

Program Policy Statement

DOCTORATE IN ENGINEERING & PUBLIC POLICY (Ph.D.)

[Draft: 11/25/2018]

Part I. Program History

A. Statement of Purpose and Expectations

The University of Delaware's Department of Civil and Environmental Engineering (CEE) and School of Public Policy and Administration (SPPA) jointly sponsor the Ph.D. in Engineering and Public Policy (EPP).

The interdisciplinary, research-oriented doctoral program focuses on the intersection of engineering and policy at all levels, local to global, including both the policy influences on engineering decisions and applications, and the policy impacts and implications of scientific and technical decisions.

The program serves students with master's level technical backgrounds in engineering and the applied sciences who are interested in using the concepts and methods of policy analysis to understand the broader societal context of technical programs and decisions.

The program requires intensive engagement of doctoral students with both engineering and policy faculty and an interest in the generation of new useable interdisciplinary knowledge that expands the boundaries of inquiry and practice.

The doctoral program will typically be completed in four years of full-time study that includes advanced courses in policy and engineering, completion of qualifying examinations and dissertation proposal, and a doctoral dissertation that applies engineering and policy analysis to issues of scholarly and policy significance. Students will design a plan of study tailored to their interests. Possible topic areas include transportation, civil infrastructure, smart cities, sustainability, and energy and the environment. While initially these areas are focused in civil engineering, and more specifically transportation and infrastructure, the intention is that eventually the program will expand. Beyond the current sub disciplines, areas in civil engineering include the environment, natural hazards, smart cities (including connected and automated vehicles) and sustainability. Beyond civil engineering, areas include biomedical ethics, food security, sustainable development, cybersecurity, and net neutrality.

The proposed program provides an opportunity to complement the existing related interdisciplinary initiatives, such as the Graduate Certificate in Wind: Engineering, Science and Policy, the PhD program in Energy and Environmental Policy, and the PhD program in Water Science Policy. Each of these programs are focused on a particular application. As such the policy related coursework is not focused on broadly applicable policy analysis tools and fundamental policy mechanisms.

Around the country, several programs (<https://www.aaas.org/spp/sepp/sepslpc.shtml>) offer elements that are similar to the Engineering and Public Policy Program at University of

Delaware, but the programs have a different focus (science rather than engineering, or master's rather than PhD), or are more anchored to public policy rather than a collaboration between policy and engineering. For example:

- Technology and Policy Program at Massachusetts Institute of Technology (<http://tpp.mit.edu/index.php/home/>) offers a PhD program in collaboration with the Institute for Data, Systems and Society. The program admits 5-6 PhD students each year.
- The Management Science and Engineering program at Stanford University (<https://msande.stanford.edu/overview>) focuses on conceptual and analytical foundations, comprehensive coverage in an application and interaction with other departments, industry and organizations. They offer a Master's and PhDs.
- The Goldman School of Public Policy at UD Berkeley (<https://gspp.berkeley.edu/programs/masters-of-public-policy-mpp/concurrent-degree-programs/public-policy-engineering>) offers a concurrent MPP/MS program in public policy and engineering.
- The Trachtenberg School of Public Policy and Public Administration at the George Washington University (<https://tspppa.gwu.edu/phd-field-science-and-technology-policy>) offers a PhD in Science and Technology Policy
- Oregon State University (<https://liberalarts.oregonstate.edu/spp/phd/policy-concentrations/science-and-technology-policy>) School of Public Policy offers a PhD concentration in Science and Technology Policy.
- Princeton's Woodrow Wilson School (<https://step.princeton.edu/phd-with-focus-on-step>) at Princeton University offers a Ph.D. in Public Affairs with a Focus on Science, Technology and Energy Policy.
- University of Michigan (<http://stpp.fordschool.umich.edu/what-is-stpp/>) offers a science and technology policy graduate certificate.

