

SYSTEMS ENGINEERING

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**Doctor of Philosophy (PhD)
in Systems Engineering:**

Policy Manual

Fall 2024 – v1.0



This policy manual was prepared by the Systems Engineering (SE) Department Doctoral Committee and will be provided to all incoming PhD students and to all Systems Engineering Department faculty members. The manual summarizes the requirements expected for acceptance into and successful completion of a doctoral degree program and the procedures that must be followed by students and faculty. It will be regularly reviewed by the Doctoral Committee and kept up-to-date. An electronic version will be maintained on the department website.

Although every attempt has been made to present the material in the policy manual in a clear and logical order, this document is not an exhaustive specification. Every SE PhD student is expected to read it in its entirety and be familiar with all aspects of the program described herein. Comments for improving the policy manual will be appreciated by everyone and should be forwarded to the SE Department Doctoral Committee Chair.

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Systems Engineering Doctoral Degree Program

The Systems Engineering Department of the Naval Postgraduate School (NPS) offers study and research leading to the award of the Doctor of Philosophy (PhD) degree in Systems Engineering. The PhD degree involves required coursework, comprehensive qualifying examinations, and a research-based dissertation. The PhD degree may be pursued via resident or hybrid study (distance learning plus periodic temporary residence¹).

Resident students may complete their dissertation research at another site after completing coursework at an NPS location. However, some travel to Monterey (for an initial orientation visit, qualifying exam, and dissertation defense) is required even if students are resident at another NPS location.

In the dissertation writing phase, students should expect to spend one week per quarter at NPS in Monterey, or the location of the student's dissertation supervisor, in order to conduct research while working directly with their dissertation supervisor. Though this is not a requirement, it is highly recommended for successful completion of the PhD degree.

Sequence of Events Leading to a PhD Degree

The following is the typical sequence of events leading to the successful award of a Doctor of Philosophy in Systems Engineering degree. Some steps may be completed concurrently (e.g.: written exams and coursework). The Academic Policy Manual section 5.4: Ph.D. Degrees contains additional details and timelines that students must understand and follow.

1. Completion of master's level coursework
2. Application for admission
3. Departmental doctoral committee review and acceptance into program
4. Completion of PhD coursework
5. Completion, with a passing score, of the written qualifying exam
6. Form a dissertation committee, led by a dissertation chair
7. Departmental doctoral committee nomination of dissertation committee, dissertation chair, supervisor which is then reviewed and approved by Academic Council
8. Completion of oral qualifying examination with a passing score
9. Preparation of a dissertation proposal, presentation of a dissertation proposal, and approval of the dissertation topic
10. Dissertation committee recommendation of advancement to candidacy and approval by Academic Council
11. Conduct of dissertation research
12. Submission of two journal article manuscripts for publication in peer-reviewed journals
13. Completion of "final draft" of dissertation
14. Oral dissertation defense and unanimous approval by dissertation committee
15. Completion of publishable dissertation including any required edits, and unanimous approval by dissertation committee
16. Dissertation committee and departmental doctoral committee nomination of student for PhD degree to Academic Council for review and approval of award of degree
17. Graduation

As is evident from the listing, there is limited flexibility in some parts of this process and zero flexibility in others (typically those involving Academic Council approval). Students are responsible for tracking their own progress and ensuring that all departmental and university rules and deadlines are followed.

Admissions

NPS doctoral programs are available to officers and qualified enlisted personnel of all U.S. services, civilian employees of the U.S. government, and to individuals sponsored by selected allied nations. Applications may be submitted at any time. An individual applying for admission to a doctoral program in Systems Engineering must hold a bachelor's degree qualifying the student for graduate status in the department of his/her major study, or shall have completed an equivalent course of study, and must have a master's degree in a related technical field. All U.S. applications shall be submitted to the Director of Admissions, who will be responsible for processing. International applications shall be submitted to the International Graduate Programs Office. All applications are forwarded by the Director of Admissions to the chair of the Systems Engineering Department for determination of acceptability by the departmental doctoral committee. The department chair, through the departmental doctoral committee, will recommend appropriate action to the Director of Admissions, who will notify applicants.

