

# O'Neill SPEA

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## **Overview**

The O'Neill School of Public and Environmental Affairs (SPEA), the nation's largest school of its kind, is a professional school dedicated to applied, interdisciplinary learning combining the study of public affairs and environmental sciences. The interests of the faculty and professional staff typically fall into one or more of the following areas:

- arts administration
- criminal justice
- environmental science and policy
- finance and economics
- healthcare management
- homeland security

- law
- nonprofit management
- policy and administration
- public management
- public safety
- urban affairs

The school's faculty, staff, and students work individually and jointly to solve problems that require O'Neill unique combination of in-depth knowledge in the natural, behavioral, social, and administrative sciences.

O'Neill, because of its broad program base, offers scientific and technical assistance to Indiana communities from all of the eight Indiana University campuses. The school maintains a wide network of relations with a large number of public agencies at all levels of government.

The degree programs offered by the O'Neill School of Public and Environmental Affairs range from the associate degree, offered primarily on some of the regional campuses, to the Ph.D. The school offers seven professional master's degrees for individuals interested in achieving leadership positions in public, private, and nonprofit organizations:

- Master of Arts in Arts Administration (M.A.A.A.)
- Master of Environmental Sustainability (M.E.S.)
- Master of Science in Healthcare Management (M.S.H.M.)
- Master of Public Affairs (M.P.A.)
- Master of Public Management (M.P.M.)
- Master of Science in Criminal Justice and Public Safety (M.S.C.J.P.S.)
- Master of Science in Environmental Science (M.S.E.S.)

The M.P.A. is a professional degree structured around concepts and skills essential to public management, policy, and planning activities in the government, nonprofit, and private sectors. The M.E.S. produces trained professionals ready to start confronting environmental issues from the moment they graduate. The M.S.E.S. provides students with a strong background in environmental sciences while emphasizing the applied aspects of environmental research and management. The M.S.H.M. is aimed at recent college graduates who are seeking the skills and credentials that will enable them to obtain entry level positions in the healthcare management field. The M.A.A.A. prepares students for careers in arts management and cultural policy. The M.S.C.J.P.S. combines coursework in criminal justice, public safety and management to address increasing demand for advanced education in criminal justice and public safety. The M.P.M. program is an interdisciplinary professional program structured around concepts and skills essential to management, policy, planning activities within governmental, quasi-governmental, and nonprofit organizations. Additionally, O'Neill's M.P.A., M.S.E.S. and M.P.M. may be pursued in combination with degrees in law, library science, biology, information science, journalism, geography, geological sciences, and degrees offered by a number of area studies centers and institutes.

At the doctoral level, O'Neill offers:

- Ph.D. in Environmental Science
- Ph.D. in Public Affairs

- Ph.D. in Public Policy

The Ph.D. in public policy is jointly delivered with the Department of Political Science. The Ph.D. in environmental science is delivered by O'Neill with the cooperation of the Departments of Biology, Chemistry, Geography, Geological Sciences, and others.

## Contact Information

### Bloomington Graduate Program Offices

The O'Neill School of Public and Environmental Affairs  
Indiana University  
1315 E. Tenth Street  
Bloomington, IN 47405-1701

Master's Programs Office  
O'Neill Center A304  
Phone: (812) 855-2840  
Toll Free: (800) 765-7755  
Fax: (812) 855-7802  
Email: [oneillmp@indiana.edu](mailto:oneillmp@indiana.edu)

Ph.D. in Environmental Science Program Office  
MSB II 322  
Phone: (812) 855-0193  
Toll Free: (800) 633-0023  
Fax: (812) 855-7547  
Email: [lokbrown@indiana.edu](mailto:lokbrown@indiana.edu)

Ph.D. in Public Affairs and Ph.D. in Public Policy Program Office  
SPEA 441  
Phone: (812) 855-2457  
Toll Free: (800) 765-7755  
Fax: (812) 855-7802  
Email: [swangok@indiana.edu](mailto:swangok@indiana.edu)

### Indianapolis Graduate Programs

O'Neill School of Public and Environmental Affairs  
Indiana University-Purdue University Indianapolis  
Business/O'Neill Building 3025  
801 W. Michigan Street  
Indianapolis, IN 46202-5152  
Phone: (317) 274-4656  
Toll Free: (877) 292-9321  
Fax: (317) 274-5153  
Email: [oneillqa@iupui.edu](mailto:oneillqa@iupui.edu)

## Admission

### Application

Information about graduate study, including literature and application materials, may be obtained from the O'Neill School of Public and Environmental Affairs offices.

### Bloomington Campus

#### Eligibility

For most programs, applicants with bachelor's degrees in any field from an accredited institution are eligible to apply for admission to the graduate programs of the O'Neill School of Public and Environmental Affairs.

M.S.E.S: The M.S.E.S. Admissions Committee looks for applicants to have an adequate background in quantitative and natural science subjects. As a minimum, an applicant must have completed at least one semester of: calculus

and chemistry with laboratory. Familiarity with statistics and biology/ecology is considered desirable.

### Application Submission

#### Residential Program

Applicants should apply to a degree program and indicate interest in O'Neill School funding consideration as early as possible before the desired semester of enrollment. Priority for admission and merit-based funding consideration for the fall term is given to students who complete their application file by February 1. International students must submit application materials as early as possible, but not later than February 1. All applications must be received by May 1. Applications are accepted after that date on a case-by-case basis.

#### Online Program

Applicants should apply to a degree program and indicate interest in O'Neill School funding consideration as early as possible before the desired semester of enrollment. Priority for admission and O'Neill School funding consideration is given to students who complete their application by:

- March 15 for the summer term
- July 15 for the fall term
- November 15 for the spring term

Applications must be received by the following dates for admission to the respective terms. Applications are accepted after these dates on a case-by-case basis:

- April 1 for the summer term
- August 1 for the fall term
- November 15 for the spring term

### Admission

Each application for admission is carefully evaluated by the admissions committee for the appropriate degree. Applicants to all O'Neill SPEA degree programs must do the following:

- Submit applications to the M.P.A.–M.S.E.S. program office.
- Submit an unofficial transcript from all colleges and universities attended in the application for admission. Applicants will need to submit official transcripts to the O'Neill School showing a conferred undergraduate degree prior to starting the program. Students who have taken course work on any Indiana University campus do not need to submit an Indiana University transcript.
- Pay a nonrefundable application fee to Indiana University.
- Submit three letters of recommendation. Applicants must provide contact information for three individuals to provide letters of recommendation in the application for admission. Individuals should be familiar with the applicant's activities and potential to succeed in graduate work. It is recommended that two of the three be from academic sources.
- Submit a personal essay and include any supplemental materials that may further support a case for admission (i.e., resume).
- Submit proof of bachelor's degree certification from an accredited institution. Students who have not completed undergraduate course work at the

time of application may be admitted based on the strength of previous work, but a final transcript attesting to the award of a bachelor's degree must be submitted before the student can enroll. Normally, a cumulative grade point average of 3.0 (4.0 = A) is the minimum for regular admission. All applicants must submit official transcripts if they provided unofficial transcripts during the application process.

