OVERVIEW

Approvals
The primary steps toward candidacy require signatory approval by the student’s Dissertation Committee and the ESES PhD Program Oversight Committee. Route all documents through the SESES Graduate Program Coordinator (Amy.Wolkowinsky@nau.edu) for approval by the ESES PhD Program Oversight Committee and to enter documents into student files.

Timeline summary

Semester 1
Advising – provisional plan of study and provisional Dissertation committee

Semester 2
Formalize Dissertation committee and hold committee meeting under supervision of Dissertation Advisor
Dissertation committee approves plan of study and requests any deviation from timeline for completion of written comprehensive exams

Semester 3
Dissertation prospectus
Complete course work (or close to it)

Semester 4
Written comprehensive exam

Semester 4 – but no later than semester 5
Oral comprehensive exam. Until the comprehensive exams are passed, students must maintain continual enrollment of at least 3 units per semester (excluding summers), including one face-to-face course (3 units) per academic year.

At least one semester prior to dissertation defense
Admission to candidacy

Course work summary: 60 credits total as outlined below

<table>
<thead>
<tr>
<th>Credit Hours</th>
<th>Catalog Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>24</td>
<td>NA</td>
<td>Maximum transferrable from MS or MA degree</td>
</tr>
<tr>
<td>15</td>
<td>EES 799</td>
<td>Dissertation; enroll only after application for candidacy</td>
</tr>
<tr>
<td>2</td>
<td>EES 605/606</td>
<td>Enroll during first two semesters</td>
</tr>
<tr>
<td>3</td>
<td>ENV 555</td>
<td>Environmental Science-Policy Interface</td>
</tr>
<tr>
<td>4</td>
<td>XXX 698</td>
<td>Graduate Seminar in any (XXX) program</td>
</tr>
<tr>
<td>6</td>
<td>Electives</td>
<td>Approved by committee; must be graded</td>
</tr>
<tr>
<td>6</td>
<td>Prof. Experience*</td>
<td>Formal or individualized course (e.g., 608**)</td>
</tr>
<tr>
<td>TOTAL: 60</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
*The “professional experience” (6 credits) is any experience that significantly broadens knowledge and skills, and advances the student’s career objectives. The requirement can be satisfied through classes or research experiences that expand the student’s (1) skills in an area outside his/her dissertation but in a professional area related to his/her career goals, or (2) research experiences within the context of the dissertation.

**All individualized studies courses require an approved CEFNS individualized course contract to be placed in the student’s file prior to the start of the activity.

Comprehensive exam summary
The “comps” test the student’s comprehensive knowledge of the field of study, both in breadth across the general topic, and depth within the area of specialization. The examination serves as the primary checkpoint for the Dissertation Committee to rigorously assess the student’s preparedness to advance to candidacy for a doctoral degree. The exam includes both written and oral parts. The ESES PhD Program Oversight Committee reviews the Dissertation Committee decision and the supporting materials, and approves the decision.

Written exam
The written component includes two products: (1) a review of the primary literature or other publishable-quality manuscript, and (2) a grant proposal.

Prior to any input from the advisor or committee, the student submits the original written comprehensive exam to all committee members. Either the manuscript or the proposal can be submitted first, but the second product must be submitted for evaluation at least six weeks prior to the completion deadline (mid October for fall and mid March for spring).

All Dissertation Committee members must evaluate the student’s original examination products and vote on whether to pass, fail, or revise. If any committee member judges the original written examination as indicating that the student will likely have difficulty writing a dissertation, then the committee must meet to discuss whether the student should continue with the comprehensive exam. If the decision is to revise, the student will have only one opportunity to produce written products that meet the expectations for a doctoral program. The ESES PhD Program Oversight Committee (possibly with input from others) must approve the decision.