The application must include the following:

- A completed online **application form**.
- Certified copies of all undergraduate and graduate **transcripts**. Transcripts from NPS are not necessary, but transcripts from other schools are required of current and former NPS students.

¹ Periodic temporary residence generally consists of visiting NPS in Monterey, CA several times per year for one week at a time although specific arrangements can be made with the PhD Program Academic Associate for the program.

- Results of a Graduate Record Examination (**GRE**) General Test taken within the past five years. Applicants with graduate degrees with at least a 3.8 GPA, and no GRE results may request a waiver of the GRE from the Admission's Office. Applicants with GRE results older than five years may submit those results along with a proxy letter. The SE Department Doctoral Committee will evaluate such letters to determine if the GRE requirement can be waived.
- A **letter of intent** (approximately 1000 words) of specific areas of interest within the proposed major field of study. The letter must include the following for the application package to be considered complete:
 - the applicant's PhD research objectives
 - potential research alignment with department faculty
 - how a PhD fits into the applicant's broader career path, professional, and personal goals
 - a tentative research plan and timeline, and practical logistics considerations
 - a statement of why this particular PhD program is an appropriate fit
- At least **two letters of recommendation** regarding the candidate's academic potential in order to assess his/her ability to conduct graduate level research. These letters should be written by someone who has earned a PhD degree, and should not merely attest to the applicant's work ethic and drive, but must adequately assess the candidate's ability to conduct doctoral level research, apply critical thinking, and write an appropriate dissertation proposal and dissertation. An ideal person would be an instructor or adviser from the candidate's master's program. Concrete examples of an applicant's qualifications and observed behaviors that indicate the applicant will be successful in the PhD program are preferred.
- A **writing sample** solely authored by the candidate to assess his/her writing competency. An acceptable writing sample is one of the following in order of preference:
 1. A submitted or published journal article or conference paper of at least 5 pages where the applicant wrote at least 60% of the paper, and where the applicant is the lead author and with at least 30 academic citations
 2. A successfully completed master's thesis or capstone or similar project with where the applicant is the sole author, and with at least 30 academic citations
 3. A school essay assignment of at least 5 pages where the applicant is the sole author and with at least 30 academic citations
 4. An unclassified document of at least 5 pages from work where the applicant is the sole author and with at least 30 academic citations
 5. If none of the above are available, a 5-page literature review containing at least 30 academic citations about a field of systems engineering that the applicant plans to conduct their dissertation research within
- Attestation by the student's sponsoring agency or nation that they are committed to tuition and salary support during the student's residence at NPS. An additional entry to this attestation should include that the sponsor realizes that the primary deliverable from this effort is an even more valued employee who now has a doctoral degree. This means that the candidate must choose a dissertation topic that advances the body of knowledge of Systems Engineering and may not be directly related to activities of the sponsoring agency.

SE Department Doctoral Committee

The SE doctoral degree program is overseen by the SE Department Doctoral Committee, which approves dissertation committees, performs other program oversight and monitoring tasks as required, and prepares and maintains a Systems Engineering Doctoral Program Policy Manual (this document). The SE Department Doctoral Committee Chair will manage the doctoral program. The Chair (through appropriate actions of the Doctoral Committee) will:

- Oversee the acceptance of students into the doctoral program,
- Monitor the status and progress of students in the doctoral program,
- Provide advice and guidance to the students to facilitate successful completion of the program, and
- Certify the satisfactory completion of all degree requirements.

The SE doctoral degree program has an Academic Associate who is also responsible for ensuring that students:

- Have a well-defined program leading to the desired degree,
- Are enrolled in the proper courses in the proper quarter,
- Are making acceptable progress toward their degree, and
- Understand any actions they must take to remediate unacceptable progress.

Student Orientation

While there is no formal orientation process for students, newly admitted students are required to meet with the Academic Associate to establish a program of study. This must occur no later than the first month of beginning the doctoral program.