### LSAT and GRE Requirements

Applicants for the M.P.A.–J.D. and M.S.E.S.–J.D. may submit LSAT (Law School Admission Test) scores in lieu of GRE (Graduate Record Examination) scores.

Other degrees require the GRE. Information concerning the GRE is available from [Graduate Record Examination, Educational Testing Service](#), P.O. Box 6000, Princeton, NJ 08541-6000, (609) 771-7670 or (866) 473-4373. Information concerning the LSAT is available from Law School Admission Services, P.O. Box 2000, Newtown, PA 18940, (215) 968-1001.

### Arts Administration Program

Students who have achieved outstanding undergraduate records will be considered for admission. Approximately 25-30 students are selected each year and may enter in the fall semester only.

Letters of inquiry and requests for application should be directed to the Arts Administration Program, O'Neill Center A304, Indiana University, Bloomington, IN 47405 or e-mailed to [maaainfo@indiana.edu](mailto:maaainfo@indiana.edu). Applications may be completed online. Completed applications (those not completed online), transcripts, GRE scores, and all other correspondence related to admission should be sent to the address above. The priority deadline for receipt of all materials is December 31.

## Indianapolis Campus

### Eligibility

For most programs, applicants with bachelor's degrees in any field from an accredited institution are eligible to apply for admission to the graduate programs of the O'Neill School of Public and Environmental Affairs. Application Information about graduate study, including literature and application materials, may be obtained from the O'Neill School of Public and Environmental Affairs Web site ([www.spea.iupui.edu](http://www.spea.iupui.edu)) or [here](#) for more information.

## Admission Status

### Regular (Unconditional) Admission Status

Applicants have met all admission requirements for the specific degree program and enroll in accordance with the entry date contained in the application for admission.

### Deferred Admission

Following notice of regular admission, applicants may defer enrollment for a maximum of one year. A candidate must submit the enrollment deposit in order to officially have deferral status.

### Provisional Admission

On some campuses applicants may be admitted on a provisional basis if GRE or LSAT scores or prior grade point averages are below admission criteria. Provisional

status is removed upon fulfillment of conditions stipulated by the respective degree program admissions committee.

### Admission with Deficiencies

Applicants may be admitted with deficiencies on a case-by-case basis if they lack course work in certain foundation areas such as mathematics, economics, or statistics. Campus and degree policies may vary.

### Nondegree Enrollment

Applicants who have a bachelor's degree and who have not been admitted to the graduate program may enroll in O'Neill courses as nondegree graduate students. Procedures may vary across campuses.

If nondegree students later wish to obtain O'Neill graduate degrees, they must apply for admission to the specific degree program. Satisfactory performance as a non-degree student does not guarantee acceptance into a professional program.

## Programs

The O'Neill School of Public and Environmental Affairs offers a variety of graduate degree and certificate programs on six of the eight Indiana University campuses: Bloomington, Indianapolis, Fort Wayne, Northwest, South Bend, and Kokomo.

### Degree and Certificate Programs by Campus

#### Bloomington

##### M.P.A.

- Community and Economic Development
- Energy
- Environmental Policy and Natural Resource Management
- Health Policy
- Information Systems
- International Development
- Local Government Management
- Nonprofit Management
- Policy Analysis
- Public Financial Administration
- Public Management
- Sustainability and Sustainable Development
- Specialized

##### M.P.A. Dual Degrees

- Master of Public Affairs–Master of Science in Environmental Science (M.P.A.–M.S.E.S.)
- Master of Public Affairs–Master of Arts in Arts Administration (M.P.A.–M.A.A.A.)
- Master of Public Affairs–Doctor of Jurisprudence (M.P.A.–J.D.)
- Master of Public Affairs–Master of Arts in African American and African Diaspora Studies (M.P.A.–M.A.)
- Master of Public Affairs–Master of Arts in African Studies (M.P.A.–M.A.)
- Master of Public Affairs–Master of Arts in Central Eurasian Studies (M.P.A.–M.A.)
- Master of Public Affairs–Master of Arts in East Asian Languages and Cultures (M.P.A.–M.A.)

- Master of Public Affairs–Master of Information Science (M.P.A.–M.I.S.)
- Master of Public Affairs–Master of Arts in Latin American and Caribbean Studies (M.P.A.–M.A.)
- Master of Public Affairs–Master of Arts in Near Eastern Languages and Cultures (M.P.A.–M.A.)
- Master of Public Affairs–Master of Arts in Russian and East European Studies (M.P.A.–M.A.)
- Master of Public Affairs–Master of Arts in European Studies (M.P.A.–M.A.)
- Master of Public Affairs–Master of Library Science (M.P.A.–M.L.S.)

#### **International M.P.A. Dual Degree**

- Master of Public Affairs–Master of Public Administration with Seoul National University (M.P.A.–M.P.A.)

#### **M.E.S.**

- Environmental Quality and Toxicology
- Municipal Sustainability
- Sustainable Natural Resource Conservation and Management
- Sustainable Water Resources

#### **M.S.E.S.**

- Ecology and Conservation
- Energy
- Environmental Chemistry, Toxicology, and Risk Assessment
- Specialized
- Thesis
- Water Resources

#### **M.S.E.S. Dual Degrees**

- Master of Science in Environmental Science–Doctor of Jurisprudence (M.S.E.S.–J.D.)
- Master of Science in Environmental Science–Master of Public Affairs (M.S.E.S.–M.P.A.)
- Master of Science in Environmental Science–Master of Science in Chemistry (M.S.E.S.–M.S.)
- Master of Science in Environmental Science–Master of Science in Geological Sciences (M.S.E.S.–M.S.)
- Master of Science in Environmental Science–Master of Science in Intelligent Systems Engineering (M.S.E.S.–M.S.)
- Master of Science in Environmental Science–Master of Science in Physics (M.S.E.S.–M.S.)

#### **M.S.H.M. - Joint Degree with Kelley School of Business**

- Master of Science in Healthcare Management (M.S.H.M.)

#### **M.A.**

- Arts Administration

#### **M.A. Dual Degrees**

- Master of Arts in Arts Administration–Master of Public Affairs (M.A.A.A.–M.P.A.)
- Master of Arts in Arts Administration–Master of Folklore and Ethnomusicology (M.A.A.A.–M.A.F.E.)

#### **International M.A. Dual Degree**

- Master of Arts in Arts Administration–Master of Museum and Heritage Studies with the Australian National University (M.A.A.A.–M.M.H.S.)

#### **Ph.D.**

- Environmental Science
- Public Affairs
- Public Policy

#### **Ph.D. Minors**

- Arts Administration (Information on the Doctoral Minor in Arts Administration can be found at <https://bulletins.iu.edu/iu/gradschool/2019-2020/programs/bloomington/arts-administration/index.shtml>)
- Environmental Science
- Environmental Studies
- Nonprofit Management
- Public Management
- Regional Economic Development
- Urban Affairs

#### **Certificates**

- Hazardous Materials Management
- Nonprofit Management
- Public Budgeting and Financial Management
- Public Management
- Public and Nonprofit Evaluation
- Rural Arts Administration
- Social Entrepreneurship

#### **Indianapolis**

##### **M.P.A.**

- Criminal Justice
- Nonprofit Management
- Policy Analysis
- Public Management
- Urban Sustainability
- Master of Science in Criminal Justice and Public Safety

##### **M.P.A. Dual Degrees**

- Master of Public Affairs–Doctor of Jurisprudence (M.P.A.–J.D.)
- Master of Public Affairs–Master of Arts in Philanthropic Studies (M.P.A.–M.A.)