The Engineering and Public Policy program at Carnegie Mellon University (<https://www.cmu.edu/epp/>) is the program most closely aligned to the UD program. This program offers a doctoral program for students with technical backgrounds, that addresses policy issues focused on science and engineering. Focus areas include energy systems, climate & environment, information communication technology, risk analysis, and technology innovation policy. Engineering and Public Policy was established in 1971 and offers undergraduate double majors, a master's, and a research oriented PhD program. Similar master's programs at Washington University Saint Louis and University of Maryland are no longer offering degrees.

The EPP program at University of Delaware prepares graduates to participate in the social, political and policy-making aspects of science and technology as government officials, members of non-governmental organizations, or practicing scientists/engineers in think tanks, industry or academia.

Program governance and administration is the joint responsibility of the faculties of the Department of Civil and Environmental Engineering and the School of Public Policy and Administration. A faculty committee with equal membership from the two sponsoring units is appointed jointly by the Chair of the Department of Civil and Environmental Engineering and the Director of the School of Public Policy and Administration to oversee the operation of the

program. The appointed chair of the program committee serves as program director for a fixed term and works directly with the heads of the two sponsoring units.

The program is administratively housed and supported by the Department of Civil and Environmental Engineering in cooperation with the School of Public Policy and Administration. Administrative program support, such as recruitment, the processing of admissions and funding, the allocation of space and equipment, the certification for degree conferral, the coordination of course scheduling and related academic services and ongoing student support services are provided by the Department of Civil and Environmental Engineering. The degree will be awarded by the Department of Civil and Environmental Engineering.

B. Date of Permanent Status (or current status).

The doctorate in Engineering and Public Policy will be established in September 1, 2019 subject to available resources.

C. Degrees offered (include brief description of concentrations, fields, etc.).

The degree awarded to those who complete this program will be a Doctor of Philosophy in Engineering and Public Policy.

Part II. Admission

A. Admission Requirements (be specific about GRE, GMAT, and TOEFL Scores, G.P.A and others).

Admission to the graduate program is competitive. Those who meet stated minimum requirements are not guaranteed admission, nor are those who fail to meet all of those requirements necessarily precluded from admission if they offer appropriate strengths.

Expected Minimum Requirements for Admission into DOCTORATE IN ENGINEERING & PUBLIC POLICY:

- Successful completion of a Bachelor's degree, from an accredited academic institution with a cumulative G.P.A. of 3.5 on 4.0 scale;
- Successful completion of a research-based Master's degree in a technical area from an accredited academic institution with a cumulative G.P.A. of 3.5 on 4.0 scale; (One degree must be in engineering and demonstrated master's level knowledge in engineering or a related scientific and technical field.)
- Applicant must demonstrate a commitment and aptitude for applying policy considerations to technical decisions in the required essays.
- Recommended minimum GRE score are 160 Verbal, 160 Quantitative and 4.0 Analytical.

- For international applicants, an official TOEFL score of at least 100 on the iBT with a minimum speaking score of 18 (TOEFL scores more than two years old cannot be considered official.)

B. Prior degree requirements.

Successful applicants will have an outstanding record of academic achievement at the undergraduate and master's level with at least one degree in engineering and demonstrated master's level knowledge in engineering or a related scientific and technical field.

D. Application deadlines.

Application deadline to be considered for funding is January 15, final deadline for application is July 1.

E. Special competencies needed (i.e., specific courses or experience).

N/A

F. Admission categories (explain other than regular such as provisional).

No categories other than regular admission.

G. Other documents required (i.e., letters of recommendation, essays, portfolios, interviews, writing assessments, etc.).