Oral exam
Taken after the written is passed. The exam comprises questions from the Dissertation Committee on: (1) student’s written products, and (2) other relevant topics to assess breadth of knowledge. If the oral evaluation is failed, the Dissertation Committee and the student must develop a plan to re-take it. The exam may be repeated only once.
PhD Program Progression
Earth Sciences and Environmental Sustainability (ESES)

INTRODUCTION
The School of Earth Sciences and Environmental Sustainability (SESES), in coordination with affiliated academic units in the College of Engineering, Forestry and Natural Sciences (CEFNS), offers an interdisciplinary PhD degree with the same title as the school’s name, “Earth Sciences and Environmental Sustainability”. The broadly defined ESES PhD degree is anchored by three emphasis areas: (1) Earth and Planetary Systems, (2) Climate and Environmental Change, and (3) Engineering Sustainable Systems. The title of the emphasis area is included on the student’s graduation diploma. The PhD degree is intended for those who want to receive the terminal degree in broad areas within the Earth and Environmental Sciences and Engineering, and the Environmental Science and Policy interface. The degree program includes students who are conducting research in both basic research and in research applied to societal problems.

This document summarizes the steps for successful completion of the PhD degree in ESES. It specifies the procedures, policies, and timelines for progression through the program. These are guided by the student’s best interest and the need to maintain an appropriately high standard for the institution, which is for the benefit of all students. This document augments rather than duplicates the information about requirements that apply to all NAU graduate programs, which is posted on the Graduate College webpages. Students are responsible for understanding the policies and procedures of the Graduate College and the requirements for the ESES PhD degree (http://nau.edu/CEFNS/NatSci/SESES/Degrees-Programs/Graduate/PhD-Earth-Sciences-Environmental-Sustainability/). Additional resources for NAU graduate students are at: http://nau.edu/GradCol/Student-Resources/

See the policies for all NAU PhD degrees, including the residency requirements: https://policy.nau.edu/policy/policy.aspx?num=100805

Download the “Checklist for Doctoral Students”, which describes the steps that the Graduate College requires to complete a doctoral program at NAU: http://www2.nau.edu/gradcol/ThesesDiss/ChecklistDoctoralStudents.pdf

ROLE OF COMMITTEES FOR THE ESES PhD PROGRAM
There are three committees within the ESES PhD program that provide oversight and approval of all student work as well as establish and maintain the overall structure and ethos of this unique, interdisciplinary PhD. Each committee carries specific duties and maintains a distinct role in the program as well as advising and mentoring PhD students.

PhD Advisory Council
The PhD Advisory Council is chaired by the chair of the ESES PhD Program Oversight Committee and is composed of representatives from academic units and agencies directly involved in the program. Most of the PhD Advisory Council members will be advisors to active PhD students. The PhD Advisory Council gives broad advice on policies and procedures in the program, reviews and suggests best practices for program requirements, and offers an overall
picture of meaningful interdisciplinary interaction within the program. Additional duties of PhD Council Members include:

- Communicating about the PhD program to their unit
- Assembling announcements of opportunities for prospective students
- Finding prospective advisors for applicants
- Answering inquiries from prospective students
- Assisting in establishing regular offerings of XXX 698 courses to support the PhD program

**ESES PhD Program Oversight Committee**

The ESES PhD Program is overseen and run by the ESES PhD Program Oversight Committee, which is appointed by the SESES Director. The ESES PhD Program Oversight Committee determines, maintains, and enforces procedures and standards for the program. The PhD Program Oversight Committee monitors each student’s advancement to ensure satisfactory progress is being made. It receives input on programmatic issues from the SESES Faculty and the ESES PhD Advisory Council. The PhD Program Oversight Committee is composed of 3-4 faculty from SESES who represent both a broad spectrum of disciplines across the School and experience with major research projects and graduate students, including PhD student advising. The SESES Director will serve as an ex-officio and advisory member on the Oversight Committee. The Graduate Program Coordinator staff in SESES works closely with the Oversight Committee Chair to ensure regular practices and procedures for the PhD degree program are completed.

**PhD Student’s Dissertation Committee**

The Dissertation Committee is the primary committee for which a PhD student will interact during their program. NAU Policy 100806, “Requirements for Theses and Dissertations” outlines the requirements for dissertation committees. The specific composition of the PhD committee for this program is explained in this handbook. The role of the Dissertation Committee is to advise and mentor the PhD student during their advancement through the PhD program as well as critique and assess the quality of the written and oral comprehensive exams and dissertation of the student. The assessment and formal decisions on the student’s exams and materials (pass, fail, or revise) and a written justification will be forwarded to the ESES PhD Program Oversight Committee for their comments and approval.

