POLICY LETTER

Doctoral Committee of the Faculty Council
Graduate School of Engineering and Management
Air Force Institute of Technology
14 August 2025

1. The Doctor of Philosophy Degree: Mission, Goals and Outcomes.

1.1. Mission and Goals.

The mission of the AFIT Doctoral program is to extend the body of knowledge by providing a quality, resourced environment, together with exceptional faculty and staff, to solve our diverse stakeholders most challenging and relevant problems in support of National Defense.

The goals of the AFIT Doctoral Program of the Graduate School of Engineering and Management (*the School*) have long been established, based on the following statements by the Council of Graduate Schools in the United States, *The Doctor of Philosophy Degree: A Policy Statement* dated Oct 1977.

> "The Doctor of Philosophy degree is awarded by universities in many parts of the world as the mark of highest achievement in preparation for active scholarship and research. The doctoral program is designed to prepare a student for a lifetime of intellectual inquiry that manifests itself in creative scholarship and research. The program emphasizes freedom of inquiry and expression and development of the student's capacity to make significant contributions to knowledge. An essential element is the development of the ability to understand and evaluate critically the literature of the field and to apply appropriate principles and procedures to the recognition, evaluation, interpretation, and understanding of issues and problems at the frontiers of knowledge. All of this is most effectively accomplished in close association with those experienced in research and teaching."
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> A central purpose of doctoral programs is the extension of knowledge, but this cannot be accomplished on all fronts simultaneously. Students must choose an area in which to specialize or a professor with whom to work. Individualized programs of study are then developed, and committee members are selected cooperatively as course work is completed and research undertaken. When all courses have been taken, the research finished, the dissertation written, and all examinations passed, the student will have acquired the knowledge and skills expected of a scholar and will have extended knowledge in the field."

References to the Ph.D. being a research degree follow from the preceding statements. In addition to the research Ph.D. there also exist in American higher education engineering professional doctorates that prepare the graduate to practice the profession at an advanced level. This Applied Doctorate is most often titled "Doctor of Engineering" and places a premium on advanced course work and replaces the dissertation with a practicum or group study. The Council of Graduate Schools in *The Doctor's Degree in Professional Fields* contrasted the two programs by "Ph.D. programs lead the student to focus on what he or she can do to the subject; professional degree programs are more concerned with what the student can do with the subject."

In 1979-1980, the AFIT Doctoral Council explored initiation of a Doctor of Engineering degree in the resident program. This initiative was rejected by a large majority of the students then in school, by the

faculty as whole and by the USAF employers of the graduates in a 1980 pr ogram review. All of these groups believed that the research Ph.D. was the best preparation for USAF officer assignment, even though that assignment was more likely to involve the management of research and technology rather than individual investigations. This support for the dissertation research experience haGs also been observed outside of the USAF. Porter, et al. in a study for the National Science Foundation surveyed 645 Ph.D. recipients in six disciplines including electrical engineering (Reported in American Scientist 70, No 5, 1982 p 475 and in Engineering Education Nov 1980 p 162). They reported: "The most impressive finding, however, was a broad perception of the dissertation as generally valuable with both researchers and non-researchers...". In particular among the electrical engineers, two-thirds of whom were no longer engaged in research or teaching, they found "the overall [dissertation research] experience was rated as strongly positive...[and] there was little enthusiasm for any of the changes [including the applied doctorate] among our respondents as a group".

This experience and additional evidence have strengthened the original requirement that the AFIT doctorate be a research Ph.D. The philosophy and description by the Council of Graduate Schools quoted here applies to the AFIT doctoral program and should be taken as the principal direction by advisors and students in establishing individual courses of study and in the selection of dissertation topics.

1.2. Program Educational Objectives (PEOs).

Program Educational Objectives are broad statements that describe what graduates are expected to attain within a few years after graduation. Graduates will:

- Lead, direct or perform research efforts critical to national security,
- Serve in technical leadership roles in research, acquisition or sustainment,
- Be a staunch proponent for graduate education of our workforce, and
- Pursue lifelong multidisciplinary learning.

1.3. Student Outcomes (SOs).

Student Outcomes are the desired achievements of the program as evidenced by the demonstrated abilities and accomplishments of the students upon graduation. The Student Outcomes of the School's Doctoral Program follow from the above description of the program objective (goal):

Upon graduation, each student will:

- critically evaluate literature within, and across, disciplines,
- apply appropriate methods and conduct credible analyses toward their research objectives
- make significant contribution(s) by extending the body of knowledge, and
- clearly communicate technically complex information in written and oral formats

1.4. Authority.

The Constitution of the School's Faculty Council states that: "The Doctoral Committee (DC) shall establish, maintain, and publish academic policies for the doctoral program." EN Operating Instruction 36-166, Doctoral Program, assigns the Doctoral Committee the following responsibilities:

> "The Doctoral Committee will establish, maintain, and publish academic policies for the doctoral program. Policy matters will include but are not limited to: Minimum standards

of admission, hour and residency requirements, examinations (to include type, purpose and number), rules for administering examinations, qualifications for research committee chairmanship, student role and department role in choosing advisors, qualifications for committee members, acceptable forms of the dissertation, quality goals for the dissertation, and other policy questions that may arise."

2. An Overview of the Ph.D. Program

The requirements for the award of the Ph.D. degree in the School are established by the Doctoral Committee and are promulgated by EN Operating Instruction 36-114. This policy letter establishes policy for interpreting and applying some of those requirements. As detailed in the coming sections, in order to be awarded a Ph.D. by the School, a student must successfully:

i. be admitted to the Ph.D. program (Section 3.1 and 3.2);
ii. complete at least 36 hours of coursework (Section 3.5) including at least 24 hours in their area of research specialization, and at least 8 hours of mathematics and/or statistics;
iii. meet a "full time student" requirement (Section 3.6);
iv. pass a Specialty Exam based on their specialty sequence (Section 3.9);
v. complete at least 48 hours of dissertation research (Section 3.10);
vi. defend their research prospectus (Section 3.11);
vii. be admitted to candidacy (Section 3.12);
viii. defend their dissertation (Section 3.13).