1. Applicants must submit essays to answer specific questions asked on the application; a resume; and a statement of professional goals and objectives.
2. Applicants must submit names and email addresses for at least three letters of recommendation. All letters of recommendation should be submitted electronically to OGPE.
3. The Graduate Record Examination (GRE) admission test scores are required. Applicants should request Education Testing Services (ETS) to report official test scores directly to the University of Delaware. The University of Delaware's institutional code for ETS is 5811. Applicants are encouraged to submit student copies of tests scores in their application packets.
4. One official transcript of all U.S. colleges attended must be sent directly from the institution to the Office of Graduate and Professional Education. Students who have attended the University of Delaware need not supply a transcript from Delaware.
5. One official transcript of all non-U.S. based college records is required. The transcript must list all classes taken and grades earned. If the transcript does not state that the degree has been awarded, send a degree certificate that states that the degree has been awarded. If the degree has not been awarded or the degree certificate has not been issued, evidence of the awarded degree must be provided prior to the first day of classes in the term of admission. For institutions that issue documents only in English, send the English original. For institutions that issue documents both in English and a foreign language, send both the English language original and the foreign language original. For institutions

that issue documents only in a foreign language, send the foreign language original and a certified translation in English. The translation must be certified by an official of the issuing institution, a state- or court-appointed translator, or the Embassy of the issuing country in the United States. If it is necessary to send non-original documents:

- a. The documents must be original “attested copies,” officially attested to by the issuing institution or the Embassy of the issuing country in the United States; and
 - b. Certified translations must be originals, no copies will be accepted.
6. International student applicants must demonstrate a satisfactory level of proficiency in the English language if English is not the first language. The Test of English as a Foreign Language (TOEFL) is offered by the Educational Testing Service in test centers throughout the world.
 7. A supplemental application form indicating interest in financial support through faculty projects or research centers.

H. University statement:

Admission to the graduate program is competitive. Those who meet stated requirements are not guaranteed admission, nor are those who fail to meet all of those requirements necessarily precluded from admission if they offer other appropriate strengths.

PART III. ACADEMIC

A. Degree Requirements

1. List course requirements according to categories such as core requirements, concentration options, electives, research credits and dissertation credit requirements. List number of credits in each category and include total credits required for degree.

Course	Title	Credits
CIEG 880 – NEW	Seminar: Engineering & Public Policy	0
CIEG 881 – NEW	Case Studies in Engineering & Public Policy	3
UAPP 701	Public Policy	3
UAPP 707	Public Policy Analysis	3
See Option (1)	Qualitative methods	3
See Option (2)	Advanced (policy) quantitative methods	3
UAPP 693 or UAPP 709	Public Economics	3
CIEG 646- NEW	Convex Optimization	3
See Options (3)	Engineering Technical Electives	6
See Options (4)	Electives	6
CIEG 882	Summer Field Experience	0*
CIEG 969	Doctoral Dissertation	9
SPPA 861	Academic and Professional Development for UAPP, DISA, ENEP Doctoral Students	0
Total		42

*International students will be required to register for 1 credit to qualify for curricular practical training (CPT).

For each of the options (1) Qualitative methods; (2) Quantitative methods; (3) Engineering Technical Electives; and (4) Electives, potential courses are listed below.

Option (1) Qualitative Research Methods Options (select one):

EVAL 755 Evaluation Models and Approaches (c/1 UAPP755)

SPPA 808 Qualitative Methods

UAPP 684 Performance Management & Program Evaluation

Option (2) Quantitative Methods Course Options (select one):

BUAD 621 Decision Analytics & Visualization

BUAD 831 Operation Management & Management Science

CIEG 641 Risk Analysis

CIEG 642 Data Analysis

CIEG 647 Network Optimization

ECON 804 Applied Econometrics

ECON 825 Time-Series Econometrics

GEOG 670 Geographic Information Systems GIS

GEOG 671 Advanced Geographic Information Systems

MAST 663 Decision Tools for Policy Analysis (c/1 UAPP663)

MAST 672/ECON 670 Benefit-Cost Analysis

MISY 631 Data Mining for Business Analytics

MISY 840 Project Management & Costing

SOCI 605 Data Collection & Analysis

SPPA-704-Advanced Quantitative Methods

STAT 608 Statistical Research Methods

STAT 609 Regression & Experimental Design

STAT 611 Regression Analysis

STAT 612 Advanced Regression Techniques

STAT 617 -Multivariate Methods

UAPP 718 Survey Research Methods

Option (3) Engineering Technical Elective Course Options (select two):

Engineering technical electives are selected in consultation with the student's advisors to reflect the area of interest.