The Systems Engineering Department holds periodic online seminars that PhD students are required to regularly attend. Topics covered may include guest speakers, graduate student success, student research presentations, and others.

Systems Engineering Course Requirements

All students are required to take a minimum of six (6) 4000 level courses from the Systems Engineering (SE) curriculum. Most 4000 level SE courses have prerequisites, which require that any student who has not taken those prerequisites either: 1) takes the prerequisite course, 2) validates prior coursework from other institutions, or 3) obtains a waiver from the course instructor. Coursework taken for previous degrees cannot be repeated for credit, but courses taken as part of a certificate program at NPS can count for credit towards the PhD degree. Coursework taken at other universities cannot be counted.

Students are strongly encouraged to make use of the resources at the Graduate Writing Center (GWC) and Thesis Processing Office seminars and trainings. Resident SE PhD students must take SE 3077 (Methods in Engineering Research) during their first year of study². All SE PhD students are required to complete the GWC's "Write Your Journal Article in Twelve Weeks" seminar series³ prior to completing the dissertation proposal.

Students can take one (1) SE4900 Directed Study course tailored to their research topic and in consultation with their dissertation supervisor.

Students may substitute some of the required six SE 4000 level courses with other courses from outside of the SE curriculum with the approval of his/her dissertation chair and committee, and the Academic Associate. Some courses that have been substituted for the six SE 4000 level courses include but are not limited to:

- OA4302 Reliability and Weapons System Effectiveness
- DA4480⁴ Systemic Strategic Thinking and Planning
- DA4481⁴ System Dynamics Modeling for Planning and Design

The following courses represent required knowledge for qualifying exams but are not counted toward PhD course requirements. Many students take some or all of these courses⁵ as part of exam prep if they have not recently taken them from NPS:

- OS3180 Probability and Statistics for Systems Engineering
- SE3100 Fundamentals of SE
- SE3302 System Suitability

Some students find the following courses useful as part of their PhD studies but they do not count toward the PhD course requirements:

- SI3400 Project Management
- SE3050 Introduction to Digital Engineering with Model-Based Systems Engineering

In addition to the six required 4000 level SE courses, other advanced courses from either inside or outside the SE department may be taken by the student at the discretion of his/her dissertation chair and with consent of the Academic Associate.

Many students who have not previously completed a systems engineering master's degree will benefit by taking the Systems Engineering Fundamentals Certificate prior to enrolling in the PhD program.

Following the completion of coursework, the student is expected to enroll in at least one (1) section per quarter of SE5905 Doctoral Research Initiation until they are advanced to candidacy. After advancement to candidacy, the student is expected to enroll in at least one (1) section per quarter of SE5810 Dissertation Research. Pursuit of additional elective courses during the research phase of the doctoral program is at the discretion of the student's dissertation committee chair and supervisor. Note that throughout the PhD program, students must be continuously registered for at least one (1) course per quarter to remain actively enrolled in the program.

The six 4000 level SE courses are valid for eight (8) years after completing each course. After eight (8) years, the course is expired and must either be retaken, or a new 4000 level SE course must be taken to substitute for that course. Students are not allowed to defend their dissertations and graduate with expired coursework.

All courses (4000 level SE courses, 4000 level courses taken in other departments, and any other courses at other levels) that are graded with a letter grade must be completed with a minimum grade of "B+". For courses that are graded pass/fail, all courses must be completed with a "pass" grade. Dissertation research courses must receive a grade of "T." Non-graded courses receiving a grade of "N" are acceptable. A grade of "I" (incomplete) must be rectified into an acceptable letter grade no later than one (1) quarter after the "I" grade was originally assigned. Any individual grade between "B" and "X" or "F" or an overall Curriculum Quality Point Rating (CQPR) below 3.3 are unacceptable and either situation places the student on academic

² SE3077 is currently unavailable for distance learning students. When it becomes available, distance learning students will also be required to take the course.

³ The *Write Your Journal Article in Twelve Weeks* seminar series is typically offered twice per year by the GWC. The seminar series is based upon the following book: Belcher, Wendy Laura. *Writing your journal article in twelve weeks: A guide to academic publishing success*. University of Chicago Press, 2019.