Though there is a single Ph.D. program in the School, each Ph.D. student's program of study is supervised and coordinated through a particular academic department (*the Department*) that corresponds to their area of research specialization. Each department may have degree requirements that are in addition to those listed above, as specified in their Department Brochure. Prior to graduation, the School also usually requires the students to complete several administrative tasks (Section 3.15).

All students are required to meet all degree requirements in the eight years that follow the beginning of the first course in the approved program and no later than four years from admission to candidacy. Though there is some flexibility in the order in which these requirements can be met, a student must have been admitted to candidacy for at least one year before they can defend their dissertation.

Many Ph.D. students are active-duty military personnel who are assigned to the School as full-time students, typically for a period of three years. In this document, such students are referred to as *quota students.* Other categories of Ph.D. students may include full and part-time civilian DoD employees and DoD contractors; these students are examples of non-quota students. Any reference to timelines is associated with full-time, quota students.

3. The Steps of the Ph.D. Program.

3.1. Minimum Standards of Admission.

Refer to ENOI 36-114, the minimum criteria for admission into the Ph.D. program are as follows:

i. A bachelor's and master's degree from a regionally accredited U.S. college or university or a comparable degree from an international institution. The earned degrees should be related to and sufficiently preparatory for the expected studies at AFIT.

ii. Direct entry into a Ph.D. program with a bachelor's degree is possible in certain circumstances. In such cases, the student must complete the master's degree prior to the award of the PhD degree.
iii. A master's thesis is highly desirable.
iv. A minimum undergraduate GPA of 3.0 on a 4.0 scale; a minimum master's degree GPA of 3.50 on a 4.0 scale.
v. Minimum GRE scores of 156 verbal and 160 quantitative.
vi. Endorsement(s) by the students' supervisor and/or faculty, especially the master's thesis advisor for students already possessing a Master's degree, are highly desirable.

Waivers to the above criteria, including the requirement to take the GRE, may be granted on a case-by-case basis A Department can substitute the GRE score requirement with an equivalent requirement using another standardized test, provided this is common practice in the student's intended area of research specialization. Individuals whose academic credentials fall below any of the above criteria are encouraged to apply.

3.2. Bachelor Entry to the Ph.D. Program.

Academic bachelors with outstanding qualifications, as compared with typical entering Master's degree students, can be admitted for graduate study as Ph.D. students. This program of study requires that all requirements for the award of the appropriate AFIT Master's degree be completed as a prerequisite to candidacy. All requirements of these policy letters also apply to the bachelor entry Ph.D. student. The thesis advisor and topic should be chosen with the intent to continue research in the area for the dissertation. Thus, the thesis advisor is also the pro tem advisor, and should normally become the research advisor. The prospectus can cite the thesis for theory, background, preliminary results, etc., as appropriate. In this case, the principal function of the prospectus is to define and scope the dissertation research and to outline the approach and/or research plan. The thesis serves the additional purpose of preparing the student to conduct the dissertation research, including the preparation and defense of the dissertation, in a timely manner.

By formulating an integrated education plan for the Master's degree courses (36 hours), thesis (12 hours) and doctoral courses (36 hours), and by performing the studies without interruption between the Master's and Ph.D. studies, substantial efficiencies should be achieved, resulting in the opportunity to pursue the research more fully in the same 18-quarter (4.5 year) program, or possibly, to complete the program in somewhat less time. In the case of direct-entry students, the timelines specified throughout this policy letter will be measured from the completion of the first 48 hours of study. The integrated education plan will be submitted to the department head of the admitting department, not later than the end of the second quarter of study, for approval as meeting the needs of the USAF/DOD, as appropriate, and meriting award of the Master's and Ph.D. degrees. Revisions to the plan require approval of the research advisor and department head.

In the event that a direct-entry student completes, prior to receipt of the Master's degree, courses that were planned to meet the requirements of the Ph.D. degree, those courses will not be submitted for the Master's degree and will not be included in the calculation of the GPA for the Master's degree, but will be carried forward to be submitted for the Ph.D. degree and will be included in the calculation of the GPA for the Ph.D. degree.

3.3. Pro-Tem Advisor.

The Department in which the student is admitted will appoint a pro-tem faculty advisor for each student. If the specialty area bridges academic departments, the department head of the admitting department shall designate the pro-tem advisor. This faculty member acts as advisor to the student during the early part of the program and until the selection of the student's research advisor is approved. The pro-tem advisor is responsible for counseling the student on an initial program of study and on any changes to it. The pro-tem advisor ensures that the student's initial program of study is submitted to the admitting department for approval. The pro-tem advisor ensures that the education plan, initially and as revised, will, if executed, satisfy all requirements for the degree. In the case of non-quota students, particular attention must be paid to the residency requirement. The pro-tem advisor also suggests potential areas of specialization representing their own research interests, and those of other faculty members. The pro-tem advisor often becomes the research advisor. The pro-tem should be appointed on this basis whenever practicable. A faculty member should not be appointed as a pro-tem advisor unless the appointing department head is confident that they will meet the criteria for serving as research advisor within the year.