For example, a student interested in transportation and infrastructure policy might choose from the following courses:

CIEG 617 Introduction to Railroad Safety & Derailment Engineering

CIEG 618 Railroad Engineering

CIEG 652 Transportation Facilities Design

CIEG 653 Roadway Geometric Design

CIEG 654 Urban Transportation Planning

CIEG 655 Civil Infrastructure Systems

CIEG 657 Contemporary Topics in Transportation
CIEG 658 Pavement Analysis & Design
CIEG 663 Traffic Engineering & Modeling
CIEG XXX Sustainable Transportation

Option (4) Illustrative Elective Course Options (select as needed):

APEC 611 Regional Watershed Management (c/l UAPP)
DISA 650 Overview of Disaster Science & Management
DISA 651 International Comparative Analysis of Disasters
DISA 670 Issues in Disaster Response
ENEP 625 Energy Policy & Administration
ENEP 626 Climate Change: Science, Policies and Political Economy
ENEP 660 Engineering Economic Analysis for Sustainable Energy
ENEP 810 Political Economy of the Environment
ENEP 820 International Perspectives on Energy & Environment
ENEP 821 Technology, Environment and Society
ENEP 824 Sustainable Energy Policy and Planning
GEOG 649 Environment & Society
MAST 660 International & National Ocean Policies
MAST 662 Climate Change: Policy, Equity & Mitigation
MAST 674 Legal Aspects of the Coastal Zone
MAST 675 Economics of Natural Resources
MAST 676 Environmental Economics
MAST 684 Electric Vehicles & the Grid
MAST 802 Case Study in Environmental Decision Making
PHIL 648 Environmental Ethics (c/l UAPP648)
POSC 818 Environmental Politics & Policy (c/l UAPP)
UAPP 606 Local Economic Development
UAPP 608 Poverty, Neighborhoods and Community Development
UAPP 613 Planning Theory and Public Policy
UAPP 675 Land Use & Transportation Linkages (1cr)
UAPP 706 Planning Sustainable Communities and Regions

2. Give non-registered requirements in detail; includes residency requirements, qualifying examinations (number and format), portfolios, seminars, English proficiency, language requirements, teaching experience, internships, etc.

Residency

Students are expected to be in residence, on-campus for fall and spring semesters of the first three years.

Seminars

Students are expected to enroll in the professional development seminar for 0-cr each semester while in residency.

Qualifying Exam

Students must complete the qualifying exam as scheduled by the program director at the end of the spring semester second year. The exam consists of written and oral parts. The qualifying exam provides an opportunity for students to demonstrate their preparedness for candidacy and serves as a diagnostic tool to identify weaknesses and gaps. The exam question will be written and evaluated by an exam committee comprised of faculty teaching core courses taken during the student's first two years of study. The program director will organize the exam committee and oversee the administration of the qualifying exam.

Field Experience

Students must complete a summer policy field experience (CIEG 882) with a local, state, or federal government agency or other appropriate organization related to the student's major area focus. Ideally the field experience will be paid and completed after the first year of study. The field experience will result in a policy paper of publishable quality to be evaluated by the student's advisors. Students participating in the field experience will carry the title "Policy Fellow."

3. Give procedure for petitions for variance in degree requirements (e.g., course substitution policies, completion deadlines, etc.).

Electives are approved by the advisor. Substitution of core and other degree requirements are approved by the program committee.

4. Define any grade minimums in courses that are different from University policy.

Students must have a minimum overall cumulative grade point average of 3.0 to be eligible for the degree. In addition, the grades in courses applied toward the degree program must equal at least 3.0. All graduate-numbered courses taken with graduate student classification at the University of Delaware are applied to the cumulative index. All grades in courses for this degree should be a "C" or above. Candidates should see that all final grades have been submitted by their instructors. Temporary grades of "S" (Satisfactory) are assigned for 868 (Research) and 969 (Doctoral Dissertation) until a final letter grade is submitted upon the completion of the dissertation.