⁴ Note that these courses previously were cross-listed with the systems engineering department as SE 4480 and SE 4481.

⁵ Students may audit a course, re-take a course, or ask for access to the Sakai site of a recent rendition of a course. Please discuss options with the Academic Associate for the SE Department PhD Program. Note that instructors are not obligated to provide feedback on work completed by students auditing a course.

probation. Remaining on academic probation for more than two (2) quarters is grounds for removal from the PhD program. A student may elect to withdraw from a course and receive a grade of “W.” However, a satisfactory reason for withdrawal must be provided to the Academic Associate.

In limited special circumstances, a student may petition the Academic Associate to be allowed to retake a course with an unacceptable grade. It is at the discretion of the Academic Associate and Departmental PhD Committee if a student is allowed to re-take a class.

Transfer of Course Credits

Acceptance of the transfer of course credits from other institutions is per the discretion of the Academic Associate, Systems Engineering Department, and Academic Council.

The validation process outlined in Academic Policy Manual 6.6.2: Validation must be followed for any coursework from other institutions that satisfies prerequisites for NPS courses.

Qualifying Examinations

A qualifying examination (consisting of both written and oral components) will be administered according to the procedures outlined in the NPS Academic Council Policy Manual. This comprehensive examination will test the student’s mastery of the fundamentals and assess readiness to begin dissertation research.

The **written component** of the examination must be taken and passed before the student may attempt the oral component of the examination.

Written qualifying examinations for the Systems Engineering doctoral degree program consist of one exam that covers fundamental SE knowledge. The following courses are useful to prepare for the written exam:

- SE3100
- OS3180
- SE3302
- SE4150

For those students who have taken SE3100, OS3180 or equivalent, SE3302, or SE4150 at the Naval Postgraduate School either as part of their doctoral studies, or as part of a prior degree, certificate, or coursework, those classes must have been successfully completed with a grade of at least a “B+”. If a student has taken those classes or similar classes at a different university, the Academic Associate shall review a student’s transcripts from other universities to determine if the prior coursework was passed with acceptable grades before the written exam is offered to the student. In some cases this may require the student to re-take a course if it was not previously completed with an acceptable grade. Note that while the above mentioned 3000 level courses are not a required part of the curriculum, some of the above courses are prerequisites for 4000 level courses.

The exam is offered twice per year generally in March and September during the quarter breaks. The Department Doctoral Committee administers the exam in consultation with SE faculty. Students are required to take the written exam within one year of entering the PhD program.

A brief exam guidance document shall be provided to students to guide students in preparing their exam preparation studies. It is the student’s responsibility to develop and implement their own study plan for the exam.

The **oral component** of the qualifying examination is the culmination of the course of study. The purpose 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 presentations. There are no “practice” exams, but students are encouraged to attend real oral exams of other students to accumulate experience with the format and example questions. The format is exclusively question and answer. The oral exam is an attempt to determine if the student is ready to proceed with dissertation research. However, the oral exam is not a defense of the dissertation proposal. Indeed, the student does not need to have selected a dissertation topic before taking the oral exam.

The oral exam will be scheduled after completion of all required coursework and successful completion of the written exam. The oral exam is typically scheduled within three (3) months of successfully completing coursework and the written exam, and must be completed within six (6) months.

The oral exam is typically conducted by the student’s dissertation committee. The committee shall be at least waiting for approval from the Academic Council before the oral exam is administered.

The NPS Academic Council Policy Manual Section 5.4.9: Oral Qualifying Examination contains details of the sequence of events that occur during the oral exam.

Second Attempts

Students who fail either the written or oral exam components may be given the opportunity to take the exam a second time at the discretion of the examiners and the Academic Associate.

Upon a student's failure on a first attempt to pass either the written or the oral exam, the written exam grader(s) or the student's oral examiners will evaluate the nature of the poor performance, may recommend a course of remedial study, and may determine the appropriate time for the second attempt. The second attempt on a written exam will occur not less than one (1) quarter but no later than two (2) quarters after the first attempt. There is no minimum time for an oral re-examination, but if granted it shall occur no later than one (1) quarter after the first attempt. No student shall be given a third attempt to take any component of the examination.

