INTERDISCIPLINARY DOCTORAL PROCEDURES
COLLEGE OF ENGINEERING
THE UNIVERSITY OF AKRON

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INTERDISCIPLINARAY DOCTORAL PROCEDURES  
COLLEGE OF ENGINEERING  

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Note: The doctoral requirements of The University of Akron are italicized to distinguish the University’s requirements from those of the College of Engineering.
College of Engineering’s Graduate Degrees

The graduate degrees offered in the College of Engineering are summarized in Table 1. Coordinated programs are those that are both an interdisciplinary program in the College of Engineering and a department at The University of Akron.

Table 1. Graduate Degrees Offered in the College of Engineering at The University of Akron

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*Coordinated Programs

Biomedical Engineering with the Biomedical Engineering Department in the College of Engineering
Polymer Engineering with the Polymer Engineering Department in the College of Polymer Science and Polymer Engineering
Engineering Applied Mathematics with the Department of Mathematical Science in the College of Arts and Sciences
College of Engineering at The University of Akron and the College of Engineering at Youngstown State University

Joint Program

MD/Doctor of Philosophy in Engineering Degree with Northeastern Ohio Universities’ College of Medicine (NEOUCOM)

MASTER OF SCIENCE DEGREES

Master of Science in Chemical Engineering
Master of Science in Civil Engineering
Master of Science in Electrical Engineering
Master of Science in Mechanical Engineering

Master of Science in Engineering
Biomedical Specialization
Polymer Specialization
Engineering Management Specialization
Doctoral Student’s Responsibilities

Doctoral students are completely responsible for all aspects of their graduate education. Specifically, their responsibilities include:

- Understanding, adhering to, and implementing the procedures of the Graduate School, as described in The University of Akron Graduate Bulletin and the Interdisciplinary Doctoral Procedures of the College of Engineering.
- Selecting an interdisciplinary program, Dissertation Director, and Interdisciplinary Doctoral Committee.
- Arranging, through the Dissertation Director, all Interdisciplinary Doctoral Committee meetings.
- Initiating, through the Dissertation Director, the forms that monitor their progress toward the doctoral degree.
- Proposing and executing an accepted Plan of Study.
- Proposing a Research Proposal and executing the proposed research.
- Preparing a scientifically acceptable and comprehensive dissertation whose format meets all the accepted standards of the Interdisciplinary Doctoral Committee, the College of Engineering, and the Graduate School.

Graduate Assistantships

The Acceptance Agreement for the Graduate Assistants at The University of Akron states that the Appointee shall be enrolled in a full-time program of graduate study at The University of Akron. Full-time study is defined as 9-15 graduate credit hours.

Admission Procedures

All applicants for the doctoral program in the College of Engineering must submit their applications and supporting documentation to the Graduate School. When the documentation is complete, the Graduate School sends it to the Dean of the College of Engineering, who then distributes it to the departments for their evaluation and recommendations concerning acceptance or rejection. The documentation and recommendations are returned to the Graduate School via the Dean of the College of Engineering. The Graduate School then sends the letter of acceptance or rejection to each applicant.

Admission Requirements

Applicants for the Doctor of Philosophy in Engineering must hold a bachelor’s degree from a program that is accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology at the time of graduation, or provide satisfactory evidence of an equivalent academic background to the Dean of the College of Engineering.

Applicants with a Master of Science degree must provide satisfactory evidence of an equivalent engineering baccalaureate background to the Dean of the College of Engineering.

Applicants must submit official undergraduate transcripts, undergraduate grade point average, at least two letters of recommendation, and official results of the verbal, quantitative, and analytical portions of the GRE. Personal statements or descriptions of post-baccalaureate experience that provide a rationale for the proposed graduate study may also be submitted.

Applicants with a bachelor’s degree must have a cumulative grade point average of at least 3.0/4.0.

Applicants with a master’s degree must have a cumulative grade point average of at least 3.5/4.0. Applicants whose native language is not English must have a TOEFL score of at least 550 (written test) or a score of at least 213 (computerized test), and also must submit their score on the Test of Written English.
Applicants not satisfying the requirements for Full Admission may be classified either as a Professional Admission or as a Deferred Admission.