5. Identify any courses, which may not be used towards the degree (i.e., independent study, pre-candidacy study).

Undergraduate courses, and pre-candidacy research credits (for example, CIEG 964) may not be used towards the degree.

6. Identify expectations of facility of expression in English (oral and written) as part of the degree requirement.

All instruction, assessments, dissertations and presentations must be completed in English and demonstrate adequate communication skills.

1. Committees for exams, thesis, or dissertations

1. Identify initial procedure for advisor and advisement procedures.

All students will have two academic advisors, one from each unit, throughout their programs of study. The program director in consultation with the faculty will assign initial faculty advisors but students may change advisors so long as she/he has one from each unit.

2. Identify each student committee needed and procedures for selecting committee members.

The student and his/her advisors will create a dissertation committee at the time the student begins to develop the dissertation proposal. A doctoral committee consists of five members:

- The student's two advisors,
- One more from each of CEE and SPPA, and
- A fifth member who should be from another university department or external to the university.

3. Give deadlines for establishing and preparation requirements for qualifying examinations.

The objective of the EPP Qualifying Examinations is to assess the student's ability to do interdisciplinary analysis, based on sound knowledge of core themes, good analytical methods, and the ability to structure and analyze public problems in a way that appropriately integrates the required knowledge, methods, and judgment of both engineering and public policy. The levels of synthesis and evaluation to be demonstrated in these examinations go beyond those expected in most courses, although each student's plan of study is aimed at developing and exercising this level of problem solving. After the fourth semester of equivalent full-time course work (approximately 36 credits) has been graded, the student must pass a written and oral qualifying examination prepared by the Qualifier Exam Committee for the cohort of students seeking Ph.D. student candidacy. All core faculty are encouraged to participate in the oral exam. The qualifying examination must be passed before the student proceeds to candidacy.

4. Give policies for dates of examinations, grading of committee examinations and retake options.

The qualifying exam will be held in late May or early June of each year and the oral exams offered two weeks to one month after submission of the written exam. Two outcomes of the Qualifying Examinations are possible. These are:

- The student passes the examinations at the Ph.D. level.
- The student fails the examinations.

A student failing the exam will be provided with a written summary identifying weaknesses and presenting a plan with strategies to address the weaknesses. The student can elect to retake the failed examination(s) one more time when next offered. Students who retake the Qualifiers must do so the year after the first attempt. Students who have failed one or more parts of the

Qualifying Examination normally do not receive graduate assistantship support while waiting to retake the examination.

5. Give guidelines for approving research proposals involving human or animal subjects.

Students engaged in research involved in human or animal subjects are expected to complete the appropriate Institute Review Board (IRB) training, and submit their proposal for IRB approval at the same time as they submit their dissertation research proposals to their committee. Details for creating consent forms and submitting studies for review by the IRB can be obtained from the Office of Research. The research cannot proceed until IRB approval has been obtained. IRB forms require the approval of the student's advisor.

6. Define procedures for dissertation approval in the department (e.g., role of department chair, dean, etc.).

Dissertation Proposal: The format of the dissertation proposal must adhere to guidelines specified in the University's Thesis and Dissertation Manual. The manual is available electronically on the Web at <http://www.udel.edu/gradoffice/current/thesismanual.html>. A copy of the dissertation proposal must be available to EPP faculty at least one week prior to the proposal defense. A copy of the dissertation proposal must be delivered to the members of the dissertation committee at least two weeks in advance of the proposal defense.

The dissertation proposal defense will be scheduled only after a majority of members of the dissertation committee have determined that a defense is appropriate. The dissertation proposal defense will be open to the public, and invitations will be sent to all EPP faculty and students at least one week prior to the defense date. The candidate will present a summary of the proposed research, and will then field questions from the committee, attending faculty, and invited guests. After all questions have been fielded, the dissertation committee will meet to decide whether the proposal is accepted, rejected, or accepted with stipulations. Results of the meeting will then be presented to the student. The student may not receive more than one dissenting vote from members of the committee to receive a passing grade.