##### **M.S.C.J.P.S.**

- Criminal Justice and Public Safety

##### **Ph.D. Minor**

- Nonprofit Management

##### **Certificates**

- Executive Graduate Certificate in Library Management
- Homeland Security and Emergency Management
- Master of Library Science - Public Management Certificate
- Master of Library Science - Nonprofit Management Certificate

- Master of Library Science - Executive Graduate Certificate in Library Management
- Nonprofit Management
- Public Management
- Social Entrepreneurship

Additional information on degree requirements through Indianapolis O'Neill SPEA may be obtained [here](#).

## Bloomington Campus

Master of Public Affairs (M.P.A.)

- Residential
- Online

Master of Public Affairs Dual Degree Programs

Master of Environmental Sustainability (M.E.S.)

Master of Science in Environmental Science (M.S.E.S.)

Master of Science in Environmental Science Dual Degree Programs

Master of Science in Healthcare Management Joint Degree (M.S.H.M.)

Master of Arts in Arts Administration (M.A.A.A.)

Master of Arts in Arts Administration Dual Degree Programs

Doctor of Philosophy (Ph.D.) in Environmental Science

Doctor of Philosophy (Ph.D.) in Public Affairs

Doctor of Philosophy (Ph.D.) in Public Policy

Doctoral Minors

Certificate Programs

## Master of Public Affairs

The Master of Public Affairs program is an interdisciplinary, professional program that prepares students for positions in local, state, or federal government, quasi-governmental service, or the nonprofit (including philanthropic) arena. It broadens students' comprehension of the economic, environmental, political, and social context in which the public servant works. The Master of Public Affairs is offered in two modalities – residential or online. The course of study requires completion of:

Requirements

- MPA core requirements
- experiential requirement
- concentration requirements
- sufficient electives and/or prior professional experience credit to total 48 credit hours

The curriculum of this program as contained in the core requirements encompasses preparation in a broad range of skills relevant to the operation of public or nonprofit agencies. It is based on the academic disciplines but not limited to any one. It is also problem-oriented, bringing the disciplines to bear on critical social, environmental, economic, and administrative issues.

Although the environment of public service is diverse and changing, effectiveness in that environment requires the development of special skills attained through

detailed study in a chosen field of concentration. The fields of concentration span the variety of professional specialties found in public service. Thus, the program provides expertise in the core requirement and in a specific concentration area, as well as a general working knowledge of public affairs.

The M.P.A. program is fully accredited by the Network of Schools of Public Policy, Affairs, and Administration (NASPAA).

### Fields of Concentration

Concentrations give students focused educational experiences in substantive areas of interest.

Concentrations offered on the Bloomington campus are:

#### Residential

- Community and Economic Development
- Energy
- Environmental Policy and Natural Resource Management
- Health Policy
- Information Systems
- International Development
- Local Government Management
- Nonprofit Management
- Policy Analysis
- Public Financial Administration
- Public Management
- Sustainability and Sustainable Development
- Specialized

#### Online

- Public Affairs

### General Elective Courses

Graduate courses, or undergraduate courses approved for graduate credit, may be used to complete the overall degree requirement of 48 credit hours.

### Accelerated Master of Public Affairs

This program allows the O'Neill School of Public and Environmental Affairs' top undergraduates to complete both their undergraduate and graduate degree in five years. To be considered for this program a student must have earned a minimum GPA of 3.5, completed 96 undergraduate credit hours, and satisfied all general-education and O'Neill School of Public and Environmental Affairs undergraduate core requirements. Because of the specialized nature of this program, potential applicants should contact the Bloomington undergraduate and graduate program director for details.

### Degree Requirements

(48 credit hours) The core requirements of the M.P.A. degree consist of 18 credit hours of work in six courses. Each student must also complete the requirements of (at least) one concentration.

The experiential requirement ensures that each graduate of the M.P.A. program has gained insight into the world of public service by way of an experience outside the classroom. This experience may or may not involve the accumulation of credit hours toward the degree.

The remaining credit hours necessary for graduation, if any, are general electives that can be used to add

breadth to a student's program; to further explore a field of concentration; or to enhance skills in foreign languages, quantitative tools, or administrative techniques.

### Residential Core Requirements

(18 credit hours) The M.P.A. core is designed to ensure that each student acquires both the prerequisite analytical skills and an understanding of policy issues and governmental processes that compose the environment within which graduates will pursue their careers.

### Required Courses

SPEA-F 560	Public Finance and Budgeting	(3 cr.)
SPEA-V 502	Public Management	(3 cr.)
SPEA-V 506	Statistical Analysis for Effective Decision Making	(3 cr.)
SPEA-V 517	Public Management Economics	(3 cr.)
SPEA-V 540	Law and Public Affairs	(3 cr.)
SPEA-V 600	Capstone in Public and Environmental Affairs	(3 cr.)
<b>OR</b>		
*GLOBASE	Capstone in Global Business and Social Enterprise	(3 cr.)

\*Please note only second year students can count GLOBASE as a capstone.

Extremely well-prepared applicants may petition the program director to waive one or more of the core requirements on the basis of advanced course work done elsewhere. Students may be exempted on the basis of satisfactory equivalent course work or by examination. Credit hours waived from the core add to the electives a student may use. Students requesting course waivers should contact the appropriate graduate program director for requirements and guidelines.

### Online Core Requirements

(18 credit hours) The M.P.A. core is designed to ensure that each student acquires both the prerequisite analytical skills and an understanding of policy issues and governmental processes that compose the environment within which graduates will pursue their careers.

### Required Courses

SPCN-F 560	Public Finance and Budgeting	(3 cr.)
SPCN-V 502	Public Management	(3 cr.)
SPCN-V 506	Statistical Analysis for Effective Decision Making	(3 cr.)
SPCN-V 517	Public Management Economics	(3 cr.)

SPCN-V 540	Law and Public Affairs	(3 cr.)
SPCN-V 600	Capstone in Public and Environmental Affairs	(3 cr.)

Extremely well-prepared applicants may petition the program director to waive one or more of the core requirements on the basis of advanced course work done elsewhere. Students may be exempted on the basis of satisfactory equivalent course work or by examination. Credit hours waived from the core add to the electives a student may use. Students requesting course waivers should contact the appropriate graduate program director for requirements and guidelines.

### Experiential Requirements

Each M.P.A. student must obtain professionally relevant experience through one of the following options: an approved internship (includes research internships) (SPEA-V 585; 0-6 credit hours), or the award of prior professional experience credit.

