minimum Major course work requirement will be four graduate level (one 3000 and three 4000) courses, beyond the Masters or equivalent level.

7. Upon passage of the written and oral qualifying examinations the student prepare for a dissertation topic. In particular, the student, in conjunction with the dissertation supervisor, identifies a dissertation topic, which must be approved by the dissertation committee (typically immediately after a "research proposal" presentation by the student to the dissertation committee).

8. Upon approval of the dissertation topic by the dissertation committee, the student becomes eligible for advancement to candidacy. The departmental PhD committee solicited by the PhD committee then recommends that the Academic Council advances the student to candidacy for the doctorate.

9. When the candidate's investigations are complete and the dissertation has been submitted, the dissertation committee administers a final oral dissertation defense.

10. After the unanimous recommendation of the dissertation committee, the Academic Council makes the final decision to recommend a candidate for the award of the PhD degree.

4. Selection Dissertation Committee, Dissertation Supervisor and Dissertation Topic

4.1. Dissertation Committee: qualifications and responsibilities.

The departmental PhD committee shall nominate a dissertation committee, to be approved by the Academic Council.

The dissertation committee shall have the following qualifications:

1. The dissertation committee will consist of five or more members.
2. Four of the committee members must be full-time NPS faculty.
3. At least three members must be from within the MAE Department.
4. At least one of the NPS faculty members shall be from outside the department (typically representing the department of the minor field of study).
5. One or more members of this committee may be from another university or appropriate institution.

6. At least four members must have earned the doctorate
7. The committee may contain no more than two members who have not earned the doctorate.

The candidate's dissertation committee, once established, is responsible for supervising the candidate's completion of his/her degree, including completion of course of study, dissertation research, and production of the dissertation document.

4.2. Dissertation Supervisor: qualifications and responsibilities.

The departmental PhD committee shall designate one or more members of the dissertation committee to be the dissertation supervisor or supervisors. The departmental PhD committee must certify to the Academic Council that the individual so named is qualified under the requirements of this Policy Manual.

The dissertation supervisor shall have the following qualifications:

1. a doctorate in the his/her field of specialty;
2. experience in thesis advising;
3. activity and productivity in research, as evidenced by recent publications of his or her research in recognized journals, and a broad reputation as a productive researcher in his or her field of specialty. Other evidence may be considered which is pertinent to demonstrating research activity or productivity.

The dissertation supervisor has the responsibility to supervise the student's program of study in accordance with the requirements of the major Department and Academic Council.

4.3. Chair of the dissertation committee: qualifications and responsibilities.

The departmental PhD committee shall designate one member of the dissertation committee to be the chair of the dissertation committee (he/she can either be the dissertation supervisor or another member of the dissertation committee). The chair of the dissertation committee is typically chosen to be the same as the dissertation supervisor, unless the dissertation supervisor does not have the required qualification (see below).

The chair of the dissertation committee shall have the following qualification: he/she shall be a MAE Tenure Track faculty member who has supervised and graduated at least one PhD student.

The chair of the dissertation committee has the responsibility to coordinate the activity of the dissertation committee in accordance with the requirements of the MAE Department and the Academic Council.

4.4. The Dissertation Topic

The distinct requirement of the doctorate is the successful completion of a thorough scholarly investigation leading to new, original and significant contribution to the knowledge in the candidate's major area of study. The subject of the investigation must be approved

by the dissertation committee and must be submitted to the Academic Council at the time of the request for advancement to candidacy.

4.5. *Minor Field of Study*

The program of study will include one minor field suitable to the needs of the student and to the research to be undertaken. Such requirements may be satisfied within the Department or preferably through another Department. Any minor requirement will be satisfied by procedures specified by the Department of the minor; these may include written or oral examinations, completion of a sequence of courses, etc.

As an example, many MAE Ph.D. students have been doing their minor within the Department of Applied Mathematics or within the Department of Electrical and Computer Engineering.

4.6. *Written Qualifying Examination*

The written qualifying examination is a comprehensive test of the student's basic knowledge of and skills in the major area. The exam is the responsibility of the dissertation committee and is administered by faculty members within the department.

The written exam is administered, by a minimum of three MAE faculty (typically by the MAE members of the dissertation committee), after the student's program of study is completed.