Because this is an interdisciplinary PhD program involving faculty and students from SESES and multiple academic units outside SESES, the PhD Program Oversight Committee carries a role in approving all decisions made by each Dissertation Committee on the written and oral comprehensive exams and materials. The details of the process related to the written and oral comprehensive exams are fully explained in this handbook.
PhD DEGREE PROGRAM PROGRESSION PLAN

First-semester advising

All students enter the PhD program with a designated faculty Advisor. Students must meet with their Advisors prior to the first semester to select courses and set goals for the first semester. Students should work with their Advisor to identify a provisional Dissertation Committee and should meet informally with the likely committee members to discuss the dissertation project and to develop a provisional plan of study.

Before the end of the first semester: Formation and Approval of Dissertation Committee

Download the “Dissertation Committee Recommendation” Form at:
http://www2.nau.edu/gradcol/ThesesDiss/Dissertation_Committee_Rec.docx

The Dissertation Committee comprises the Advisor and at least three others. At least four members must hold earned doctorate degrees. It is required that all ESES Dissertation Committees include at least one faculty member from SESES; exceptions to this policy can be considered in consultation with the SESES Director and chair of the Oversight Committee. At least one member of the Dissertation Committee must be from outside of the focus area of the student’s research, generally from a department or school other than the student’s primary academic home. The role of the outside member is to bring additional breadth of expertise represented by the Committee and to encourage development of the interdisciplinary aspects of the project. The ESES PhD Program Oversight Committee will work with students and their Advisors to identify an appropriate outside committee member. Committee members may include tenure-track and research professors, adjuncts, or other professionals on or off campus with appropriate experience to advise and evaluate a PhD dissertation. Committee members from outside of NAU must submit a current CV to the Graduate College, along with the application that formalizes the Dissertation Committee.

To formalize the Dissertation Committee, the Advisor completes the “Dissertation Committee Recommendation Form”, which includes a brief summary of the proposed dissertation topic. The form is then signed by the Advisor and the chair of the ESES PhD Program Oversight Committee before it is submitted to the Graduate College no later than the last day of instruction prior to final exams of the first semester. The membership of the proposed Dissertation Committee will be reviewed by the Graduate Dean, who will formally appoint the Doctoral Committee. The Graduate Dean will not approve substitute committee members within two months of the dissertation defense.

Before the end of the second semester: Develop a Program of Study

Download the current “Program of Study” form at:
http://www2.nau.edu/gradcol/POS/EarthSciEnvSus_PHD_CURRENT.docx

Note: If the comprehensive exam (both written and oral parts) is unlikely to be completed by the end of the fifth semester following admission to the program, students must submit in writing, along with their Program of Study form, an explanation for the longer timeline. Exemptions to the five-semester timeline that are requested following the first committee meeting will only be
granted in extenuating circumstances. Students who were admitted prior to receiving an MS degree are expected to take an additional two or three semesters longer than the benchmarks specified in this document to complete their comprehensive examination.

The goal of the first committee meeting is to develop the overall plan for the degree program, including how each of the requirements will be fulfilled. To do this, the student must be prepared to discuss his/her research objectives as well as career goals. The meeting typically lasts 2 hours and begins with a brief (20 minute) presentation of the dissertation project to introduce the committee to the project and to facilitate discussion. The student should fill in as much of the Program of Study form as possible in consultation with his/her Advisor and distribute copies to each committee member before the first meeting. In addition to receiving input on the research, the Program of Study should be discussed and approved during the first committee meeting. Forward the form (signed by the advisor) to the ESES PhD Program Oversight Committee (via the SESES Graduate Program Coordinator) for final approval. The student is responsible for scheduling the first committee meeting prior to the end of the second semester. During subsequent years, students are required to arrange a meeting of their Committee at least once per academic year to assess progress and to discuss research results and future research plans. Although one meeting per year is the minimum, it is best to keep the Committee updated more frequently.