### Prior Experience

A student's experiential requirement may be satisfied through Prior Experience (PE). Depending upon the type and amount of experience, a student may qualify for a credit reduction as well. There are three categories of PE (Professional, Military, and Volunteer) available to MPA, MSES, MPA-MSES, and MES students. MAAA and MAAA-MPA students have different guidelines for PE, as they are governed by the University Graduate School.

Applications for the different types of PE may be picked up in the Master's Programs Office (MPO – SPEA A304) or online via the Current Student Portal in the Forms section. Completed forms should be returned to the O'Neill Graduate Records Office (SPEA A328 or oneillrc@indiana.edu) to be advanced to the appropriate Faculty Program Director for review.

- PE waivers and credit reductions are granted for experience gained prior to taking courses in the MPA, MES, and MSES programs.
- Applications for PE must be submitted within the first 24-credit hours or they will be denied.
- Students may be approved for more than one type of PE, but the combined credit reduction cannot exceed 12-credit hours.
- Credit reductions cannot result in the elimination of degree or concentration requirements. Students receiving prior experience credit reductions should carefully plan the balance of their program with an advisor.
- A student may not apply for PE with any of O'Neill's outside, dual degree programs (e.g., MPA-MA, MSES-JD). All of O'Neill's outside dual degree programs reflect a discounted credit hour program in an effort to streamline the academic demands for the student. Further credit reductions are not negotiable. This does not apply to O'Neill's dual MPA-MSES and MAAA-MPA degree.
- Determination of PE credit is made separately from decisions about transfer of credit. Under no circumstances will the prior experience credit and transfer credit total more than 21-credit hours.

**Professional Experience:**

Experiential waivers and credit reductions can be granted for prior professional or technical work experience. The appropriate Faculty Program Director determines if the experience qualifies for a waiver and/or reduction. In general, credit reductions require work experience above entry level that involves some independent managerial, analytic, or scientific responsibility and work that articulates with the student's current field of study. Applicants may appeal a professional credit decision by submitting a request, in writing, for reconsideration and providing additional information. Students receiving prior professional experience credit should carefully plan the balance of their program with a faculty advisor.

General guidelines to qualify for Professional Experience:

Work must have been full-time, either paid or unpaid.

To receive a waiver of the degree's experiential requirement, work experience should roughly equal or surpass that of a summer internship.

To qualify for credit reduction in addition to a waiver of the experiential requirement, experience must have been with a single entity for at least two years (consulting work may present an exception).

Position may be with government, private firm, or nonprofit organization, but the work must be explicitly related to a MPA career path, regardless of the type of employer. Employing entity may be domestic or international. Documentation from supervisors may be required.

MPA Guidelines:

- To receive a 3-credit hour reduction, a student must have a minimum of two years' technical, administrative, or policy-level work experience with a government, nonprofit, or private agency.
- 6-credit hours is generally possible for two to four years of relevant full-time managerial and/or policymaking experience in any sector, such as program leadership, budgetary oversight, organizational or staff development, fundraising, analysis, planning, or human resources supervision.
- A 9-credit hour reduction is possible for five years to seven years of relevant full-time managerial and/or policymaking experience. At this point, at least one higher-level, multi-year assignment is expected, including responsibility for supervision of staff, budget preparation, or organizational control of public or nonprofit agencies.
- 12-credit hours is possible for eight or more years of relevant managerial and/or policymaking experience leading to one or more executive assignments.

**Military Experience:**

Students with at least two years of active duty or full-time guard/reserve service OR four years of part-time guard/reserve service with the United States military are eligible for an experiential waiver and a minimum 6-credit reduction. Up to a 12-credit reduction is possible for four years of active duty or full-time guard/reserve service OR eight years of part-time guard/reserve service with the United States military. Proof of service will be required.

**Volunteer Experience:**

Students who have participated as a volunteer in Peace Corps, AmeriCorps, or Teach For America are eligible for

a credit reduction based on years of service, as well as a waiver of their experiential component. The O'Neill School will grant a 3-credit reduction for one year of service and a 6-credit reduction for two years of service. Proof of service will be required.

**Concentration Requirements**

(15–24 credit hours) Concentrations give students educational experiences in a substantive area of interest. The course of study in each concentration area is determined in conjunction with an advisor. Up to 3 credit hours of the concentration may be taken in V 585 Practicum in Public Affairs, if approved in advance by an advisor.

Concentration requirements may be waived on the same basis as core requirements. Consult with an advisor about course prerequisites.

**Community and Economic Development**

(18 credit hours) The Community and Economic Development concentration prepares students for professional positions that help people develop sustainable communities and enhance the economy at the local and regional level. Students may not use MPA core courses to fulfill concentration requirements.

**Required Courses (9 credit hours)**

The following **two** courses are required:

SPEA-L 563	Planning and Community Development	(3 cr.)
SPEA-L 622	Local Economic Development	(3 cr.)

Select **one** of the following three courses:

SPEA-E 518	Vector-based Geographic Information Systems	(3 cr.)
SPEA-M 547	Negotiation and Dispute Resolution for Public Affairs	(3 cr.)
SPEA-P 507	Data Analysis and Modeling for Public Affairs	(3 cr.)

**Electives (9 credit hours)**

In consultation with a concentration advisor, select **three** courses from the above list and from the following courses:

AADM-Y 551	Cultural Planning and Urban Development	(3 cr.)
SPEA-D 573	Development Economics	(3 cr.)
SPEA-D 576	Approaches to Development	(3 cr.)
SPEA-D 669	Economic Development, Globalization, and Entrepreneurship	(3 cr.)

SPEA-F 609	Seminar in Revenue Theory and Administration	(3 cr.)
SPEA-F 610	Government Budget and Program Analysis	(3 cr.)
SPEA-F 667	Seminar in Public Capital and Debt Theory	(3 cr.)
SPEA-I 516	Public Management Information Systems	(3 cr.)
SPEA-L 564	Local Government Management	(3 cr.)
SPEA-L 568	Management of Local Government Services	(3 cr.)
SPEA-M 602	Strategic Management for Public and Nonprofit Organizations	(3 cr.)
SPEA-N 521	The Nonprofit and Voluntary Sector	(3 cr.)
SPEA-P 541	Benefit Cost Analysis	(3 cr.)
SPEA-P 562	Public Program Evaluation	(3 cr.)
SPEA-R 563	Sustainability in a Tri-sectoral World	(3 cr.)
SPEA-S 596	Sustainable Development	(3 cr.)

Or other relevant SPEA courses may count toward the elective requirement with the approval of a community and economic development concentration advisor.

### Energy

(18 credit hours) The energy concentration provides students an educational experience in topics associated with energy production, distribution, and use, using an interdisciplinary approach in science, technology, and public policy. This concentration allows flexibility in the choice of courses used to meet the concentration requirements and to meet each student's professional goals.

#### Required Courses (6 credit hours)

SPEA-E 574	Energy Systems	(3 cr.)
SPEA-R 674	Energy Economics and Policy	(3 cr.)

#### Electives (12 credit hours)

In consultation with a concentration advisor, students select a mixture of science and policy courses related to energy in accordance to professional goals. At least **two** courses must be taken from **each** of the following groups.