Dissertation Committee

There is always a chair of a dissertation committee, as well as a dissertation supervisor. The chair provides formal oversight over all matters regarding the dissertation process, to include the oral exam (if conducted by the dissertation committee), defense, and final approval of the dissertation. The dissertation supervisor serves as the primary research adviser to the student, providing frequent guidance and direction regarding the dissertation contribution and development. To be the chair, an SE faculty member must have served as a committee member on a completed dissertation and meet all NPS Academic Policy Manual requirements. The chair typically serves a dual role as both chair and dissertation supervisor; however, one of the other dissertation committee members may serve as the supervisor, at the discretion of the chair, must be from the Systems Engineering Department, and must meet all NPS Academic Policy Manual requirements.

The NPS Academic Policy Manual Section 5.4.5 Responsibilities and Qualifications of the Dissertation Committee contains further qualification requirements for the dissertation committee chair, supervisor, and committee members.

At least three members (including the chair) must be faculty members with primary appointments in the Systems Engineering Department, and with PhDs, and at least one must have tenure. At least one member must be chosen from another department at NPS, must have a PhD, and will be selected for their expertise in an area related to the dissertation research. The fifth (and/or sixth) member may be a PhD or non-PhD faculty member in any NPS department, or may be a qualified individual associated with an external organization. In all cases, all committee members must meet all NPS Academic Policy Manual requirements.

Dissertation Proposal

When working through the first few quarters of the SE doctoral degree program, students must balance the need to successfully complete courses, prepare for qualifying exams, and engage with faculty in order to explore potential research topics for the dissertation. After successful completion of the course requirements and all oral and written components of the comprehensive examination, full-time work on the dissertation can begin. Students are required to develop and present a formal written dissertation proposal to their dissertation committee (and possibly to the entire SE faculty) before advancing to candidacy.

The proposal is required to contain a working title, the membership of the dissertation committee, an abstract suitable for outside dissemination, and sufficient definition of the proposed research program for the committee to assess:

- The significance of the proposed research (Is it worth doing?)
- The validity of the proposed approach (Is the approach likely to yield a successful outcome?)
- The originality of the proposed research (Is it novel?)
- The feasibility of the proposed research (Can it be completed in a reasonable time frame with the available resources?)
- A committee management plan

This proposal is typically presented immediately following completion of the oral exam (often on the same day). In all cases, the System Engineering Department desires that the proposal be presented to the committee and department within one (1) quarter following the oral exam. The nature of this presentation will be determined by the dissertation committee. There is no standard approach or minimum requirement imposed on the proposal presentation. The proposal must be successfully presented and approved before the student can be advanced to candidacy.

Students are advised to review the Systems Engineering Department's Student Research webpage that includes information on systems engineering research methods.

Doctoral Dissertation Research

The character and conduct of research for every dissertation are likely to be unique to the student, the membership of the doctoral committee, and the topic of the dissertation. The research phase of the doctoral program will involve:

- Extensive self-study of prior work in both the discipline and domain associated with the project. The student should expect to read an extensive number of books and journal articles to master the prior work. Extensive reference should be made to all of the relevant prior work.
- Independent and original contribution to the field. The dissertation is the student's work (not the supervisor's), and the student's contributions (vice the supervisor's) should be obvious to any reader of the dissertation.
- Conceptually complete, contextually relevant, and thoroughly defensible results and conclusions. The student will be required to publicly defend the dissertation against all challengers.

The average time required for full-time students at major universities to complete engineering dissertations is between 4 and 5 years. Most full-time military and government students who are sent to Monterey by their sponsors have only 3 years to complete their dissertations. Such students must find a topic and begin to work as soon as possible. It is expected that part-time students will take longer than full-time students with many part-time students taking 6 to 8 years to complete. There is also a 5-year limit imposed by NPS on completion of the dissertation after the student is advanced to PhD candidacy. However, the student's dissertation committee will not approve an incomplete or inadequate dissertation simply because a sponsor deadline for completion or the end of the 5-year window is approaching.