Coursework

Until the comprehensive exams are passed, students must maintain continual enrollment of at least 3 units per semester (excluding summers), including one face-to-face course (3 units) per academic year (see: https://policy.nau.edu/policy/policy.aspx?num=100805).

The student works with his/her Advisor and Dissertation Committee to develop an appropriate set of courses, depending on the student’s dissertation topic and career objectives. The PhD degree at NAU requires a minimum of 60 credit hours beyond the bachelor’s degree. Of the 60 hours, 15 hours must be EES 799 (Dissertation Research). Additional hours of EES 799 do not count toward the minimum credit hour total of 60. The remaining 45 credit hours must be approved by the Dissertation Committee and ESES PhD Program Oversight Committee. Of these, at least 37 credit hours must be at the 500 or 600 level and no more than 8 credits may be at the 400 level. As approved by the Dissertation Committee, up to 24 credit hours completed for a master’s degree (at NAU or elsewhere) may be applied toward the doctoral program. Unless explicitly approved by the Dissertation Committee and by the ESES PhD Program Oversight Committee, an approved program of study may only include graded courses and not courses taken as P/F. Students must maintain a GPA of 3.0 or better. Only 6 hours of grade C are allowed in the PhD degree program. Any C grade places the student on academic probation and requires a plan, presented to the ESES PhD Program Oversight Committee, for improvement in future courses. In the case of poor academic performance, only one course may be repeated for the second grade to count toward graduation, but both grades are used in computing the grade point average.

Required courses include:

- EES 605/606 (1 unit each dedicated to ESES PhD students)
• ENV 555
• Professional experience (see explanation below; 6 units)
• … 698 – Graduate Seminar (e.g., EES 698; 4 units in addition to the ESES PhD student seminar. Graduate seminars are dedicated to reading and discussion of the current literature on a tightly focused PhD-level topic. Any substitutes for this requirement must be consistent with this objective)
• EES 799 (15 units minimum, taken following formal application for candidacy)
• Additional courses (30 units, of which 24 may be transferred from another graduate degree. Unless explicitly approved by the Dissertation Committee and by the ESES PhD Program Oversight Committee, all 30 units must be graded rather than P/F)

Professional experience

All individualized studies courses (e.g., 608) require an approved contract to be placed in the student’s file prior to the start of the activity.

Download the CEFNS “Individualized Study Contract” at: https://nau.edu/uploadedFiles/Academic/CEFNS/_Shared/Individualized Study Contract.doc

The “professional experience” (6 credits) is any experience that significantly broadens knowledge and skills, and advances the student’s career objectives. The requirement can be satisfied through classes or research experiences that expand the student’s (1) skills in an area outside his/her dissertation but in a professional area related to his/her career goals, or (2) research experiences within the context of the dissertation, but beyond the classes offered at NAU. The credits for professional experience can be earned through:

• Regularly scheduled courses at NAU aimed at developing professional skills
• Courses transferred from other universities that meet the goals of the professional experience but are not included in the 24 credits that are applied to the 30 units of additional course work
• … 608 – Fieldwork Experience (Supervised field experience in an appropriate agency, organization, or situation)

Examples of professional experiences include:

• Spend a semester at another university to learn cutting-edge research methods, to collaborate on a project with another research group at that university.
• Work as an apprentice on a project that is not part of the dissertation, but could be related.
• Participate in a professional workshop to learn new research skills, analyze shared dated, develop and test models, synthesize information, or prepare a manuscript.
• Teach a course as the instructor of record and receive formal training in teaching methods, such as a professional development workshop.
• Lead a meaningful outreach activity and generate a major outreach product.
• Complete courses at NAU or another university that develop leadership, communication, management, or other professional skills that will significantly advance the ability to gain employment in your selected career.
Before the end of the third semester: Dissertation Prospectus

The Prospectus presents in a succinct manner (2 pages minimum) the research that will be completed for the dissertation. It must be presented to the Committee before the end of the third semester so that all members have input to the design of the project at an early stage. The Prospectus must be approved by the entire Dissertation Committee and the ESES PhD Program Oversight Committee before the end of the third semester.