Dissertation committee members should sign the final copy of the approved proposal. A signed copy of the approved dissertation proposal should be forwarded to the program director. Students who fail the dissertation proposal defense will receive one additional opportunity to repeat the process and defend a new or modified dissertation proposal. The program director signs the candidacy form.

Defense of the Dissertation: The format of the dissertation must adhere to guidelines specified in the University's Thesis and Dissertation Manual. A copy of the dissertation must be made available to Engineering and Public Policy faculty at least two weeks prior to the proposal defense. The dissertation defense will be scheduled only after the advisor of the dissertation committee has determined that a defense is appropriate.

The dissertation defense will be open to the public, and invitations will be sent to all Engineering and Public Policy faculty and students at least two weeks prior to the defense date. The candidate

will present a summary of the completed research, and will then field questions from the committee, attending faculty, and invited guests. After all questions have been fielded, the dissertation committee will meet to decide whether the dissertation is accepted, rejected, or accepted pending revisions. Results of the meeting will then be presented to the student. The student may not receive more than one dissenting vote from members of the committee to receive a passing grade.

Processing the Final Document: Three copies of the dissertation must be approved by the chair of the student's advisory committee, the Director of the Engineering and Public Policy program, and the Vice Provost for Graduate and Professional Education. The dissertation is to be signed by the professor in charge of the dissertation and all members of the dissertation committee. A separate abstract and abstract approval page must be submitted with the dissertation. The dissertation must be submitted to the Office of Graduate and Professional Education for approval not later than seven weeks prior to the degree conferral date. The dissertation defense must be completed prior to the submission date and the certification of a successful defense must be submitted to the Office of Graduate and Professional Education.

7. Define departmental and student obligations for finding committee members.

Outside committee members must hold a doctoral degree, and shall include individuals not affiliated with the Engineering and Public Policy Program. These may be individuals from within the University of Delaware outside of the University who are nationally recognized for their expertise in the area of study specified by the dissertation. The Program Committee must approve committee members from outside of the University.

8. Define departmental and student obligations and procedures for changes in committee members.

It is the responsibility of the dissertation advisors to replace members who withdraw from the committee during the dissertation process.

J. Timetable and definition of satisfactory progress towards the degree

1. Academic load (full & part-time) expectations. Define normal progress. Define departmental review procedures for evaluating normal progress and evaluation of performance.

A full-time academic load is 9 credits per semester. All required course work will be completed at the end of the second year of full-time study. Part-time study is not an option.

A possible plan of study is shown below:

Year 1 - Fall CIEG 880 (0 cr) CIEG 646	Year 2 - Fall SPPA 861 (0 cr) CIEG 881	Year 3 - Fall SPPA 861 (0 cr) CIEG 964* (9 cr)	Year 4-Fall SPPA 861 (0 cr) Doctoral Candidacy
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Quantitative Methods UAPP 693 = 9 cr	Elective UAPP707 = 9 cr	=9 cr // Ideal: defend proposal //	
Year 1 - Spring SPPA 861 (0 cr) Qualitative Methods UAPP 701 Technical Elective = 9 cr	Year 2 - Spring SPPA 861 (0 cr) Technical Elective Elective = 6 cr	Year 3 - Spring SPPA 861 (0 cr) Doctoral Candidacy	Year 4 - Spring SPPA 861 (0 cr) Doctoral Candidacy/Defend Dissertation
Year 1 - Summer CIEG882 Field experience	Year 2 - Summer Qualifying exam	Year 3 - Summer .	

*CIEG964 Candidacy becomes CIEG 969 Dissertation when student is admitted to candidacy.

The program committee will assess progress each year and provide written feedback to students not making satisfactory progress.

- Grade requirements (general and specific). Include any special departmental expectations such as minimum grades in specific courses, limits on special problem courses, etc.

As discussed in Section III.A.4., students must maintain a 3.0 GPA and a C or better in all classes.