In the case of a bachelor's-entry student, the pro-tem advisor should serve as thesis advisor for the prerequisite MS degree. It is intended that the thesis serve as the basis for the prospectus. Therefore, the pro-tem advisor / thesis advisor should be qualified to serve as the research advisor (or become so qualified) and should be chosen with the intent that the pro-tem advisor become the research advisor. During the first quarter of study, the student and pro-tem advisor will develop an initial education plan which meets the requirements for both the M.S. and Ph.D. degrees, but which constitutes an integrated and efficient plan, to maximize the benefit of courses taken.

3.4. Education Plan.

Each Ph.D. student at AFIT is required to have an education plan which outlines their plan for meeting the degree requirements. A preliminary plan covering the first two quarters (only) of doctoral work should be completed upon entry. This preliminary plan is approved by the pro tem advisor. The complete plan for each Ph.D. student will be completed and approved by the end of the first quarter in residence. This approval will include the advisor pro-tem and department head(s). The head's approval indicates a commitment by that department(s) to offer the courses listed and indicates approval of the course of study.

3.5. Coursework Requirements.

The AFIT Ph.D. requires, at a minimum, 36 hours of coursework beyond the Master's degree. This includes at least 24 hours in their area of research specialization, and at least 8 hours in mathematics and/or statistics. Dissertation research hours (XXXX999) may not be used to meet this requirement. Individual Departments may extend these requirements, such as including more Mathematics and Statistics courses or adding a Minor Sequence.

3.5.1. Specialty Sequence.

As described above, the Ph.D. program is research based. The purpose of the coursework in the specialty area is to bring the student to the forefront of some area of specialization so that they might extend that area with an original contribution. The specialty coursework should not be considered an end in itself but rather a bridge of specific preparation for research. The minimum 24 hours of specialty courses may

consist of courses from more than one department as long as these courses form an integrated program designed to make the student an expert in the chosen area of research. In some cases this may require more than 24 hours. These specialty courses normally build on the individual student's Master's program. The bulk of the specialty area should consist of the most advanced courses available in the chosen area of research. Special studies courses (XXXX899) may be used to meet this requirement. However, at least 12 of the hours used to meet this requirement must come from non-special-studies courses.

3.5.2. Mathematics Requirement.

The quantitative and analytical maturity expected of a Ph.D. student must be demonstrated. To achieve this quality goal, Ph.D. studies in the School are to include the study of mathematics and/or statistics. In order to complete this area of study successfully, the student must complete with grades of B or better two courses (a minimum of 8 quarter-hours credit) offered by the School's Department of Mathematics and Statistics at the 6XX level or above. A course taken with a grade below B may be retaken to meet this requirement with advance permission of the Head of the admitting department. For Ph.D. students in the Department of Mathematics and Statistics, this requirement is replaced with an analogous requirement for at least two courses (and at least 8 hours of) courses from other Departments related to a single research area.

3.6. Full Time Student Requirement.

Three quarters of at least one contiguous four quarter period is to be as a "full time student." The intent is to ensure that the student has an appropriate period of immersion in the academic life of the graduate school. This helps the student to develop long term professional relationships with a cadre of fellow students and to focus on the selected discipline and research. "Full time student" is defined in ENOI 36-105.

For off-campus students, the three quarters full time study requirement may be waived by the Dean of the Graduate School of Engineering upon request from the student through the student's academic advisor and the Department. The student with his/her advisor shall develop a program plan (including course work, exams, research, home office resources/support) that requires signature concurrence of the student's home office along with a good-faith commitment to allow a period of time where the student in his/her workplace can be immersed in the Ph.D. program.

A period of long-term full-time training (LTFT) of at least 9 months is the best approach to providing immersion. If LTFT cannot be used, an immersion period with minimal tasking by the employee's home organization is recommended. Other arrangements may be proposed, but the plan must provide the student a realistic opportunity for success. A renewal of the workplace commitment shall occur at the beginning of Candidacy.

For the purposes of this policy, "hours" means graded and XXXX999 graduate quarter-hours or the equivalent. In establishing equivalence, the ratio of class contact hours is the adjustment factor. For example, semester-hours at many universities refer to a 15-week semester, while quarter-hours refer to a 10-week quarter. Thus, 6 semester hours at such a school would be equivalent to 9 AFIT quarter-hours.

3.7. Research Advisor.

The student selects a field of specialization (research area) and a faculty member expert in that area to act as their research advisor and research committee chairperson. It is in the best interest of the student

to select a topic area and advisor as soon as possible so that the research advisor can help determine the selection of courses to be taken in preparation for the research and to give the student as much head start on the topic as possible. However, the student-research advisor relationship constitutes a significant commitment by both parties and should not be entered into tentatively. The student should understand that the faculty member might make commitments to funding agencies or sponsoring organizations in order to support the intended research on the basis of the student's commitment to carry out that work. Nevertheless, it is sometimes necessary for a student to change to a different advisor. When such a situation arises, the change should be accomplished as soon as possible.

Once a prospective research advisor is chosen by a student, and that faculty member has agreed to accept that student, they request the appointment by the head(s) of the student's admitting department and of the faculty member's department. Upon appointment, the research advisor replaces the pro tem advisor, keeps the education plan current and ensures that that any revised plan will meet all requirements for the degree. In the case of non-quota students, particular attention must be paid to the residency requirement. The research advisor advises the student throughout the remainder of the program, including formation of the research committee, the specialty exam, the prospectus, the research project, writing of the dissertation, and any other matters pertaining to the student's program.

To serve as a research advisor, a faculty member in the School must: 1) have a tenure-track appointment or have approval of the relevant Department Head with a special appointment title of Non-Tenure Track or Research, and 2) must be currently pursuing an active research program.