The Prospectus includes:

• Background information about the current knowledge and significance of the research.
• The major research questions to be addressed.
• The materials, methods, and data-analytical approaches that will be used.
• A timetable for completion of major stages of the work.

Comprehensive Examination

The “comps” test the student’s comprehensive knowledge of his/her field of study, both in breadth across the general topic, and depth within the area of specialization. The examination serves as the primary checkpoint for the Dissertation Committee to rigorously assess the student’s preparedness to advance to candidacy for a doctoral degree.

The exam includes both written and oral parts. Students must complete the written portion by the end of their fourth semester and the oral portion by the end of the fifth semester. If the comprehensive exam is unlikely to be completed by the end of the fifth semester following admission to the program, students must submit in writing, along with their Program of Study form, an explanation for the for the longer timeline. Exemptions to the five-semester timeline that are requested following the first committee meeting will only be granted in extenuating circumstances.

Before the end of the fourth semester: Written component of Comprehensive Evaluation

Because the written exam involves reviews and revisions, students are required to submit the written products to their Dissertation Committee at least six weeks prior to the deadline for completion (mid-October for fall semester or mid-March for spring semester). Students who do not meet their scheduled deadline will be placed on academic probation. An academic improvement plan must then be approved by the advisor and ESES PhD Program Oversight Committee, with a revised and final deadline set. Inability to pass the comprehensive exam during the time specified in the plan precludes admission to candidacy and terminates the student’s program.

Advisors must work closely with their advisees to make sure that the students are properly prepared for the examination, including a clear understanding of the expectations for doctoral-level products. A Google search for “peer review in science” turns up examples of reviewed manuscripts and author’s replies. A search on “evaluating scientific writing” returns useful resources on best practices in scientific writing. Sharing copies of reviewers’ comments on manuscripts that have gone through peer review could be instructive as well. Comprehensive
exams must be the original work of the study and must not have been used for a previous class assignment (although some overlap may be expected).

The written component includes two products: (1) a review of the primary literature or other publishable-quality manuscript, and (2) a grant proposal. Both products will be evaluated in depth by the Dissertation Committee. The content and evaluation standards for the two written examination products are:

1. Review of the primary literature or other publishable manuscript:

The goal of the manuscript component of the written exam is to develop and evaluate the student’s ability to research the primary scientific literature and to prepare a publication-quality manuscript. The standard for passing is equivalent to that which is required for acceptance in the peer-reviewed journal. The manuscript is a 10- to 20-page document (text), including an abstract, plus references and figures/tables. The manuscript must demonstrate a command of the relevant literature. This could be done as a dedicated literature review, or as part of a paper that presents original data that advances the topic. In some cases, the manuscript could serve as a provisional “Introduction” to the dissertation. Whatever the objective, it is written and presented as a publication-quality product in all aspects, and will be evaluated as such.

2. Grant proposal:

The goal of the grant-proposal component of the exam is to develop and evaluate the student’s ability to independently formulate a research proposal. The standard for passing is a proposal that is worthy of funding in an open competition. The proposal should be written in the format required by a major funding agency, such as NSF or NASA or other appropriate source, and should include a timeline and budget for completing the project. An NSF Doctoral Dissertation Improvement Grant (DDIG) is acceptable. The proposal must be an independent endeavor on the part of the student. It should not be jointly written with the Advisor, but the proposed project may include collaborations with others, including committee members. If the proposal involves a study closely related to what has already been written, the student must explain specifically how the proposal expands upon or is innovative relative to any existing proposal. The student can seek guidance at the planning stage of the proposal from their PhD advisor or Dissertation Committee members, but they must write the proposal themselves as it is a written exam. It is recommended that the Advisor give the PhD student examples of successful proposals as guidance.