Applicants with a bachelor’s degree in a discipline other than engineering shall have completed undergraduate coursework in calculus, differential equations, and have one year of classical physics. These students may be required to take additional bridge-up courses depending on their background. Necessary bridge-up coursework will be determined by the graduate committee of admitting department or program.

Residency Requirement

The minimum residency requirement for a doctoral candidate is at least two consecutive semesters of full-time study in the program. Full-time study is defined as 9-15 semester graduate credits, except for graduate teaching and research assistants for whom full-time study is specified by the assistantship agreement. No student holding a full-time job is considered as fulfilling the residence requirement. The summer sessions may count as one semester, provided that the doctoral student is enrolled for a minimum of 10 consecutive weeks of full-time study and for a minimum of six semester credits per five-week session.

Time Limit

All doctoral requirements must be completed within 10 years of matriculation for doctoral studies.

Transfer Credits

A student who has a master’s degree from another university or from one of the departments in the College of Engineering may, upon recommendation of the Interdisciplinary Doctoral Committee, transfer up to 24 credits of coursework. The course comprising the transfer credits must be identified and itemized on the Plan of Study and must be substantiated by an official transcript from the educational institution that offered the courses.

A student who has completed a non-thesis master’s degree, or has graduate credits but has not completed the degree requirements for the master’s degree, can transfer a maximum amount of 24 credits of coursework toward the doctoral course requirements.

No more than six credit hours of research or completed thesis credits can be transferred.

Doctoral Degree Requirements

The University’s Academic Requirements (See Academic Requirements in the Graduate Bulletin) for the Doctoral Degree and the College of Engineering’s Academic Requirements for the Doctoral Degree must be satisfied.

- Pass a departmental Qualifying Examination. The purpose of the qualifying examination is to determine admissibility to the doctoral program and any technical weaknesses.
- Identify an interdisciplinary field of study, a dissertation director, and an Interdisciplinary Doctoral Committee (IDC) before completion of 18 credits of coursework. The chair of the IDC will be in the student’s home department.
- Complete a formal Plan of Study that is acceptable to the IDC. The plan of study should include 96 credit hours of combined coursework and research credits in accordance with the guidelines established by the student’s admitting department/program.
- Satisfy the language requirement specified by the Interdisciplinary Doctoral Committee.
- Pass a Candidacy Examination. The purpose of the candidacy examination is to test the student’s ability to conduct independent research.
- Present an acceptable Dissertation Proposal that describes the proposed research to the Interdisciplinary Doctoral Committee.
- Present and successfully (no “fail” votes) defend the dissertation to the Interdisciplinary Doctoral Committee.
A copy of the Ph.D. in Engineering Program Procedures may be obtained from the office of the Dean of the College of Engineering.

**Qualifying Examination**

The student must pass a Qualifying Examination before the Dissertation Director, the Interdisciplinary Committee, and the courses for the Plan of Study are selected. The objective of the Qualifying Examination is to determine if the student has sufficient engineering background to qualify for doctoral studies.

To ensure an equitable basis for evaluation, the Qualifying Examination shall be taken by all first-year graduate students and must be a common written departmental examination.

Each department shall have a graduate committee composed of departmental graduate faculty representing each of the interdisciplinary programs in the department. This departmental graduate committee advises graduate students prior to the selection of a Dissertation Director; the committee also develops, administers, and grades the Qualifying Examination for those graduate students whose professional identity or undergraduate degree is in the discipline of the department. The Qualifying Examination may be given in September, January, and/or May of each academic year.

If the student fails the Qualifying Examination, the student may petition the Qualifying Examination committee for re-examination. One re-examination is permitted. The second examination must be taken at the regularly scheduled time for that department’s Qualifying Examination. If the student fails the second Qualifying Examination along with the recommendation that the Dean of the Graduate School dismiss the student from the doctoral program in the College of Engineering.

Any graduate student who does not take or pass the Qualifying Examination in the first year of graduate study may be dismissed from the doctoral program, and if on an assistantship, shall not receive any further assistantship support.

**Dissertation Director**

The Dissertation Director must be identified before completion of 18 credits of coursework. Any graduate who does not select a Dissertation Director accordingly may be dismissed from the doctoral program and, if on an assistantship, shall not receive further assistantship support.