Changing Dissertation Topics and/or Committees

Situations resulting in changes to a topic or committee membership are rare but do occasionally arise. Students are encouraged to exhibit strong technical leadership on their topic from the start, be receptive to expert advice, and avoid excessive dependency on committee members for direction and decisions concerning smaller details. A student is not required to stick with an approved dissertation topic if it is subsequently determined to have a low probability of success. The student should first discuss any concerns with his/her dissertation committee or with the SE Department Doctoral Committee (if the problem lies with the dissertation committee). In the case that it is agreed that the topic is unlikely to succeed, then all affected parties shall be notified of this decision by the SE Department Doctoral Committee Chair. The student shall then find another dissertation topic and/or another dissertation committee as soon as possible but not to exceed one quarter. After advancement to candidacy, the 5-year clock is running and continues to run even if the dissertation research topic is altered. All changes to a dissertation committee must be approved by the SE Department Doctoral Committee and by the Academic Council. If the student elects to pursue a substantially different dissertation topic, then a new dissertation proposal must be prepared, defended, and approved before the student may proceed to conduct the new research.

Publication Requirement

All PhD students are required to prepare and submit as lead author at least two (2) manuscripts describing the results of their dissertation research for publication in peer-reviewed journals. Manuscripts with the student as secondary author or describing work not directly related to the student's dissertation research do not count toward this requirement. The manuscript must be approved by the student's dissertation committee and formally submitted to the journal before the SE Department will recommend them for award of the PhD degree. In all cases, student manuscript submissions must be approved by the dissertation committee chair and supervisor before submission occurs. The manuscript does not need to be accepted for publication by the journal prior to the student's receiving the PhD degree. However, a rejection before the student is nominated for graduation must be dealt with and the manuscript must be resubmitted to the same journal or another journal with appropriate revisions. Subsequent rejection by the journal after the student is nominated for graduation will not negate the award of the degree. NOTE: Publications must be consistent with any release limitations imposed by sponsoring agencies and must not violate export control regulations.

Additional journal publications are desired and strongly encouraged as part of a student's dissertation research.

All PhD students are required to publish one (1) conference paper and present it at a conference prior to being nominated for graduation. The conference paper must be published in an archival peer-reviewed conference proceedings such as (but not limited to) INCOSE IS, IEEE SoSE, ASME IDETC/CIE, and MORS Symposium. The official publication may occur after the student graduates but the conference presentation must occur before the student graduates. The student must be first author on the conference paper. The conference paper must be approved by the student's dissertation committee, committee chair, and supervisor before submission occurs. The conference paper must be directly related to the student's dissertation research although the paper may be based on preliminary work and does not necessarily need to contain the final results of dissertation research. NOTE: Publications must be consistent with any release limitations imposed by sponsoring agencies and must not violate export control regulations.

Dissertation Defense

Upon completion of the written dissertation the student will be required to defend that dissertation before his/her complete dissertation committee at NPS. The purpose of the dissertation defense is to determine if the contributions of the dissertation research are sufficient for award of a PhD. A minimum of six (6) months must elapse between successful completion of the oral qualifying examination and the defense of the dissertation.

The student provides each member of his/her dissertation committee with a copy of the final draft of the dissertation for review at least two (2) weeks⁶ before the dissertation defense. Any committee member at their discretion may require more time in excess of two weeks to review the final dissertation draft. It is the responsibility of the student in consultation with the committee chair and supervisor to establish if any committee members require additional time to review the dissertation draft before the defense.

Any member of the dissertation committee may require that corrections be made to the dissertation draft before approving the draft as the basis a dissertation defense. There is no set timeline for how long this process may take or how many rounds of revisions may be required. Several rounds of comments and revisions is common and often takes longer than planned by the student. It is therefore critical that students keep their committees informed of their research progress and provide sufficient time for comments and revisions. A committee member cannot be asked to allow an unacceptable dissertation draft to proceed to defense with the promise of later corrections.