The student must pass all written qualifying examinations.

If the student fails the first written qualifying examination, the dissertation committee may grant a second examination opportunity to the student. If the privilege of re-examination is granted, the time period within which it must be accomplished will be specified by the dissertation committee, but it shall not exceed 12 months. Only two opportunities for passage are allowed.

4.7. *Oral Qualifying Examination*

The oral qualifying examination may be scheduled only after successful passage of the written qualifying examination and fulfillment of the minor field requirement.

The oral qualifying examination is the culmination of the course of study. The purpose of the oral qualifying examination is to test basic knowledge and creative ability and to demonstrate the student's capacity to use material from the course of study. The oral qualifying examination shall contain no prepared presentation; its format shall be exclusively question-and-answer.

Passage of the oral qualifying examination requires a unanimous vote of the examiners. All dissertation committee members must be physically present during all phases of the oral exam.

The Academic Council representative must attend all phases of the oral examination and shall report to the Academic Council that the examination was conducted in accordance with the rules of this Policy Manual.

If the student fails the first oral qualifying examination, the dissertation committee may grant a second examination opportunity to the student. If the privilege of re-examination is granted, the time period within which it must be accomplished will be specified by the dissertation committee, but it shall not exceed 12 months. Only two opportunities for passage is allowed.

Upon successful completion of the Oral Qualifying Examination the candidate's coursework requirement ceases.

4.8. Reporting of Examination

The result of the qualifying examinations must be reported to the cognizant Program Officer, the Associate Provost for Academic Affairs, and to the Academic Council, not later than two weeks after the scheduled date of the oral qualifying examination. Each member of the dissertation committee shall sign the report.

The Academic Council representative must submit a written report on the oral qualifying examination. The report is sent to the Academic Council to verify that the oral examination was conducted in accordance with the rules of the Academic Council.

4.9. Dissertation Defense

A minimum of six months must elapse between successful completion of the oral qualifying examination and the defense of the dissertation.

When the dissertation research has been completed, the PhD candidate prepares a draft of the dissertation and provides a copy to each member of the dissertation committee for approval. Upon the dissertation committee's unanimous acceptance of the draft as the basis for a dissertation defense, the dissertation committee chair notifies the departmental PhD committee and provides it with a draft of the dissertation. The dissertation committee chair schedules the final dissertation defense. This examination must be scheduled later than one week after the submission of the draft of the dissertation to the departmental PhD committee.

All members of the dissertation committee are required to be physically present during the final defense and the entire Academic Council is invited to attend. The Academic Council shall designate a representative, who must attend the dissertation defense.

In the final dissertation defense, the candidate presents the dissertation and is subject to such questions as the entire dissertation committee deem appropriate. The extent of participation of all parties is determined by the dissertation committee chair.

4.10. Report of Completion of Dissertation and Successful Defense

The results of the final dissertation defense and completion of the dissertation document are reported to the Academic Council, the report bearing the signatures of all the members of the dissertation committee.

If the candidate is passed, the report shall also include, nomination of the successful candidate for the award of the degree, Doctor of Philosophy.

4.11. Time Limits for Retaking the Dissertation Defense

If a candidate, on first attempt, fails the final dissertation defense, then he/she may be re-examined only once, and then only if the dissertation committee so recommends. If the privilege of re-examination is granted, the time period within which it must be accomplished shall be specified by the dissertation committee, but it shall not exceed 12 months.

4.12. Time Limit for Completing the PhD

All requirements for completing the PhD degree must be completed within a period of five years after advancement to candidacy.

4.13. Residency requirements

Because of the nature of a doctoral program demanding a high level of dedication and interaction between the student/candidate and the advisor and dissertational committee, it is advisable for the student/candidate to be at NPS during the entire duration of the program.

There is a minimum 12 months residency requirements at NPS after admission into the PhD program. Furthermore, it is recommended that the student/candidate spend at least one week per quarter at NPS, after the residency at NPS and for the entire duration of the program.

4.14. Minimum QPR requirements

The same minimum graduate QPR is required for being admitted to the PhD program as for the Engineers Degree (which is 3.70).

Any deviation from this Policy will have to be approved by the Departmental PhD Committee