**Interdisciplinary Doctoral Committee (IDC)**

After choosing the Dissertation Director, an Interdisciplinary Doctoral Committee is formed. The Interdisciplinary Doctoral Committee shall consist of a minimum of five full-time faculty member with a minimum of three from the College of Engineering and at least one from outside the College of Engineering.

The outside member of the committee shall function as a regular member of the committee, attending all meetings and receiving preliminary drafts or chapters as do other committee members. The outside member of the committee is usually someone who may provide additional expertise to the dissertation research from a related field, and is also someone who assures that the dissertation process is conducted fairly and that quality standards are maintained. The schedules of all committee members, including the outside member, shall be considered when selecting a time for all committee meetings, including the final dissertation defense.

At the discretion of the doctoral advisor or the Graduate Dean, additional members may be appointed.

At the time the doctoral committee, including the outside representative, is constituted, the doctoral adviser shall send the entire committee membership through the College of Engineering to the Graduate School for ratification and approval. This notification of the entire committee membership should be received in the Graduate School at the time the committee is constituted, prior to the prospectus meeting, normally at least six (6) months prior to the dissertation defense, and must be received in the Graduate School no later than a minimum of three (3) months prior to the dissertation defense.
If there are any changes to the committee membership after the initial appointment by the Graduate School, the doctoral adviser shall send revised committee membership to the Graduate School for ratification and approval of any changes. Requests for changes in committee membership should include the reason for the change.

Of the three members from the College of Engineering, one must be from a department different from that of the Dissertation Director and all three must have attained that graduate faculty status, as specified by the Graduate School, which permits the direction of doctoral students. *The member from outside the College of Engineering also must have a status on the graduate faculty, which allows him/her to direct doctoral dissertations.* This member ought to be selected so as to be maximally beneficial to the student in the design and conduct of the research, providing a perspective from a related discipline. *A majority of the committee membership must have a status on the graduate faculty, which allows them to direct doctoral dissertations* and a majority of the Interdisciplinary Doctoral Committee must be from the College of Engineering, except for the Joint Program with the Department of Mathematics and Computer Science.

Adjunct faculty may be on the Interdisciplinary Doctoral Committee but must be in addition to the minimum of five full-time faculty members on the Committee.

**Voting privileges are limited to the full-time faculty on the Committee.**

Any graduate student who does not form an Interdisciplinary Doctoral Committee in the first year of doctoral study may be dismissed from the doctoral program and, if on an assistantship, shall not receive further assistantship support.

The doctoral student may change the membership of the Interdisciplinary Committee or the Dissertation Director anytime before the Plan of Study is submitted to the Interdisciplinary Doctoral Committee. After that, the doctoral student must submit a written petition to and obtain written approval from the Dean of the College of Engineering to alter the membership of the Interdisciplinary Doctoral Committee or to change the Dissertation Director.

The Interdisciplinary Doctoral Committee has authority over the individualized study and the academic standard for the doctoral student. The Dean of the College of Engineering is responsible for determining that all of the University’s degree requirements are met.

For graduate students participating in Coordinated Programs, please see that section of these procedures.

**Plan of Study**

After consultation with the Dissertation Director, the doctoral student shall formally present a Plan of Study to the Interdisciplinary Doctoral Committee for recommendations and acceptance. Academic activity pursued prior to the selection of a Dissertation Director and the formation of the Interdisciplinary Doctoral Committee may not be accepted by the Committee.

The courses listed on the Plan of Study constitute the individualized curriculum that the doctoral student must satisfy to meet the course requirements for the doctoral degree. Since the Plan of Study is individualized, it may contain more credits than the minimums specified in the doctoral requirements.

Any graduate student who does not have an approved Plan of Study in the first year of doctoral study may be dismissed from the doctoral program and, if on an assistantship, shall not receive further assistantship support.

**Credit Requirements**

*Thesis, dissertation, and preliminary research hours are to be given credit/non-credit grades.*

*Full-time study is defined as 9-15 semester credits.*

The minimum total credit hours for the doctoral program is 96 credit hours.
Language Requirement

To determine the student’s ability for self-instruction, the Interdisciplinary Doctoral Committee may require the student to demonstrate proficiency in a foreign language.