#### Natural Science Elective Group (6 credit hours)

SPEA-E 503	Natural Gas: Technical and Policy Challenges	(3 cr.)
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SPEA-E 515	Fundamentals of Air Pollution	(3 cr.)
SPEA-E 518	Vector-based Geographic Information Systems	(3 cr.)
SPEA-E 529	Application of Geographic Information Systems	(3 cr.)
SPEA-E 536	Environmental Chemistry	(3 cr.)
SPEA-E 591	Climate Change Impacts on Natural Resources	(3 cr.)
SPEA-R 515	Renewable and Nuclear Energy	(3 cr.)
EAS-G 571	Principles of Petroleum Geology	(3 cr.)
EAS-G 576	Climate Change	(3 cr.)
EAS-G 587	Organic Geochemistry	(3 cr.)
GEOG-G 532	Physical Climatology	(3 cr.)

#### Economics, Public Policy and Law-Related Elective Group (6 credit hours)

SPEA-E 501/X 511	Human Behavior and Energy Consumption	(3 cr.)
SPEA-E 535	International Environmental Policy	(3 cr.)
SPEA-P 541	Benefit Cost Analysis	(3 cr.)
SPEA-R 512/LAW-L 660	Climate Law and Policy	(3 cr.)
SPEA-R 533/LAW-B 675	Public Natural Resources Law	(3 cr.)
SPEA-R 564	Environmental and Natural Resource Policy Design and Implementation	(3 cr.)
SPEA-R 590	Energy Policy from a Nation-State Perspective	(3 cr.)
SPEA-R 625	Environmental Economics and Policy	(3 cr.)
SPEA-R 626	Energy Policy Seminar	(3 cr.)
SPEA-R 643	Natural Resource Management and Policy	(3 cr.)
SPEA-R 645	Environmental Law	(3 cr.)
SPEA-S 596	Sustainable Development	(3 cr.)
SPEA-V 550	Planning for Climate	(3 cr.)

	Change and Resilient Urban Communities	
SPEA-V 550/ LAW-L 644	Energy Law and Policy	(3 cr.)

### Environmental Policy and Natural Resource Management

(18 credit hours) The Environmental Policy and Natural Resources Management concentration draws on economics, statistics, and other quantitative fields to help students develop analytical skills to interpret and use data for the formation and evaluation of policy for environmental protection and natural resources management. The concentration draws on the study of law, politics, public policy, and management to build an understanding of the institutions through which society manages the formation and implementation of its policies. Students acquire a set of skills and insights that they will use in careers in government and consulting, in the regulatory and government relations offices of corporations, and in the advocacy and analysis operations of not-for-profit organizations. Students can focus their studies on either domestic or international environmental and natural resource issues. Students may not use MPA core courses to fulfill concentration requirements.

#### Environmental Law and Economics (6 credit hours)

The following courses are required:

SPEA-R 625	Environmental Economics and Policy	(3 cr.)
SPEA-R 645	Environmental Law	(3 cr.)

#### Environmental Policy (3 credit hours)

In consultation with your advisor, select **one** of the following courses:

SPEA-R 521	Domestic Environmental Policy	(3 cr.)
SPEA-V 550/ SPEA-E 535	International Environmental Policy	(3 cr.)

#### Analysis and Skills Courses (3 credit hours)

In consultation with a concentration advisor, choose **one** of the following courses:

SPEA-E 529	Application of Geographic Information Systems	(3 cr.)
SPEA-E 560	Environmental Risk Analysis	(3 cr.)
SPEA-M 547	Negotiation and Alternative Dispute Resolution for Public Affairs	(3 cr.)
SPEA-P 507	Data Analysis and Modeling for Public Affairs	(3 cr.)
SPEA-P 541	Benefit Cost Analysis	(3 cr.)

SPEA-P 562	Public Program Evaluation	(3 cr.)
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#### Context Courses (3 credit hours)

In consultation with a concentration advisor, choose **one** from the following list of courses:

SPEA-E 543	Environmental Management (cannot count as context course for MPA-MSES dual degree)	(3 cr.)
SPEA-R 532	Water Policy and Economics	(3 cr.)
SPEA-R 564	Environmental and Natural Resource Policy Implementation	(3 cr.)
SPEA-R 590	Energy Policy from a Nation-State Perspective	(3 cr.)
SPEA-R 626	Energy Policy Seminar	(3 cr.)
SPEA-R 643	Natural Resources Management and Policy	(3 cr.)
SPEA-R 674	Energy Economics and Policy	(3 cr.)
SPEA-S 596	Sustainable Development	(3 cr.)
SPEA-V 550	Environmental Justice	(3 cr.)

**Note:** MPA students with a concentration in Environmental Policy and Natural Resource Management who want to take SPEA-E 543 must take both V502 and E543. Students can count E543 as a concentration elective.

#### Science Courses (3 credit hours)

Students who are not in the dual MPA-MSES degree program are strongly encouraged to take one of the foundational courses that matches their area of interest (Applied Ecology, Environmental Chemistry, or Environmental Toxicology), unless they have previous environmental-science training in these areas.

In consultation with a concentration advisor, choose **one** from the following list of courses:

SPEA-E 514	Changing Landscape of Toxic Chemical Regulation	(3 cr.)
SPEA-E 515	Fundamentals of Air Pollution	(3 cr.)
SPEA-E 517	BMP Design for Healthy Urban Watersheds	(3 cr.)
SPEA-E 520	Environmental Toxicology	(3 cr.)
SPEA-E 522	Urban Forestry	(3 cr.)
SPEA-E 527	Applied Ecology (foundation course, cannot	(3 cr.)

	count as a concentration elective for MPA-MSES students)	
SPEA-E 528	Forest Ecology and Management	(3 cr.)
SPEA-E 536	Environmental Chemistry (foundation course, cannot count for dual degree)	(3 cr.)
SPEA-E 539	Aquatic Chemistry	(3 cr.)
SPEA-E 540	Wetlands Ecology and Management	(4 cr.)
SPEA-E 542	Hazardous Materials	(3 cr.)
SPEA-E 544	Subsurface Microbiology & Remediation	(3 cr.)
SPEA-E 545	Lake and Watershed Management	(3 cr.)
SPEA-E 546	Stream Ecology	(3 cr.)
SPEA-E 552	Environmental Engineering (cannot count for dual degree)	(3 cr.)
SPEA-E 554	Groundwater Flow Modeling	(3 cr.)
SPEA-E 555	Urban Ecology	(3 cr.)
SPEA-E 556	Limnology	(4 cr.)
SPEA-E 557	Conservation Biology	(3 cr.)
SPEA-E 564	Organic Pollutants: Environmental Chemistry and Fate	(3 cr.)
SPEA-E 570	Environmental Soil Science	(3 cr.)
SPEA-E 574	Energy Systems	(3 cr.)
SPEA-E 591	Climate Change Impacts on Natural Resources	(3 cr.)

### Health Policy

(18 credit hours) The Health Policy concentration is designed to provide students with a strong grounding that prepares them for employment in the growing sectors of health policy, health care and life sciences management, and international health sectors, as well as for pursuing Ph.D. programs in health policy.