Additionally and regardless of academic rank, the faculty member: (1) should have performed sufficient research to indicate a high probability of successfully guiding the student to completion, including having brought research activity to (acceptance for) archival publication, (2) must have at least one year of graduate teaching experience at AFIT, and (3) should have successfully advised one M.S. thesis. A prospective research advisor may serve as pro-tem until these conditions are met but must meet these conditions in time to form the research committee and conduct the specialty examination without delaying the student's progress. A faculty member who has not yet advised a successful Ph.D. research effort (the student graduated) should not serve as research advisor for more than two Ph.D. students in the same graduating class at the same time.

3.8. Research Committee.

The research committee shall be chaired by the research advisor and shall consist of no fewer than three AFIT faculty members. These faculty must represent at least two academic departments from the School at the time of committee establishment. Each research committee will include at least one member of the School's faculty who has advised a successful Ph.D. There should be at least one tenure-track AFIT faculty committee member from the admitting department of the Ph.D. student. This number includes the research advisor but not the Dean's representative. It is encouraged that the committee include additional members such as prominent scientists or engineers, external faculty from other schools, or members of the sponsoring organization with doctorate degrees. The full research committee, including the research advisor, but not including the Dean's representative, must be approved by the department head of the admitting department. Reapproval is required for all changes in the composition of the research committee during the student's program.

3.9. Specialty Examination.

A written and oral examination in the specialty area is required for each Ph.D. student. The oral part may be included in the Prospectus Examination, or it may be part of the Specialty Examination or both. The Specialty Examination has two objectives: to measure the student's mastery of the specialty area and to measure their readiness to define a dissertation research area.

The Specialty Examination should normally be administered to quota students before the end of the fifth quarter. It will be administered by the student's Research Committee. The Research Committee typically invites other faculty to submit and grade questions for the Specialty Examination, particularly those that specialize in a subject to be included in the exam. The examination should cover the specialty work taken to that time as specified in the student's education plan. If the student's education plan includes specialty courses during the fifth and later quarters, the Research Committee may elect to include additional Specialty questions as a part of the Prospectus Examination. Since the Specialty Examination is administered by the Research Committee, it is obviously necessary for the student to form that Committee before the specialty examination. The Specialty Examination should be different from end-of-course examinations in that it should attempt to synthesize and integrate material from several courses using problems and questions which can be expected to be new to the student. This should place a premium on analysis and original problem solving rather than on recall.

3.10. Dissertation Research.

A minimum of 48 hours of research, supervised by a member of the faculty of the Graduate School of Engineering, are required for the doctoral degree. Departments will not approve enrollment for research registration until the research advisor has been approved. While dissertation research earns credit, the grade assigned will be S (Satisfactory) or U (Unsatisfactory). One grade of U is acceptable, but two or more is a probable cause for elimination from the program.

3.11. Prospectus Examination.

After the student has prepared a prospectus on the selected dissertation research project, the Research Committee will examine the student on that prospectus. Normally this examination will be an oral examination conducted after the committee has had an opportunity to study the prospectus. The prospectus examination will be graded as “pass” or as “not yet ready”. Therefore, it can be viewed as an ongoing process, in which the “defense” can be adjourned and reconvened (as necessary) until the prospectus is accepted by the committee. This examination should be completed by the end of their seventh quarter after admission into full-time study in the Ph.D. program. (Note that completion of coursework is not an explicit prerequisite to the prospectus examination. If unusual scheduling constraints require delaying a course to the seventh or later quarter, then the student should have had XXXX999 hours earlier in the program in which to prepare the prospectus.)

The committee will indicate their approval by signing the prospectus cover sheet. Their approval implies the following:

i. the research, if it is successfully completed and if it yields new knowledge, should merit the award of the Ph.D. degree;
ii. the student's understanding of prior work and underlying principles is sound; and
iii. the student's proposed approach to the problem is sound;

If a student fails to pass the prospectus examination by the end of their seventh quarter, their progress will be reviewed by the student's admitting department, and corrective action will be as approved by the department head. Note that failure to be admitted to candidacy by the end of their seventh quarter can result in referral to an Academic Review Committee. Furthermore, if a quota student fails to pass the prospectus examination by the end of their eighth quarter, the student's department will review the circumstances and forward its recommendation for Academic Review Committee action to the Dean of the School.

3.12. Admission to Candidacy.

After completion of the approved course of study and all examinations (except the dissertation defense), and after committee approval of the research prospectus, the student should submit a request to the Dean through the research advisor, department head, and the Academic Standards Committee of the School's Faculty Council, requesting admission to candidacy for the Ph.D. degree. The Research Advisor shall recommend the effective date of admission to candidacy in their endorsement of the request, add the below-listed attachments to the student's request, and forward the package to the school Dean through the Head of the admitting department and the Academic Standards Committee of the School's Faculty Council.

It is a degree requirement that all students be admitted to candidacy at least one year prior to the award of the degree. Quota students who have not been admitted to candidacy by the end of their seventh quarter exhibit unsatisfactory progress. Such cases will be reviewed by the student's admitting academic department for possible referral to an Academic Review Committee (ARC).

The effective date of admission to candidacy is the date at which the last requirement for candidacy has been met. Normally, this is the date of the research advisor's signature on the prospectus. This becomes the effective date of admission to candidacy, unless the Dean specifies a different effective date. The Academic Standards Committee (ASC) will review the request and attachments for completeness and forward its concurrence to the Dean. Every attempt will be made to correct any deficiencies in the package before an adverse recommendation is forwarded.