- Thesis/dissertation progress timetable guidelines.

Students should complete their dissertation proposal by the end of the third year and the complete dissertation by the end of their fourth year.

- Thesis/dissertation defense guidelines.

Students should complete their dissertation defense by the end of their fourth year. Procedures for scheduling the defense are presented in Section III.b.9.

- Forms required.

The following forms are required:

- Each semester: an updated plan of study
- After the completion of the qualifier, presentation of the proposal and all course work: Recommendation for Candidacy
- Prior to dissertation defense: Application for an Advanced Degree and Dissertation Defense Notification Form
- After dissertation defense: Dissertation Defense Certification

- Identify consequence for failure to make satisfactory progress.

A student who is not making satisfactory progress will be issued a written warning after one semester. The warning will identify steps to make satisfactory progress and indicate the consequences of unsatisfactory progress. After a second semester of unsatisfactory progress, the student's financial support will be terminated and the student will be placed on probation. After three semesters of unsatisfactory progress, the student will be recommended for dismissal. All graduate students are subject to the University of Delaware Graduate Probation and Dismissal Policy, as stated in the University Catalog. Protocol for grievance procedure if student has been recommended for termination for failure to make satisfactory progress.

A student that has been recommended for dismissal for failure to make satisfactory progress may file a grievance based on OGPE policies (<https://grad.udel.edu/policies/graduate-academic-policies/>).

Part IV. Assessment Plan

The objective of the PhD program in Engineering and Public Policy is to train interdisciplinary, research-oriented scholars focused on the intersection of engineering and policy at all levels.

This requires:

- A foundation in a technical area with the skills and interest to seek new technical knowledge
- A broad base of analytical skills to support policy analysis
- Ability to structure problems, understand context and explore alternative solutions
- Effective oral and written communication skills
- Critical thinking skills
- Organizational skills

These learning objectives are manifest in the requirements for the Ph.D. They are measured directly in the course through course assignments and oral presentations, project reports and final examinations. Throughout the PhD degree they are also assessed in the qualifying exam, proposal presentation and dissertation defense using the evaluation tools available to the dissertation committee. In addition to these direct measures of the program, every year graduating students complete an exit survey that asks them to rate their attainment of the desired goals as well as various aspects of the program. The results of this survey, class evaluations, performance in qualifying exams, and committee evaluations of theses and dissertations are used to modify the program.

PART V. Financial Aid

A. Financial Awards

1. Types of awards, policy for granting financial awards, summer appointments, and number of years of support.

Fellowships, research assistantships and teaching assistantships are offered to highly qualified applicants on a competitive basis. Typically these financial arrangements cover full-time tuition

and include a separate stipend. The intention is to provide full support for all four years of the program.

2. Responsibilities of students on contract.

Students receiving full support will be expected to work up to 20 hours per week on faculty projects and students are expected to maintain full-time status.

3. Evaluation of students on contract.

The program director and advisor will review each student after each semester in terms of GPA and progress towards degree completion. Students will be given written feedback indicating satisfactory performance, or unsatisfactory performance. After two semesters of unsatisfactory performance, contracts may not be renewed.

PART VI. DEPARTMENTAL OPERATIONS

A. General student responsibilities

Policies and procedures governing the EPP PhD degree program follow the policies and procedures for Civil and Environmental Engineering. These may be found at: <http://www.ce.udel.edu/>

B. Student government and organizations (both student and professional).

Students will have the opportunity to participate in SAPA. Professional organizations include International Association of Emergency Managers, Society for Risk Analysis, Association for Public Policy and Management and the American Society of Civil Engineers.

C. Travel for professional meetings or presentations

There are no specific dedicated funds set aside for graduate students enrolled in the PhD-EPP degree program. However, students may secure professional development funding from a variety of potential funding sources at the University of Delaware (Graduate & Professional Education, Department of Civil and Environmental Engineering and School of Public Policy and Administration) or elsewhere if they are able to demonstrate need and purpose.