### Required Courses (9 credit hours)

The following courses are required:

SPEA-H 549	Health Policy	(3 cr.)
SPEA-P 507	Data Analysis and Modeling for Public Affairs	(3 cr.)

SPEA-P 562	Public Program Evaluation	(3 cr.)
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### Economics, Finance and Regulation Components (9 credit hours)

Three of the following courses, of which at least two must be from SPEA.

SPEA-H 524	Health Industry Regulation	(3 cr.)
SPEA-H 525	Health Economics for Policy and Management	(3 cr.)
SPEA-H 526	Healthcare Finance	(3 cr.)
SPEA-H 527	International Healthcare Systems	(3 cr.)
SPEA-N 557	Proposal Development and Grant Management	(3 cr.)
BUS-X 519 or BUS-X 519 and BUS-X 518	BUS-X 519 Business of Life Sciences: Value Chain or BUS-X 519 Life Sciences from Research to Patient and BUS-X 518 Life Science Global Trends	(3 cr.)
SPH-P 685	Public Health Policy and Politics in the U.S.	(3 cr.)

### Information Systems

(18 credit hours) The information systems (IS) concentration prepares students for entry-level and mid-career positions—such as systems analysts, consultants, Webmasters, and database managers—in the exciting, evolving, and rapidly growing fields of computing and communication technologies as they apply to public organizations. The IS concentration builds on a solid core of three courses and provides the flexibility to add three more electives from a wide range of course offerings. Students are encouraged to combine the IS concentration with other concentrations to strengthen their technical skills in a variety of applied areas.

### Required Courses (9 credit hours)

The following courses are required:

SPEA-E 518	Vector-based Geographic Information Systems	(3 cr.)
SPEA-I 516	Public Management Information Systems	(3 cr.)
SPEA-I 519	Database Management Systems	(3 cr.)

**Electives (9 credit hours)**

Three courses from the following information systems application groups. (Note: Two of the courses must be from group A, B, or C.)

**Group A: Geographic Information Systems**

SPEA-E 529	Application of Geographic Information Systems	(3 cr.)
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**Group B: Decision Support and Analysis**

SPEA-E 560	Environmental Risk Analysis	(3 cr.)
SPEA-P 507	Data Analysis and Modeling for Public Affairs	(3 cr.)
SPEA-P 539	Management Science for Public Affairs	(3 cr.)
SPEA-P 541	Benefit Cost Analysis	(3 cr.)
SPEA-P 562	Public Program Evaluation	(3 cr.)
SPEA-V 550	Data Science for Public and Environmental Affairs	(3 cr.)

**Group C: Design and Management of Information Systems**

SPEA-I 611	Design of Information Systems	(3 cr.)
SPEA-M 602	Strategic Management of Public and Nonprofit Organizations	(3 cr.)

**Group D: Networking and Telecommunications**

BUS-S 515	Foundations of Business Telecommunications	(3 cr.)
ILS-Z 525	Government Information	(3 cr.)
ILS-Z 532	Information Architecture for the Web	(3 cr.)
ILS-Z 643	The Information Industry	(3 cr.)

**Group E: Additional Option**

Graduate courses that address issues in information technology, such as programming and the digital economy, are offered in other units such as the Kelley School of Business and the School of Informatics, Computing, and Engineering. Students may elect to take one of these electives (3 credit hours) in an outside unit with the approval of a concentration advisor and the appropriate Faculty Program Director.

**International Development**

(18 credit hours) The International Development concentration in the Master of Public Affairs is designed to provide students with a policy-focused understanding of international development, and will introduce students to topics such as economic programming and planning, political economy, conflict and post-conflict recovery, sustainable development, international organizations, governance and business activities. Students may not use MPA core courses to fulfill concentration requirements.

**Required Courses (9 credit hours)**

The following courses are required:

SPEA-D 573	Development Economics	(3 cr.)
SPEA-D 578	Introduction to Comparative and International Affairs	(3 cr.)
SPEA-D 669	Economic Development, Globalization and Entrepreneurship	(3 cr.)

**Electives (9 credit hours)**

In consultation with a concentration advisor, students choose three electives from Groups I and II where at least one course (3 credit hours) is from Group I (methods).

**Group I\*: Methods**

SPEA-E 518	Vector-based Geographic Information Systems	(3 cr.)
SPEA-P 507	Data Analysis and Modeling for Public Affairs	(3 cr.)
SPEA-P 541	Benefit Cost Analysis	(3 cr.)
SPEA-P 562	Public Program Evaluation	(3 cr.)

\*A student may also choose to fulfill the Group A requirement with a graduate level *language* or *area studies* course with the approval of a concentration advisor and the appropriate faculty program director.

**Group II: Other Electives**

SPEA-D 548	US Foreign Policy and Third World Regimes	(3 cr.)
SPEA-D 576	Approaches to Development	(3 cr.)
SPEA-D 577	International Economic Strategies and Trade Policy	(3 cr.)
SPEA-D 583	Conflict and Development	(3 cr.)
SPEA-E 535	International Environmental Policy	(3 cr.)

SPEA-F 584	Tax Policy in Developing Countries	(3 cr.)
SPEA-M 575	Comparative Public Management and Administration	(3 cr.)
SPEA-M 654	Public Program Management and Contracting	(3 cr.)
SPEA-N 524	Civil Society in Comparative Perspective	(3 cr.)
SPEA-N 534	NGO Management for International Development	(3 cr.)
SPEA-R 563	Sustainability in a Tri-sectoral World	(3 cr.)
SPEA-S 596	Sustainable Development	(3 cr.)
SPEA-V 550	Latin American Governance	(3 cr.)
SPEA-V 559	Principles and Practices of Social Entrepreneurship	(3 cr.)

### Local Government Management

(18 credit hours) The Local Government Management (LGM) concentration prepares students for entry-level and mid-career management and policy positions in local government. Course work includes a local government management core required of all students and a selection of advanced electives. Students should consult with a faculty concentration advisor to choose the advanced electives best suited to their interests. Students may not use MPA core courses to fulfill concentration requirements.

### Required Courses (9 credit hours)

The following courses are required:

SPEA-L 564	Local Government Management	(3 cr.)
SPEA-L 568	Management of Local Government Services	(3 cr.)
SPEA-M 561	Public Human Resources Management	(3 cr.)

### Advanced Electives (9 credit hours)

In consultation with a concentration advisor, select **three** of the following courses or other graduate courses approved as substitutions:

AADM-Y 500	Cultural Districts and Local Arts Policy	(3 cr.)
AADM-Y 504	Arts Administration in the Public and Private Sectors	(3 cr.)
SPEA-F 610	Government Budget and Program Analysis	(3 cr.)