The package for admission to candidacy should include:

i. A copy of the current approved education plan, including grades on all courses that have been completed. The remarks section must identify the specialty courses and the courses used to satisfy the mathematics requirement.
ii. A memo (or memos) from the research advisor giving the date and outcome of both the written and oral parts of the Specialty Examination. The oral part may be included in the Prospectus Examination.
iii. Evidence of Committee approval of the research prospectus. Usually this is the prospectus title page with committee signatures affixed.
iv. A copy of the letter of appointment of the research committee that conducted the prospectus examination.
v. For non-quota students, a memo from the research advisor, signed by the head of the admitting department, indicating how the full-time student requirement has been met or is planned to be met.

These items will be returned to the research advisor after the Dean's action.

3.13. Evaluation and Defense of the Dissertation.

3.13.1. Nature of Dissertation.

Dissertation research shall be an original independent effort by the student that makes a publishable contribution to the student's chosen field of knowledge. With the exception of such progress reports as may be required by the sponsoring agency, no publication of the results of dissertation research will be made prior to acceptance of the dissertation without the approval of the student's Research Committee.

3.13.2. Format of Dissertation.

The format of the dissertation is described in the AFIT Style Guide for Theses and Dissertations. The style guide describes both traditional and scholarly (multiple paper) formats.

3.13.3. Timeline.

The intended timeline of events (Figure 1) is as follows:

i. The candidate for the degree submits a complete dissertation draft to their advisor.
ii. Once any necessary edits are made and the advisor approves the draft, the candidate submits the draft to the committee.
iii. The advisor polls the committee to determine if a defense should be held. This poll may be conducted any time after the committee receives the draft.
iv. The decision of the committee to proceed to a defense is communicated by the advisor to the candidate, not later than four weeks after the committee receives the draft. The advisor requests that a Dean's representative be assigned, noting the committee's decision to proceed.
v. Once a Dean's representative is assigned, the candidate sends them a copy of the dissertation draft. Once the committee has agreed to proceed to a defense AND a Dean's representative has been assigned, the candidate schedules the defense.
vi. Once the defense is scheduled, the advisor advertises the defense to the local academic and technical community, and also provides the advertisement info to the Registrar. The defense itself should occur at least one week after the decision to proceed to a defense, AND at least two weeks after the dean's representative received the draft, AND at least four weeks after the committee received the draft. The defense should occur at soon as practicable, but at least one week after advertisement.

There are no hard enforcement mechanisms for this timeline, but any deviations or irregularities will be noted by the Dean's representative in their report to the Dean.

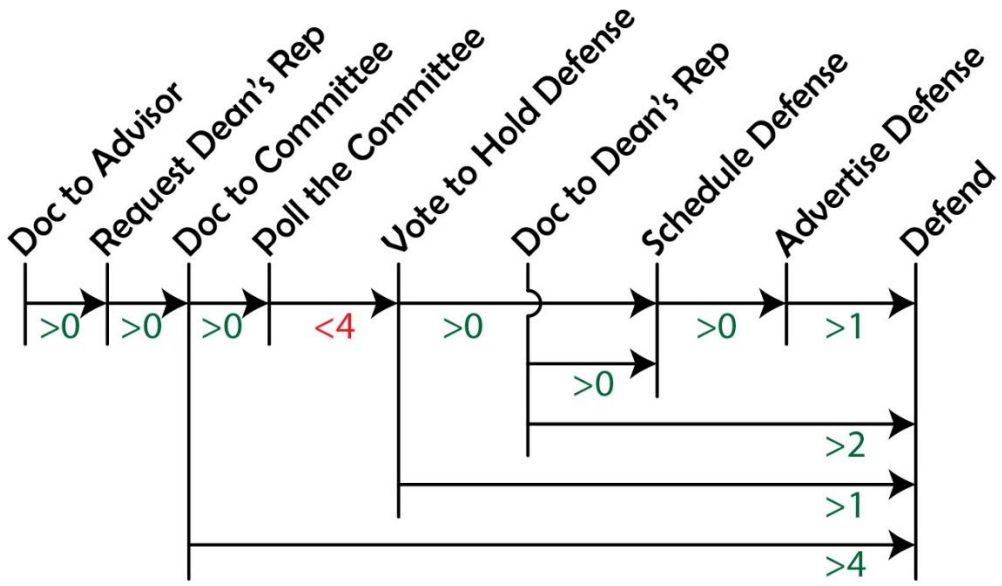

Figure 1. See Intended Schedule (time in weeks).

3.13.4. The Draft Dissertation.

The Research Advisor will normally request a first draft of the dissertation for preliminary review. When the Advisor is satisfied with this first draft or at his/her discretion, when satisfied with the research itself, they will request that the school Dean appoint a Dean's Representative to the committee. The Advisor will then ask the candidate to provide each member of the committee with a copy of the draft dissertation. In the absence of any action by the Advisor, the candidate may submit final draft copies directly to the committee members including the Advisor.

3.13.5. Evaluation.

The committee will independently read and evaluate the final draft. The Advisor will poll the committee to decide if a defense should be held. The decision to proceed with a defense must be supported by a three-fourths majority of the research committee (including the Advisor). The defense should not be scheduled until this time. In particular, the defense should not be scheduled when the final drafts are first received. There is little reason to proceed with a public defense if the committee is not satisfied. If the decision is positive, the defense of the dissertation will be scheduled as soon as possible. The decision should be communicated to the candidate not later than four weeks after the receipt of the draft. The draft copies may be returned to the candidate with suggested revisions or, if the revisions are minor, the drafts may be held by the committee until after the defense.

3.13.6. The Defense.

The oral defense of the dissertation is a public event, and its time and place should be given the widest possible public dissemination among the local technical community. This may include as appropriate, public notices within AFIT, notification of sponsoring agencies, notices in organizational bulletins, and the notification of appropriate base laboratories or sister academic institutions when the subject matter is of interest to them. The defense will be held at AFIT and scheduled per section 3.13.3 item viii. The defense will be judged by the Research Committee. (The process of the defense is monitored by the dean's representative, as detailed in a later section.) The written dissertation and the results of this

defense will be judged satisfactory if they have the approval of a three-fourths majority (including the Advisor) of the committee. The committee may approve the defense subject to further revisions in the written dissertation.