Upon the dissertation committee's unanimous acceptance of the draft dissertation as the basis for a dissertation defense, the dissertation chair notifies the departmental doctoral committee and provides it with a draft of the dissertation. The dissertation chair schedules the final dissertation defense. This examination must be scheduled at least two (2) weeks⁶ after the submission of the draft of the dissertation to the departmental doctoral committee.

All dissertation committee members must participate in all phases of the final defense. It is acceptable for any dissertation committee member to participate in the defense via video teleconferencing. An Academic Council representative must attend the final defense. Except for classified dissertations, the public will be invited to dissertation defenses.

Passage of the final defense requires unanimous vote of the dissertation committee. It is the responsibility of the student, and the dissertation chair and supervisor to discuss with the dissertation committee ahead of time to determine if there are any reservations about the defense and likelihood of successfully passing the dissertation defense. Any such concerns must be addressed prior to the dissertation defense.

If a candidate, on first attempt, fails the final dissertation defense, then the candidate may be re-examined only once, and then only if the dissertation committee so recommends and the Departmental Doctoral Committee concurs. 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.

The NPS Academic Council Policy Manual specifies the manner in which the dissertation defense is conducted in Section 5.4.13: Dissertation Defense.

Completion of the Doctoral Program

Upon successful completion of the dissertation defense and obtaining all necessary approvals of the dissertation proper, the student will be recommended to the Academic Council for approval of the award of the PhD degree in Systems Engineering. All requirements for completing the PhD degree must be completed within a period of five (5) years after advancement to candidacy.

The Academic Council votes to approve a recommendation for the PhD degree. If the Academic Council recommends that the president of NPS confer the degree, the student is eligible to participate in a graduation ceremony at which he/she will be formally presented with the doctoral hood of the academic regalia by the dissertation supervisor, and a formal citation of the dissertation research will be read to the audience by the provost. The student's family may attend the graduation ceremony.

Student Leave of Absence

In certain cases, a student may experience an emergent circumstance (e.g.: life event, deployment, funding issue) that would disrupt successful participation in their program of study. In such cases, the student should contact the Academic Associate to discuss options for a temporary program suspension that would enable them to handle the emergent circumstance and then resume the program upon resolution. If in discussion with the Academic Associate it is determined that the emergent circumstance plus the program of study cannot be managed concurrently, a leave of absence request is to be submitted to the

⁶ Two (2) weeks is required in the Systems Engineering Department and is longer than the mandatory minimum period defined in the Academic Policy Manual.

Academic Associate in writing from the student. The request must include an estimated expected return date and be coordinated with the tuition sponsor.

Note that the coursework expiration clock continues to advance while a student is on a leave of absence.

During the leave of absence, the student's accounts at NPS are suspended.

When the student is ready to resume studies, the student must contact the Academic Associate and request to be reinstated into the program. The tuition sponsor may be required to sign a new attestation prior to the student resuming studies. Upon reinstatement, the student's accounts are reactivated.

Separation from the Doctoral Program

In the best circumstances, a student exits the program upon successful completion of the degree requirements and graduation. Realistically, many students (PhD students especially) exit their program of study some time prior to completion, or persist in a semi-committed state making little to no forward progress in comparison to the magnitude of invested resources (e.g., time, money, labor, etc.). Students who have followed the latter path have often done so for many years before making a conscious decision to withdraw themselves from the program. While the distance learning programs are designed to be flexible for and accessible to students who also work full time and manage other commitments, the Systems Engineering Department has established some risk indicators and procedures as follows to curtail what could otherwise amount to, over time, irresponsible consumption of student, sponsoring command, and departmental resources. The below description of these indicators and actions constitutes notice to students about these expectations:

The department shall provide notice to the tuition sponsor when any of the following risk indicators are present:

- A student has received a failing grade (see the "Systems Engineering Course Requirements" section for details).
- A student has had an incomplete (I) grade turn into a failing (X) grade.
- A student does not have a committee-approved dissertation proposal at the conclusion of one (1) dissertation block (SE5805).