SPEA-I 516	Public Management Information Systems	(3 cr.)
SPEA-L 563	Planning and Community Development	(3 cr.)
SPEA-L 622	Local Economic Development	(3 cr.)
SPEA-M 547	Negotiation and Dispute Resolution for Public Affairs	(3 cr.)
SPEA-M 570	Public Labor Relations	(3 cr.)
SPEA-M 575	Comparative Public Management and Administration	(3 cr.)
SPEA-M 602	Strategic Management in Public and Nonprofit Organizations	(3 cr.)
SPEA-M 652	Managing Workforce Diversity in Public Organization	(3 cr.)
SPEA-M 654	Public Program Management and Contracting	(3 cr.)
SPEA-N 521	Nonprofit and Voluntary Sector	(3 cr.)
SPEA-N 523	Civil Society and Public Policy	(3 cr.)
SPEA-P 541	Benefit Cost Analysis	(3 cr.)
SPEA-P 562	Public Program Evaluation	(3 cr.)
SPEA-R 563	Sustainability in a Tri-sectoral World	(3 cr.)
SPEA-S 515	Sustainable Communities	(3 cr.)

### Nonprofit Management

(15 credit hours) The nonprofit management concentration equips students with the skills to effectively manage and lead nonprofit organizations through a local grounding in the legal structure and functions of nonprofits, and to apply the analytic and managerial tools that support effective nonprofit operation. Students may not use MPA core courses to fulfill concentration requirements.

### Required Courses (6 credit hours)

SPEA-N 521	The Nonprofit and Voluntary Sector	(3 cr.)
SPEA-N 525	Management in the Nonprofit Sector	(3 cr.)

In consultation with a concentration advisor, select three courses (9 credit hours) from the following lists. At least 1

course must come from Group I (nonprofit management). Up to 3 courses may come from Group I (nonprofit management). Up to 2 courses may come from Group II (additional management skills). Only 1 course may come from Group III (nonprofit areas). Relevant substitutions may be made in Groups II and III with a faculty advisor's approval.

### Electives (9 credit hours)

**Elective Group I:** At least **1 - 3** nonprofit management courses may count toward the three electives.

SPEA-F 526	Financial Management for Nonprofit Organizations	(3 cr.)
SPEA-M 504	Public Organizations	(3 cr.)
SPEA-M 602	Strategic Management of Public and Nonprofit Organizations	(3 cr.)
SPEA-N 522	Human Resource Management in Nonprofit Organizations	(3 cr.)
SPEA-N 523	Civil Society and Public Policy	(3 cr.)
SPEA-N 524	Civil Society in Comparative Perspective	(3 cr.)
SPEA-N 534	NGO Management for International Development	(3 cr.)
SPEA-N 557	Proposal Development and Grant Administration	(3 cr.)
SPEA-N 558	Fund Development for Nonprofits	(3 cr.)
SPEA-V 559	Principles and Practices of Social Entrepreneurship	(3 cr.)
LAW-B 569	Nonprofit Organizations	(3 cr.)
LAW-B 761	Law and Philanthropy	(3 cr.)

**Elective Group II:** In consultation with a concentration advisor, up to **two** additional management skills courses may count toward the three electives. Substitutions can be made with a faculty advisor's approval.

SPEA-I 516	Public Management Information Systems	(3 cr.)
SPEA-M 547	Negotiation and Dispute Resolution for Public Affairs	(3 cr.)

SPEA-M 569	Managing Interpersonal Relations	(3 cr.)
SPEA-M 652	Managing Work Force Diversity in Public Organizations	(3 cr.)
SPEA-M 654	Public Program Management and Contracting	(3 cr.)
SPEA-M 662	Seminar in Accountability and Performance	(3 cr.)
SPEA-P 541	Benefit Cost Analysis	(3 cr.)
SPEA-P 562	Public Program Evaluation	(3 cr.)

**Elective Group III:** In consultation with a concentration advisor, **one** course in a nonprofit area may count toward the three electives.

AADM-Y 500	Cultural Districts and Local Arts Policy	(3 cr.)
AADM-Y 511	Performing Arts Center Management	(3 cr.)
AADM-Y 525	Museum Management	(3 cr.)
AADM-Y 559	Public Policy and the Arts	(3 cr.)
SPEA-D 573	Development Economics	(3 cr.)
SPEA-D 576	Approaches to Development	(3 cr.)
SPEA-D 577	International Economic Strategies and Trade Policy	(3 cr.)
SPEA-D 669	Economic Development, Globalization and Entrepreneurship	(3 cr.)
SPEA-H 549	Health Policy	(3 cr.)
SPEA-L 568	Management of Local Government Services	(3 cr.)
SPEA-L 622	Local Economic Development	(3 cr.)
SPEA-R 563	Sustainability in a Tri-sectoral World	(3 cr.)
SPEA-S 515	Sustainable Communities	(3 cr.)

### Policy Analysis

(18 credit hours) The Policy Analysis concentration combines an understanding of the policy process with the skills to create and consume accurate and actionable research and information designed to address public policy problems.

Concentration requirements emphasize the acquisition of quantitative and analytic skills that may be used to

inform public policy decisions. The Policy Analysis field electives aim to provide students with additional skills used for policy analysis, and/or to provide students with the contextual knowledge needed to analyze policies in a substantive area. The electives change frequently, and often include topics courses as well as courses in a wide variety of policy areas: health, economic development, education, social policy transportation, energy, etc. In general, this substantive knowledge component requires more than one course in the same area. Consequently, it is important that the plan include *early* consultation with a concentration advisor.

Students may also acquire this substantive knowledge by combining the Policy Analysis concentration with other concentrations. For example, dual concentrations in Policy Analysis and Sustainable Development would prepare one to do work in sustainability with a more analytical approach. As in all concentrations, students may not use MPA Core courses to fulfill concentration requirements.

**The following required courses (6 credit hours)**

SPEA-P 507	Data Analysis and Modeling for Public Affairs	(3 cr.)
SPEA-V 512	The Public Policy Process	(3 cr.)

**In consultation with a concentration advisor, select one, if not both of the following courses (3-6 credit hours)**

SPEA-P 541	Benefit Cost Analysis	(3 cr.)
SPEA-P 562	Public Program Evaluation	(3 cr.)

**NOTE:** Should the student decide to take P541 and P562, the second course can be counted as one of the elective policy field courses required below and the student will then only need an additional 6 credit hours to complete the concentration.

**Policy Field (6-9 credit hours, to add up to a total of 18 credit hours)**

In consultation with a concentration advisor, select two of the following courses or other graduate courses approved as equivalent substitutions:

AADM-Y 500	Cultural Districts and Local Arts Policy	(3 cr.)
AADM-Y 559	Public Policy and Arts	(3 cr.)
SPEA-D 573	Development Economics	(3 cr.)
SPEA-D 577	International Economic Strategies and Trade Policy	(3 cr.)
SPEA-D 583	Conflict and Development	(3 cr.)
SPEA-D 669	Economic Development,	(3 cr.)