3.13.7. Unsuccessful Defense.

If the defense or dissertation is not approved by the committee, the defense may be repeated after submission of a revised draft to the entire committee. Again, a three-fourths majority including the advisor is necessary to schedule a second defense. At any time, the student may petition the admitting department to reconstitute his/her committee under the same or a different Advisor. If approved, the new Advisor will ask the school Dean to appoint a Dean's Representative, who may be the old representative or a new one. If a reconstituted committee is approved, a three-fourths majority of the new committee is still necessary to proceed with and to approve the defense.

3.13.8. Cover Sheet Signatures.

After evaluating the final copy of the dissertation, ensuring that any revisions requested by the committee have been made, all committee members and finally the Dean of the appropriate school will sign the dissertation approval page. These signatures indicate approval of both the oral defense and the dissertation. The names of any committee members who do not vote to approve the defense and/or research are not to appear on the cover sheet.

3.14. Dean’s Representative.

The Dean appoints a representative to each student’s doctoral committee when the student’s dissertation is ready for final reading by the committee. The Dean’s representative monitors the process of final evaluation and defense of the dissertation and may serve as an independent evaluator of the merit and quality of the work. The Dean may select their representative without suggestions from the committee or department. To serve as Dean’s representative, an individual must be a tenured or tenure-track member of the School's faculty at the level of Assistant Professor or above.

As monitor of the process, it is the duty of the Dean’s representative to ensure that the dissertation defense is held in accordance with the Faculty Council's policies. Therefore, a Dean’s representative should review this policy letter prior to the defense.

It is also the duty of the Dean’s representative to monitor and report on the fairness and effectiveness of the defense process. For example, if the student is not afforded a real opportunity to answer questions, but is being badgered, the process is unfair to the candidate; on the other hand, if the research advisor or other committee members are answering questions that are properly addressed to the candidate, the defense does not properly adjudge the candidate’s work and abilities. Similarly, the public should have its opportunity to question the work.

The Dean’s representative does not serve as a member of the committee, and votes neither on whether to proceed to the defense nor on whether to accept the dissertation. Consequently, the Dean’s representative is not included on the signature page.

As evaluator, the Dean’s representative receives a copy of the dissertation at least two weeks before the defense to review. However, the Dean’s representative is not expected to serve as a technical expert in the work reported in the dissertation, or even in the discipline of the work, but rather as a competent

scientist or engineer. Questions the Dean's representative should be able to address include, for example: "Does the dissertation communicate clearly? Does the evidence presented justify the conclusions drawn? Is the evidence credible? Are the originality and merit of the work evident? Do the candidate's presentation and response to questions indicate that the student has conducted the research independently and has mastered the material involved? Does the candidate understand the field well enough to explain the research to someone who is not already an expert in the topic?"

The Dean's representative will provide the Dissertation Defense Evaluation Forms to the defense. The Dean's representative shall submit a written report to the Dean summarizing their observations about the conduct of the defense. The report will also include the number of publications resulting from the doctoral effort that (1) are in preparation, (2) have been submitted, and/or (3) have been accepted or published. If the Dean's representative has reservations about the quality of the work or the decision of the committee, these will be included in this report. Major concerns should be discussed with the Dean. The faculty rely upon the Dean for ultimate quality assurance in such cases. A copy of this report shall be provided to the Chair of the Doctoral Committee.

3.15. Final Administrative Duties.

Students should be aware that to graduate, they are usually expected to perform several administrative tasks regarding the documentation of their fulfillment of the degree requirements as well as the dissemination of their dissertation. These tasks are specified in checklists published by the Academic Standards Committee (ASC) and the Thesis Processing Center (TPC).

All completed PhD dissertations will be archived at AFIT and available through the AFIT library. Distribution A dissertations should be readily searchable and available for public release. Limited distribution and classified dissertations will be archived and available according to the appropriate distribution guidelines.

4. Miscellaneous.

4.1. Standards of Work.

Each student is expected to perform at a high academic level and maintain a grade point average of at least B (3.00) on the course work and meet all program requirements and deadlines.

4.1.1. Standards of Coursework.

A student's performance is deemed unsatisfactory if they receive a grade lower than C (2.00) or two grades lower than B (3.00). A student falling into this category will be recommended to an Academic Review Committee to be dropped from the Ph.D. program. A student in this situation can petition, through their Research Committee (or Pro-tem Advisor if the Research Committee has not yet been formed), to the head of the admitting department to continue in the Ph.D. program for one, or at most two probationary quarters in order to demonstrate their capability to do Ph.D. quality work (course work and dissertation). The individual must cite the reasons for their poor performance. This petition must be approved by the Research Committee (or Pro-tem Advisor). If the committee/pro-tem advisor makes a favorable recommendation, they must stipulate the conditions that must be satisfied during the probationary period. In particular, if a student who has received a grade lower than C (2.00) is permitted to continue in the program, the grade must be resolved by repeating the course concerned (for no credit), or by taking an appropriate substitute course (for no additional credit) and achieving a grade of B or

better. For a substitute course to be appropriate, it must be recommended by the student's Research Committee (or Pro-tem Advisor) and approved by the head of the admitting department.

4.1.2. Specialty Exam Standards.

After taking the Specialty Exam, a student will be informed of the examination results (pass/fail) within 30 days. Usually, students will be notified in much less time. In the event that the Research Committee determines that a student has failed the exam, the committee may allow an extension to refine or clarify portions of the Exam. The Department Head will review the circumstances and forward their recommendations to the Dean of the School. Such recommendations should include whether the student should be permitted to retake the Specialty Exam, and/or whether to convene an Academic Review Committee. Normally, no student will be permitted to retake any examination more than once.