Examination procedure:

During the preparation of the written exam products, especially the research proposal, the student will naturally seek guidance from others, which can be included as part of the conceptual development of the proposal and of the research questions themselves. Although the written product must be the student's original work, the exam also serves as a training ground for students in their progress toward candidacy. Interaction between the student and his/her committee or other experts is expected during the preparation and revision stages. To honor this collaborative aspect, the student must include a brief statement stating his/her role in the preparation of the research proposal. In addition to verifying that the text itself is original, the statement should reflect on origin of the ideas for the project and should state the approximate proportion of the content that is the direct result of his/her own creation. This exercise follows
the current trend in publications to include a brief and transparent statement of each author’s contributions.

The comprehensive exam serves as the primary checkpoint for the Dissertation Committee to rigorously assess a student’s preparedness to advance to candidacy for a doctoral degree. A student who advances to candidacy has the motivation and ability to comprehend the limits of knowledge within a field and to design and conduct original and rigorous investigations to advance knowledge beyond the leading edge. The exam assesses the student’s abilities; work must be his/her original product. Prior to any input, the student submits her/his written exam to all committee members who then must vote on whether to Pass, Revise, or Fail.

(1) The student and advisor decide whether both written products will be submitted to the committee simultaneously, or whether the committee must first approve one of the two products before the other is submitted. Either the manuscript or the proposal can be submitted first, but the second product must be submitted for evaluation at least six weeks prior to the completion deadline.

(2) Prior to any input from the advisor or committee, the student submits her/his original written comprehensive exam to all committee members (either digital or paper copy, depending on member’s preference). For the manuscript: a copy of (or link to) the “guidelines for authors” from the targeted journal is included and must be adhered to. For the grant proposal: the request for proposals (RFP) and formatting guidelines from the targeted funding program are included.

(3) All committee members must evaluate the student’s original examination products. Following each member’s appraisal of the written exam, and prior to any further communications with the student, the committee will confer by e-mail, teleconference, or in a face-to-face meeting to decide whether the student passes, fails, or must revise the written products. Specifically:

- Pass: The decision to “Pass” implies that both written products are on par with what is expected for submission to a journal or funding agency. Some flaws should be expected, but minor revisions should not delay the student from proceeding to the oral part of the comprehensive exam. In essence, “Pass” implies “pass with minor revisions”, with the understanding that the input provided from the committee will be addressed before the manuscript or proposal takes the next step. It is the responsibility of the advisor to be sure that the student addresses the committee’s comments regardless of whether the written products are submitted for publication/funding. To pass the Written Comprehensive Exam, all committee members must approve both products, which are then forwarded with the critiques of the exam written by the Dissertation Committee to the ESES PhD Program Oversight Committee for final approval. A written critique by the Dissertation Committee to the student (and copied to the PhD Oversight Committee) is required as part of the training and feedback process that this exam is designed to encourage. The ESES PhD Program Oversight Committee may consult with members of the student’s Dissertation Committee, the ESES PhD Advisory Council or other experts in the field for input. To assist the ESES PhD Program Oversight Committee with the decision, please forward the original written exam along with the committee’s review of the products. Once approved by the ESES PhD Program Oversight Committee, students proceed to the oral part of the comprehensive exam.
- **Revise**: The decision to “Revise” implies that the exam contains significant defects. These defects must be specified in writing to the student with a clear statement of the expectations for the revisions necessary to pass, along with a firm deadline for receipt of the revised products. “Revise” should not be used for minor flaws. It suggests that the student is close to failing and that s/he will have only one opportunity to produce written products that meet the expectations for a doctoral program. If the decision is to revise, the student will have only one opportunity to produce written products that meet the expectations for a doctoral program.

- **Fail**: Students who fail do not advance to candidacy and exit the program. They have not demonstrated the motivation and ability to comprehend the limits of knowledge within a field, and to design and conduct original and rigorous investigations to advance knowledge beyond the leading edge. If any committee member judges the student as not meeting this expectation, or believes that the written examination indicates that the student will likely have difficulty writing a dissertation then the committee must consider whether the student should continue with the comprehensive exam, or whether s/he should be advised to discontinue the degree program. Or if the initial decision was to “Revise” and the student did not make the expected improvements within the timeline allotted, then the student is discontinued from the degree program.