The language options approved by the University are:

- **Plan A:** Reading knowledge with the aid of a dictionary, of two approved foreign languages. At the discretion of the major department an average of “B” in the second year of a college-level course in a language will be accepted as evidence of proficiency in reading knowledge for that language. English may be considered as one of the approved foreign languages for a student whose first language is not English. Demonstrated competence in a research technique (e.g., statistics and/or computers) may be substituted for one of the two foreign languages. Under the last option, each department should define competence and publicize.

- **Plan B:** Comprehensive knowledge of one approved foreign language, including reading without the aid of a dictionary, and such additional requirements as the department may impose.

- **Plan C:** In certain doctoral programs (counseling and guidance, elementary education, engineering, psychology, secondary education) the demonstration of competence in appropriate research skills may serve as a substitute for the foreign language requirement.

Candidacy Examination

The purpose of the Candidacy Examination is to permit the doctoral student an opportunity to demonstrate:

- Depth and detailed knowledge of fundamental scientific and engineering principles, especially those obtained from the courses in the Plan of Study.
- A comprehensive and mature understanding of the relevance and technological significance of the interdisciplinary field of study.
- Sufficient academic skills to be able to perform independent, original, and scholarly investigations.
- Sufficient oral and written communication skills to be able to report the results of the original investigations.

The Candidacy Examination shall be prepared and administered by the Interdisciplinary Doctoral Committee. The Interdisciplinary Doctoral Committee shall have the flexibility to combine, as it sees fit, the Candidacy Examination and the Dissertation Proposal.

After the student passes the Candidacy Examination, the Doctoral student becomes a doctoral candidate. The doctoral candidate, through the Dissertation Director and Dean of Engineering, submits the Cover Letter for Advancement to Candidacy form to the Dean of the Graduate School.

If the doctoral student fails the Candidacy Examination, the doctoral student may submit a written petition to the Interdisciplinary Doctoral Committee for a re-examination. If the Committee concurs with the student’s petition, then one re-examination is permitted within the time period specified by the Interdisciplinary Doctoral Committee.

If the Interdisciplinary Doctoral Committee rejects the petition for re-examination, or the student fails the re-examination, then the Dissertation Director shall notify the Dean of Engineering, in writing, that the student has failed the Candidacy Examination. The Dean of Engineering shall recommend to the Dean of the Graduate School that the student be dismissed from the doctoral program in engineering.

**Advancement to Candidacy forms must be submitted no later than May 15 for the December commencement and no later than September 15 for the May commencement. These forms are available in the office of the Dean of the Graduate School or in the academic department.**
Dissertation Proposal

The Dissertation Proposal provides a formal record of the interaction between the doctoral student and the Interdisciplinary Doctoral Committee concerning the proposed investigations. The Dissertation Proposal is a written description of the proposed research and should at least include a review of the previous work in this area, the significance of the investigations, the objectives, the methodology, and the expected results.

The Committee must also evaluate the doctoral student’s ability to communicate the results of the investigations. The response of the Committee to the dissertation proposal must include written recommendations to the doctoral candidate concerning the above listed criteria together with comments on the organization, style, neatness, grammar, and clarity of presentation.

The Dissertation Proposal and the Interdisciplinary Doctoral Committee’s written recommendations become part of the student’s file in the College of Engineering.

The Dissertation Proposal must follow the format specified in the latest edition of the Guidelines for Preparing a Thesis or Dissertation.

Dissertation and Oral Defense

The ability to do independent research and demonstrate competence in scholarly exposition must be demonstrated by the preparation of a dissertation on some topic related to the major subject. It should represent a significant contribution to knowledge, be presented in a scholarly manner, reveal the candidate’s ability to do independent research, and indicate experience in research techniques.

The doctoral dissertation committee supervises and approves the dissertation and administers an oral examination on related areas of study. This examination is open to the graduate faculty. The dissertation and oral examination must be approved by the committee before the dissertation is submitted to the Graduate School. Two copies of the dissertation are due in the Graduate School at least two weeks prior to commencement. The copies must be signed by the advisor, department chair, and college dean prior to submission to the Dean of the Graduate School. A manual entitled Guidelines for Preparing a Thesis or Dissertation is available in the Graduate School and all copies of the dissertation must conform to these instructions.

The doctoral candidate distributes complete, but preliminary copies of the dissertation to each member of the Interdisciplinary Doctoral Committee at least two weeks prior to the Dissertation Defense.