4.1.3. Admission to Candidacy.

If a full-time student fails to be admitted to candidacy by the end of their seventh quarter, the Department Head will review the circumstances and determine whether the student should be granted a one quarter extension for admission to candidacy, or alternatively that the student should appear before an Academic Review Committee for final disposition, i.e. to be dropped from the Ph.D. program. Normally, a maximum of two quarters extension will be granted.

4.2. Waivers

4.2.1 Waiver from Required Coursework.

A Ph.D. student may request a waiver of the 36-hour coursework requirement. The waiver requires approval by Advisor, Department and the Academic Standards committee. If approved, the waiver would reduce the 36-hour coursework requirement for content taken in a Master's program at AFIT or another university. A waiver documents course title, course content, school, date taken and grade, as well as justifies why the request is being made. The following applies to all waived courses.

- Waived courses cannot be used in meeting the mathematics requirement.
- Waived courses may have already counted toward a separate degree.
- No more than 12 credit hours may be waived under this provision.
- A course cannot be waived if the waiver would reduce the total number of graduate course hours (excluding Master’s thesis hours) to less than 72 quarter hours.
- Material from waived courses that are included in the specialty sequence normally will be included in the Specialty Exam.

To aid with yearly Ph.D. program assessment, the Academic Standards Committee will provide the Doctoral Committee access to waiver request packages and final disposition, if requested.

4.2.2 Waiver from the Required Timeline.

Students are required to complete all degree requirements within a contiguous eight-year time period, and at most four years from when they were admitted to candidacy. If a student is unable to meet one or both of these deadlines, they may petition the Faculty Council via the Academic Standards Committee for a one-year extension. Such requests should include a reasonable, detailed plan for accomplishing all degree requirements within the extended timeframe, and are normally endorsed by the student, the

advisor, and the Department Head. At most two such extensions may be granted over the course of their degree program.

4.3. Classified Dissertation Research.

The primary goal is for the dissertation (the document itself) to be publicly releasable and unclassified. This is necessary for academic accountability and for review by accrediting agencies. It is also in the best interest of the graduate to be able to publish archival articles based on the dissertation and to be able to use the dissertation throughout their career, for example, when applying for positions or grants.

However, research areas that are important to national defense often involve classified information, and it is appropriate for AFIT Ph.D. students to conduct research in these areas. To achieve both these ends, the dissertation should be Distribution A and report on unclassified research, such as the development of a new theoretical analysis or computational or experimental technique. These considerations motivate the following policies.

4.3.1. Classification Determination.

It is important to recognize that responsibility for classifying research findings and related documents, including the doctoral dissertation, does not rest within AFIT. External entities are responsible for security classification guides and will directly influence, or even dictate, the final classification determination. In such cases, there is no academic basis for deviating from required security classification constraints and AFIT researchers must appropriately protect the information. Of greatest importance to this policy letter is that classification decisions (unclassified to classified, confidential to secret, or higher), which could come at any point in a student's academic program, should not negatively impact the student's program and jeopardized his/her opportunity to complete.

The student's classified research may entail the application of new analysis methods or processing techniques using classified data or have direct applicability to developmental or operational system performance; such common factors routinely dictate a higher classification level. Other scenarios for classified dissertations include:

i. timely need for and importance of classified research that can only be practicably achieved by an AFIT Ph.D. student,
ii. the research topic and/or contributions being deemed classified when the time remaining in the student's program is insufficient to start an unclassified project without jeopardizing the student's opportunity to succeed, or
iii. the professional field of specialization for which the student is preparing predominantly relies on classified research.

These considerations motivate the following policies. Before pursuing a dissertation topic that entails classified research or which may result in a classified document, the research advisor will:

i. Consult with the sponsor(s) to identify the appropriate classification level and any special access controls, etc., that will apply.
ii. Consult with the AFIT security manager regarding the procedures and facilities necessary to conduct the envisioned research and protect the information that will be used or generated, and the availability of these facilities.
iii. Coordinate with the sponsor(s) regarding the potential use and availability of specific off-campus facilities and resources, should they be needed.

iv. Ensure that a Project Security Plan (PSP) is in place for conducting the research. The PSP will provide the practical details necessary to ensure that the work can proceed successfully while meeting all applicable security requirements. The PSP construct is project dependent and may include a compilation and citation of existing guidelines, specifically tailored guidelines required by the research sponsor(s), or combination thereof. The PSP should include any reference to know sponsor-owned security classification guides (SCG) applicable to the research (and the advisor and student should obtain a copy of the stated SCG). The PSP will be coordinated through the security manager and approved by the Department Head. Upon approval, the research advisor is responsible for ensuring that the PSP is updated and maintained if/when changes to security guidelines occur.

4.3.2. Dissertation and Defense.

i. Regardless of classification, the dissertation must be sufficient to warrant award of the degree.
ii. If unclassified, the dissertation will neither include nor reference any classified material.

iii. If unclassified, the defense will be public. The existence of any classified research should not be revealed and must not be the basis for accepting a dissertation that is not sufficient on its own merits.
iv. If classified, all members of the committee, including the Dean's representative, must be cleared to the appropriate level to access the dissertation and support defense activities. Individual "need-to-know" is always a criterion for granting access to classified material and for some special programs, certification of need to know requires concurrence of the controlling agency. The classified dissertation defense will be advertised to, and may be attended by, those members of the community who have the necessary clearance, access, and need-to-know.