Once the Dissertation Committee has decided on either a Pass or Fail, the ESES PhD Program Oversight Committee (possibly with input from others) must approve the decision before the oral exam is conducted. Please forward the original written products (and the revised product(s), if applicable) along with the information requested below to the SESES Graduate Program Coordinator (Amy.Wolkowinsky@nau.edu). Include the “guidelines to authors” for the target journal that was used as the style guide for the manuscript, and the “request for proposals” that was used to write the grant proposal. A goal of the comprehensive exam, and a mark of professional development is that student’s understand the expectations for submission of manuscripts and proposals according to the journal/agency's guidelines/constraints. The ESES PhD Program Oversight Committee will return its decision to the student’s advisor within 10 working days.

Forward original written products (and revised, if applicable), with authors’ guide and RFP, and the information below to the SESES Graduate Program Coordinator.

**Student’s name:**

**Dissertation Committee** (list names of all committee members who voted on the exam):

**Date manuscript was delivered to Dissertation Committee:**

**Date grant proposal was delivered to Dissertation Committee:**

**Date of Dissertation Committee vote:**

**Dissertation Committee decision (Pass, Revise or Fail):**

If decision is to Revise, specify the shortcomings that must be corrected

If decision is to Revise, state the deadline for receipt of revised documents:

**Date revised documents were delivered to Dissertation Committee:**
Date of second Dissertation Committee vote:

Dissertation Committee decision (Pass or Fail):

ESES PhD Program Oversight Committee decision and date:

Before the end of the fifth semester: Oral component of Comprehensive Evaluation

The goal of the oral component is for the student to convey his/her knowledge of the dissertation topic, including the analytical skills necessary to complete the research and any background knowledge as determined appropriate by the Dissertation Committee. The Committee will evaluate the student’s understanding of the field and ability to bring together ideas and present them cogently in a professional atmosphere. The evaluation is given by all members of the student’s Committee and lasts 1.5 to 2 hours. It is taken after the student has passed the written component, including its approval by the ESES PhD Program Oversight Committee. The oral evaluation is held in private and is organized and directed by the student’s Advisor. At a minimum, it includes:

1. An explanation of how the Comprehensive Evaluation will be conducted.
2. Questions from the Dissertation Committee to the study related to the student’s research, including that which was included in the written exam products.
3. Questions from the Dissertation Committee on other relevant topics to assess the breadth of the student’s knowledge in the field. Individual Committee members may choose to give the student a bibliography of works for which they will be tested.

In addition, the Dissertation Committee may ask the student to prepare a presentation of research progress and plans, but the focus should be an examination of the student by the committee.

Questions usually deal with details, concepts, and principles related to the student’s field, including the conceptual development of, and recent developments in related fields. When necessary, emphasis will be placed on areas in the written evaluation on which the student has shown weaknesses. Each member of the Dissertation Committee keeps notes on all questions, recording a satisfactory or unsatisfactory answer, and provides a general summary of the student’s performance. A pass or fail vote is recorded, and a three-fourth’s passing vote is required. Once the student has passed the oral evaluation, the advisor will notify the ESES PhD Program Oversight Committee. If the oral evaluation is failed, the Dissertation Committee and the student must develop a plan to re-take it. The plan must be approved by the ESES PhD Program Oversight Committee and is placed in the student’s file. The exam may be repeated only once. A second failure, or failure to adhere to the re-take plan and its deadline precludes admission to candidacy and terminates the student’s program.

No later than one semester prior to the dissertation defense: Admission to Candidacy

Download the “Application for Candidacy” form at: http://www2.nau.edu/gradcol/Forms/CandidacyApp.docx
Candidacy means that the student becomes an official candidate for the PhD degree, implying that s/he is prepared to undertake research independently and write a dissertation. A completed form, which must be forwarded to the ESES PhD Program Oversight Committee, requires:

1. Confirmation of two consecutive semesters of full-time study in residence. Refer to the residency requirement on the Graduate College’s website.


3. Completion of the Written and Oral Comprehensive Evaluation.

4. Completion of all course work on the Program of Study, including course deficiencies, but not including EES 799 (plus consideration and approval of any changes since the form was initially prepared).