At the opening of the Dissertation Defense, the doctoral candidate makes an oral presentation of the dissertation. The Interdisciplinary Doctoral Committee evaluates the presentation and examines the candidate to determine that the investigation meets scholarly standards that are appropriate for the doctoral degree.

At the end of the final defense, all committee members shall be polled for their vote on the defense and the dissertation (pass or fail). All committee members shall affix their signatures to a single form signifying their vote. The form shall be sent to the Graduate School as the single form indicating that the defense has been held, and that the student has passed or failed. This form must be on file in the Graduate School at the time the dissertation is officially submitted. No “fail” votes are permitted in the College of Engineering.

The student, along with the dissertation advisor and the entire committee, bear responsibility for the content and form of the dissertation being acceptable.

If any member of the Interdisciplinary Doctoral Committee is not satisfied with any aspect of the dissertation or the defense, this member is required to communicate the reasons for the dissatisfaction to the Dean of Engineering. If individual members of the committee, including the outside representative, wish to write separate memos to the Graduate School concerning the dissertation and/or the defense, they are invited (but not required) to do so.

The doctoral candidate incorporates the recommendations and corrections of the Interdisciplinary Doctoral Committee into the dissertation and then prepares the final draft of the dissertation. The format
for both the dissertation proposal and the dissertation must conform to accepted professional standards and to the specifications of the Graduate School’s manual, Guidelines for Preparing a Thesis or Dissertation.

A total of five copies of the completed and signed dissertation are required; two for the Graduate School, one for the department, one for the Dissertation Director, and one for the doctoral candidate. The five required copies of the dissertation are submitted to the College of Engineering for approval by the Dean of the College of Engineering. A copy of the abstract is placed in the candidate’s file and then the five copies are returned to the candidate, who shall deliver them to the Graduate School.

The signature sheet of the final draft of the dissertation shall be signed by the Dissertation Director, the department chair, and the Dean of the College of Engineering, as well as the Dean of the Graduate School. Since the position of “reader” is eliminated, there shall be no such signature required.

The candidate shall ascertain that a copy of the abstract of the dissertation is sent to Dissertation Abstracts.

Coordinated and Joint Programs

Coordinated Engineering Applied Mathematics program for the Doctor of Philosophy in Engineering Degree between the College of Engineering and the Applied Mathematics Division of Department of Theoretical and Applied Mathematics (formerly Department of Mathematics and Computer Science)

The faculty in the College of Engineering and the Department of Mathematics and Computer Science have agreed to provide a coordinated program, subject to the following conditions, for those graduate students who elect the interdisciplinary field of Engineering Applied Mathematics.

Admission Requirements

Applicants for the Engineering Applied Mathematics Program must have their graduate application and credentials evaluated by the College of Engineering Dean’s Office and the Department of Mathematics and Computer Science. The Admission Requirements for the Doctor of Philosophy in Engineering, as given in the Graduate Bulletin, shall apply to all applicants for the Engineering Applied Mathematics Program.

Degree Requirements

The applicable Degree Requirements for the Engineering Applied Mathematics Program are those given in the Graduate Bulletin under the Section Doctor of Philosophy in Engineering. These degree requirements include passing a Qualifying Examination, identifying a Dissertation Director, establishing an Interdisciplinary Doctoral Committee, completing a formal Plan of Study, satisfying the University’s language requirement and residency requirement, passing a Candidacy Examination, presenting an acceptable Dissertation Proposal, writing a dissertation, and publicly and successfully (no “fail” votes) defending the dissertation before the Interdisciplinary Doctoral Committee.

Students in the Engineering Applied Mathematics Program must pass a department Qualifying Examination composed and administered by the participating faculty from the Department of Mathematics and Computer Science and the participating faculty from one of the five departments in the College of Engineering.

The Interdisciplinary Doctoral Committee shall consist of at least six members. It shall have an equal number of faculty members with primary appointments in the College of Engineering and participating program faculty from the Department of Mathematics and Computer Science. The participating faculty from the Department of Mathematics and Computer Science must hold joint appointments in the College of Engineering.

Graduate students who elect the Engineering Applied Mathematics Program may proceed directly from their baccalaureate degree to the doctoral degree.