4.3.3. Library Archive.

Classified dissertations are part of the AFIT Library archive and should be retained indefinitely. However, destruction may be required per applicable Security Classification Guides and/or Original Classification Authority. Indefinite retention is desired for academic accountability and has long been accepted academic procedure, but security policies will be prioritized.

Appendix. Ph.D. Pre-Graduation Actions & Checklists.

A.1. Research Advisor Prior to Oral Defense.

Send a memo to the school Dean requesting that a Dean's Representative be appointed to the committee. This is normally done at least four weeks in advance of the anticipated defense date. In the request include the dissertation title, the names of the currently approved committee, and the date of admission to candidacy.

Distribute copies of dissertation to the committee far enough in advance to give them time for careful reading. This is normally done four weeks in advance of the anticipated defense date.

Poll the committee for a decision whether to proceed to a defense. This must be done at least a week in advance of the defense so that adequate notice of the defense can be given.

Post notices in AFIT notifying the faculty and student body of the defense, title, time and place. Any other appropriate actions necessary to notify the local technical community (Laboratories, sponsors, other academic institutions, etc.) should also be taken.

A.2. Students after a Successful Defense and All Revisions are Accepted.

Obtain a current graduation checklist from the TPC (AFIT Thesis Processing Center) and perform all necessary actions.

Obtain a current graduation checklist from the Academic Standards Committee (ASC) of the School and perform all necessary actions.

Check with AFIT/EN to make arrangements for graduation. This includes providing contact information so that the School can coordinate graduation with you and coordinating with your research advisor to draft an abstract to be read at the graduation ceremony. Be advised that the Ph.D. degree is conferred only at the March graduation. However, it is AFIT practice to code your military personnel record (if applicable) “Ph.D.” as soon as the ASC recommends award of the degree to the Dean.

A.3. Research Advisor Following a Successful Defense.

Perform the requisite actions specified by the TPC and ASC checklists. These duties include, but are not limited to, forwarding the following documentation to the School's Academic Standards Committee:

- A memo signed by the research advisor stating that the student passed the final defense. Include date, place, and names of the committee present. (If the committee vote was not unanimous, report the vote, e.g., passed by vote of 5 to 1). If the committee has voted to approve subject to revisions in the dissertation, the signed cover sheet (item 4 below) is taken as evidence that the revisions were made to the satisfaction of all.

- A copy of the letter of appointment of the research committee and a copy of the letter of appointment of the Dean’s Representative.
- A copy of the Dean’s letter of admission to candidacy and the ASC’s memorandum or endorsement that forwarded the request to the Dean recommending approval.

- The Final Education Plan, dated "final" and approved, including all grades, title of dissertation and education codes. Any courses that appear but are not required as a part of the approved education plan should be annotated as such. (This is necessary because of the requirement to complete the degree within eight years of the beginning of the first course in the approved program.)
- An extra copy of the dissertation cover sheet signed by the committee (or the 3/4 majority including the advisor of the committee who voted to pass) and signed by the Dean of the appropriate school.
- Degree requirement waivers, if any, such as time limit extensions, including any supporting documentation that was required in granting the waiver.
- Optional: If the Dean's Representative gives you a copy of his report, attach it. Also include any other documents that should be permanently archived by the Registrar, such as letters of commendation.

A.4. Academic Department.

Forward the package received from the advisor, with a cover letter indicating the Department's recommendation for award of the degree, to the School's ASC.

A.5. Academic Standards Committee (ASC).

The School's Faculty Council establishes specific responsibilities and procedures for its ASC that implement Doctoral Committee policy and such quality assurance functions as the Faculty Council deems appropriate. These actions should include the following activities:

- Review and approve (or return for correction) the student's graduation package promptly upon receipt from the department.
- Once accepted (no further corrections are needed), forward the package by memorandum or endorsement to the Department's recommendation letter, to the Dean, with the ASC's recommendation.
- Upon recommending award of the degree, inform the Registrar's office by memorandum that the student's military record (if applicable) is to be immediately coded to indicate completion of the Ph.D.

A.6. Registrar.

Upon receipt of the ASC's memorandum described above, code the student's military record to indicate completion of the Ph.D. as of the date of ASC's memorandum. This applies to active duty or reserve students of all branches of the service. Coordinate with non-Air Force students' personnel department as necessary to achieve this. It should be noted that the timeliness of this action is essential to ensure that the student's records are current in the event that any board should review the record before the actual conferral of the degree at graduation.

Appendix. Configuration Changes

Date	Changes
Sept 2023	Changed full-time study waiver approval to Dept Head 4.3 Rewrote procedures for Classified dissertation (reviewed by AFIT/SR Security). Removed Minor edits/ formatting
July 2024	3.7 Changed criteria for Advisors for doctoral committees. Allows "special" appointment with titles of Non-tenure track and Research to chair doctoral committees. This change is consistent with P&T appointment duties 3.1 Changed GRE admissions criteria to 156V/ 160Q. GRE scores and their corresponding percentiles change. The old criteria of 151Q reflected students only in the 33rd percentile. 160Q is closer to many top-tier research university criteria Minor edits/ formatting
November 2024	4.2.1 Clarified/Changed how a waiver to the 36 hour coursework requirement should proceed. The waiver requires approval by Advisor, Department and the Academic Standards committee. This change benefits resident military PhD students who often take extra discipline classes during a previous AFIT Masters.
14 August 2025	• Added Program Mission statement • Add PEOs • Changed Candidacy Package process wording for ASC, allowing a review vice a recommendation • Updated language for admissions criteria. Clarified the ability to waive GRE (score and test) • Added a notional Timeline for Dissertation Defense • Clarified committee membership for members who leave AFIT (PCS or retire), while staying on committee