5. Completion of the “research competency requirement”, which is satisfied in ESES through the successful completion of the grant proposal component of the written comprehensive exam.

**Dissertation**

Although two types of dissertation format are acceptable for the Graduate College ([http://nau.edu/GradCol/Student-Resources/Theses-and-Dissertations/](http://nau.edu/GradCol/Student-Resources/Theses-and-Dissertations/)), the journal-article format is required for the ESES degree, unless otherwise approved by the ESES PhD Program Oversight Committee. This format is a series of papers either submitted, or drafted for submission, to peer-reviewed professional journals, with additional introductory and concluding chapters as described at the web site provided above. The dissertation must be of sufficient quality for publication in international peer-reviewed journals. Professional publications demonstrate undeniable expertise in research and bring greater visibility to the author.

The dissertation must be reviewed by the Advisor and revised by the student prior to distribution to the committee. The nearly final version of the dissertation must be submitted to the Dissertation Committee at least eight weeks prior to the anticipated defense to allow for further revisions based upon Committee members’ recommendations. Committee members must provide feedback on the dissertation within two weeks after receiving it, if they expect the suggested changes to be incorporated into the final draft of the dissertation. The dissertation, in its nearly final form, including all figures, tables, and references, must be distributed to all Committee members, and a copy to the Graduate College, at least two weeks before the date of the dissertation defense examination.

**Dissertation Seminar**

*The PhD degree requires that each student present a formal Dissertation Defense Seminar,* which is open to the public. The seminar will last about 40 minutes with 10-15 additional minutes for questions and discussion. This seminar must be given before the Dissertation Defense Examination and is typically given immediately before the Defense. The seminar must demonstrate that the student has mastered his/her field of specialization, has carried out independent scholarly work, and has contributed new knowledge.
Oral Dissertation Defense Examination


The goal of the Oral Dissertation Defense Exam is to test the student’s competence in research, and adequacy of the dissertation. It is a rigorous “defense” of the dissertation. The examination is given by all members of the student’s Dissertation Committee, and typically lasts 2-3 hours.

The examination is scheduled by the student through the Graduate College at least two weeks in advance. At the start of the semester in which a student expects to defend her/his dissertation, s/he must verify with the Graduate College the deadline for holding a dissertation defense. It should be scheduled for immediately after the Dissertation Defense Seminar. The date for the examination must be arranged by the student so that all members of the committee can attend. While it is desirable for all members of the Dissertation Committee to be present at the same location for a dissertation defense, teleconferencing of up to two members is permissible. If possible, the date should fall within the Fall or Spring semesters; the defense cannot be held during the last two weeks of any term. All Committee members must have a confirmed date, time and place, in writing from the student. The examination must be scheduled at least four weeks before the date of expected graduation in order to allow for any changes to the dissertation recommended by the Committee. The Dissertation Defense may not be held prior to 90 days after the student has been admitted to candidacy. No more than four years can elapse between the Oral Comprehensive Evaluation and the Dissertation Defense Examination. If the time between examinations is longer than four years, the Oral Comprehensive Evaluation must be repeated.

This examination will be devoted to questions relating to the Dissertation. Any member of the NAU faculty may attend the Dissertation Defense Examination. Each member of the Dissertation Committee keeps notes on performance during the examination and records a general summary of the student’s understanding of the research project and defense of the thesis.

A pass or fail vote is recorded by secret ballot by the committee in private before any discussion. To pass, a student must obtain at least three-fourths of the votes in favor. If the examination is failed, it may be retaken once. If any Dissertation Committee member is absent because of an emergency, permission to continue with the examination must be obtained from the Dean of the Graduate College. If permission is granted to continue with one missing member, no dissenting votes may be registered. If more than one Committee member is absent, the examination must be rescheduled.

The Graduate Dean also appoints an observer from the University Graduate Committee to attend the defense seminar and final oral defense. The observer reports to the Graduate Dean on the conduct of the examination. This report is also shared with the SESES Director. If invited by the Chair of the University Graduate Committee, the observer may ask questions, but the observer does not vote to pass or fail the student.