Students participating in the Engineering Applied Mathematics Program must have at least 50 percent of minimum course work from the College of Engineering and at least 50 percent of minimum course work from the Department of Mathematics and Computer Science.
Coordinated Program for the Doctor of Philosophy in Engineering Degree between The University of Akron and Youngstown State University.

The University of Akron and Youngstown State University are engaged in a joint program with the objective of facilitating graduate study by engineering students residing in the proximity of Youngstown State University by providing the opportunity and convenience of completing some of the requirements for the Doctor of Philosophy in Engineering at The University of Akron through joint counseling and enrollment at Youngstown State University.

Admission Requirements

When an engineering graduate student at Youngstown State University declares an interest in the joint doctoral program, the student shall prepare a letter of intent, with academic credentials, to the Dean of Engineering at Youngstown State University. The Dean of Engineering at Youngstown State University shall forward the letter of intent and academic credentials, together with recommendation to the Dean of Engineering at The University of Akron. The Dean of Engineering at The University of Akron shall have the graduate faculty in the applicant’s discipline evaluate the academic credentials and make a recommendation in the academic acceptability of the applicant. If the recommendation is favorable, the student shall be advised to apply to the Graduate School at The University of Akron for formal admission to the Doctoral Program in the College of Engineering at The University of Akron. The Dean of Graduate and Research at Youngstown State University shall be kept informed of the progress of the admission procedure. The applicant from Youngstown State University must satisfy the Admission Requirements for the Doctor of Philosophy in Engineering at The University of Akron.

Degree Requirements

The engineering student from Youngstown State University must satisfy the Degree Requirements for the Doctor of Philosophy in Engineering at The University of Akron, subject to the following modifications:

- One of the members of the Interdisciplinary Doctoral Committee for the joint doctoral program candidate shall be an engineering faculty member from Youngstown State University and normally would be the student’s dissertation director, although this is not necessary. The faculty member from Youngstown State University shall have adjunct status at The University of Akron and qualify for Category II graduate faculty membership.
- One-half (24 credits) of the coursework and one-half (24 credits) of the research credits may be taken at Youngstown State University. The parity of courses is decided by the faculty on the Interdisciplinary Doctoral Committee when the student submits the proposed Plan of Study. At the Advancement to Candidacy, the Committee recommends official transfer of credits from Youngstown State University to The University of Akron.
A Joint Program for the MD and Doctor of Philosophy in Engineering Degree between the College of Engineering at The University of Akron and the Northeastern Ohio Universities College of Medicine.

The College of Engineering and NEOUCOM provide a coordinated program for those desiring both the MD and Doctor of Philosophy in Engineering degrees. This program integrates the knowledge and skills acquired by the student in each of the programs. Each individual coordinated degree program will be tailored to suit the background and research interests of the student. Additional information may be obtained from the Department of Biomedical Engineering at the University of Akron or NEOUCOM.

Admission Requirements

Applicants with a bachelor’s or master’s degree in a discipline other than engineering or in engineering will be required to meet the Admission Requirements for the Doctor of Philosophy Degree in Engineering.

Applicants will be required to have completed the following courses and to have taken the MCAT prior to admission into the coordinated MD and Doctor of Philosophy in Engineering Program.

| MD       | Principles of Chemistry I and II |
| MD       | Organic Chemistry I and II       |
| MD       | Principles of Biology I and II   |
| MD, Ph.D.| Classical Physic I and II        |
| Ph.D.    | Statics                         |
| Ph.D.    | Dynamics                        |
| Ph.D.    | Strength of Materials (or Materials Science) |
| Ph.D.    | Basic Electrical Engineering (or Circuits I and II) |
| Ph.D.    | Calculus I, II, III, and Differential Equations |

To obtain an MD degree from NEOUCOM and a Doctor of Philosophy Degree in Engineering from the University of Akron, the student must satisfy NEOUCOM’s degree requirements and the College of Engineering’s Doctor of Philosophy in Engineering Degree Requirements. This coordinated program does not change in any way the degree requirements for either program.

APPENDIX

INTERDISCIPLINARY DOCTORAL FORMS

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| IDC-11* | Schedule of Dissertation Defense |
| IDC-12* | Doctoral Dissertation Defense Report |

*Memos or forms sent to the Dean of the Graduate School.