The department shall withdraw a student from their program when any of the following indicators are present:

- A student has been in their program of study longer than eight (8) years, not counting approved leaves of absence.
- A student has received a failing grade and was not successful in improving the grade (see the "Systems Engineering Course Requirements" section for details).
- A student does not have a committee-approved dissertation proposal at the conclusion of two (2) dissertation blocks (SE5805).

These risk indicators are established to help students, tuition sponsors, and faculty understand the program expectations for progress and assist with decisions concerning program continuation under normal circumstances (see section on Leaves of Absence for emergent circumstances). Students who monitor their own progress according to these indicators should have no reason for concern about the above notices and program withdrawals.

Accommodation of Documented Disabilities

Students with disabilities are encouraged to contact their Program Officer to discuss reasonable accommodation. Program Officers coordinate services between faculty, staff, and students to offset circumstances that may negatively impact a student's academic performance. At all points in the process, your private information is restricted solely to staff or faculty on a need-to-know basis.

NPS students with disabilities can receive a variety of services to adjust or enhance traditional teaching and testing. By law, NPS and individual instructors are not required to fundamentally alter the nature of a class or curriculum to meet the needs of students with disabilities. However, many accommodations are still possible.

Students are encouraged to discuss their needs with their Program Officer before they matriculate or when issues become apparent. Discussion of reasonable accommodation should occur as far in advance as possible of coursework, written exams, oral exams, and other major program activities. For further information, see the Graduate Writing Center's Special Needs and Reasonable Accommodation website: <https://nps.edu/web/gwc/special-needs-reasonable-accommodation>

Handbook Updates

From time to time the Systems Engineering Department Doctoral Committee makes updates to the PhD Program Policy Manual. When an update occurs, existing students in the program are evaluated for compliance with the new rules. Students that are not currently in compliance are either 1) grandfathered in based upon the old standards, 2) given a period of time to come into compliance with the new standards, or 3) are removed from the program.

Thoughts on Successfully Navigating the Doctoral Dissertation Process

There are usually several milestones in research: statement of the problem, review of prior work, development of theory and hypotheses, experiments, analyses, and conclusions. Each may form a major section of the dissertation, and each can and should be written (in draft form) as soon as that milestone has been completed. The dissertation committee should be permitted to review each section as soon as it is written (even if it is not in the formal thesis format). Their comments are usually helpful and often guide the direction of the research. This is especially true when one or more aspects of the research have not been adequately addressed.

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. Dissertations cannot be read overnight. The student should allow at least two weeks (preferably a month) for review and approval before any necessary milestone must be met. It is wise to remember that all comments and inputs from every member must be seriously considered and addressed in the final document. All members of the dissertation committee must sign the completed dissertation. Given that members of the dissertation committee may be widely distributed geographically and have independent teaching, service, travel, and leave schedules, it is often challenging to arrange meetings (including the dissertation defense), conduct necessary reviews, or obtain signatures from all members in even a reasonably lengthy time period.

After a successful dissertation defense, the dissertation draft may require additional revision to correct deficiencies uncovered during the defense. The candidate must prepare a final draft of the dissertation that takes into account all committee comments and submits it for final committee approval. Several rounds of edits may be required after the dissertation defense before the committee approves the dissertation.

The student must closely monitor quarterly graduation deadlines as promulgated by the NPS Thesis Processing Office and the SE Department PhD Program. This includes several levels of approval in the department and at the Academic Council. It is unlikely that a student will graduate in a specific desired quarter if the deadlines are not followed. The student may formally graduate at the ceremony immediately following Academic Council approval. If the Academic Council does not approve recommending the candidate to the president, the student will not graduate at that ceremony.

Governing Documents

In all cases, the NPS Academic Policy Manual (<https://nps.edu/web/registrar/academic-policy-manual>) is the governing document and overrides this document if there is a conflict. Chapter 5.4: Ph.D. Degrees is particularly pertinent but there are other chapters that also apply. It is strongly recommended for PhD students to read and understand the NPS Academic Policy Manual to ensure that all requirements are being met.