	Globalization, and Entrepreneurship	
SPEA-E 535	International Environmental Policy	(3 cr.)
SPEA-E 574	Energy Systems	(3 cr.)
SPEA-F 526	Financial Management for Nonprofit Organizations	(3 cr.)
SPEA-F 609	Seminar in Public Revenue Theory and Administration	(3 cr.)
SPEA-F 610	Government Budget and Program Analysis	(3 cr.)
SPEA-F 667	Seminar in Public Capital and Debt Theory	(3 cr.)
SPEA-H 524	Health Industry Regulation	(3 cr.)
SPEA-H 525	Health Economics for Policy and Management	(3 cr.)
SPEA-H 526	Healthcare Finance	(3 cr.)
SPEA-H 549	Health Policy	(3 cr.)
SPEA-L 568	Management of Local Government Services	(3 cr.)
SPEA-L 622	Local Economic Development	(3 cr.)
SPEA-M 547	Negotiation and Dispute Resolution for Public Affairs	(3 cr.)
SPEA-N 521	The Nonprofit and Voluntary Sector	(3 cr.)
SPEA-N 523	Civil Society and Public Policy	(3 cr.)
SPEA-N 557	Proposal Development and Grant Management	(3 cr.)
SPEA-P 539	Management Science for Public Affairs	(3 cr.)
SPEA-R 564	Environmental and Natural Resource Policy Design and Implementation	(3 cr.)
SPEA-R 625	Environmental Economics and Policy	(3 cr.)
SPEA-R 626	Energy Policy Seminar	(3 cr.)
SPEA-R 643	Natural Resource Management and Policy	(3 cr.)
SPEA-R 645	Environmental Law	(3 cr.)

SPEA-R 674	Energy, Economics and Policy	(3 cr.)
SPEA-V 550	Poverty and Social Welfare Policy	(3 cr.)
SPEA-V 559	Principles and Practices of Social Entrepreneurship	(3 cr.)
SPEA-V 640	Law, Public Management, and Public Policy	(3 cr.)
SPEA-X 511/E 501	Human Behavior and Energy Consumption	(3 cr.)

### Public Financial Administration

(18 credit hours) The Public Financial Administration concentration develops technical skills necessary for budget analysis, preparation, and operation; analysis and application of tax policy; and public financial planning. Students may not use MPA core courses to fulfill concentration requirements.

#### Required Courses (9 credit hours)

In consultation with a concentration advisor, select **at least three** of the following courses:

SPEA-F 609	Seminar in Revenue Theory and Administration	(3 cr.)
SPEA-F 610	Government Budget and Program Analysis	(3 cr.)
SPEA-F 667	Seminar in Public Capital and Debt Theory	(3 cr.)
SPEA-P 562	Public Program Evaluation	(3 cr.)

**NOTE:** Should the student decide to take all four courses, the fourth course can be counted as one of the two electives required below.

#### One of the Following Courses (3 credit hours)

In consultation with a concentration advisor, select **one** of the following courses:

SPEA-F 542	Governmental Financial Accounting and Reporting	(3 cr.)
SPEA-P 541	Benefit Cost Analysis	(3 cr.)

**NOTE:** Should the student decide to take both courses, the second course can be counted as one of the two electives required below.

#### Electives (6 credit hours)

In consultation with a concentration advisor, select **two** of the following courses or other graduate courses approved as equivalent substitutions:

SPEA-F 542	Governmental Financial Accounting and Reporting	(3 cr.)
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SPEA-F 666	Public Revenue	(3 cr.)
SPEA-H 526	Healthcare Finance	(3 cr.)
SPEA-I 516	Public Management Information Systems	(3 cr.)
SPEA-P 507	Data Analysis and Modeling for Public Affairs	(3 cr.)
SPEA-P 541	Benefit Cost Analysis	(3 cr.)
SPEA-P 562	Public Program Evaluation	(3 cr.)

### Public Management

(15 credit hours) The public management concentration is designed to teach students to manage and lead using the knowledge, systems, skills, and tools necessary to effectively pursue the missions of public organizations. Upon completing the concentration requirements, students will understand the political, legal, and social context in which public policies are adopted, implemented and evaluated; the role of public bureaucracy in a democratic society; the goals, structures, processes and behavior observed within public organizations; and the core administrative functions performed by public managers and employees. Students may not use MPA core courses to fulfill concentration requirements.

#### Required Courses (9 credit hours)

In consultation with a concentration advisor, select **at least three** of the following courses:

SPEA-M 561	Public Human Resource Management	(3 cr.)
SPEA-M 602	Strategic Management of Public and Nonprofit Organizations	(3 cr.)
SPEA-M 654	Public Program Management and Contracting	(3 cr.)
SPEA-M 662	Seminar in Accountability and Performance	(3 cr.)
SPEA-P 562	Public Program Evaluation	(3 cr.)

#### Electives (6 credit hours)

In consultation with a concentration advisor, select **two** of the following courses:

SPEA-F 610	Government Budget and Program Analysis	(3 cr.)
SPEA-I 516	Public Management Information Systems	(3 cr.)
SPEA-L 568	Management of Local Government Services	(3 cr.)

SPEA-M 518	Intergovernmental Systems Management	(3 cr.)
SPEA-M 547	Negotiation and Dispute Resolution for Public Affairs	(3 cr.)
SPEA-M 570	Public Sector Labor Relations	(3 cr.)
SPEA-M 575	Comparative Public Management and Administration	(3 cr.)
SPEA-M 652	Managing Workforce Diversity	(3 cr.)
SPEA-P 541	Benefit Cost Analysis	(3 cr.)
SPEA-R 563	Sustainability in a Tri-sectoral World	(3 cr.)
SPEA-R 564	Environmental and Natural Resource Policy Design and Implementation	(3 cr.)
SPEA-V 512	Public Policy Process	(3 cr.)
SPEA-V 550	Latino American Governance	(3 cr.)
SPEA-V 640	Law, Public Management, and Public Policy	(3 cr.)

### Sustainability and Sustainable Development

(18 credit hours) In the sustainability and sustainable development concentration students study the relations among productive activity and social and environmental impacts. They consider the role of markets and related institutions in the efficient and equitable delivery of goods and services, and develop skills to analyze and address the systematic strengths and weaknesses in the various social systems. Students examine the many factors, including social, economic, legal and political forces that promote or deter sustainability. The concentration encourages students to examine the interrelationship of environmental and social systems, the regenerative capacity of both, and the institutional change that will be required to develop greater sustainability. Graduates will be prepared for employment in government and international programs, corporate sustainability offices, and not-for-profit sustainability campaigns. Students may not use MPA core courses to fulfill concentration requirements.

### Required Courses (6 credit hours)

In consultation with a concentration advisor, choose **two** of the following three courses:

SPEA-R 563	Sustainability in a Tri-Sectoral World	(3 cr.)
SPEA-S 515	Sustainable Communities	(3 cr.)
SPEA-S 596	Sustainable Development	(3 cr.)

### Context for Sustainability (6 credit hours)

In consultation with a concentration advisor, **select two courses from one of the three areas:** Development, Policy and Entrepreneurship, Natural Environment, or Environmental Protection. Students are encouraged to select courses that lead to expertise in a particular context. (Note: The third concentration core course can be substituted for one of these context courses).

### Development, Policy and Entrepreneurship

SPEA-D 576	Approaches to Development	(3 cr.)
SPEA-D 669	Economic Development, Globalization, and Entrepreneurship	(3 cr.)
SPEA-E 535	International Environmental Policy	(3 cr.)
SPEA-L 622	Local Economic Development	(3 cr.)
SPEA-R 512	Climate Law and Policy	(3 cr.)
SPEA-R 532	Water Policy and Economics	(3 cr.)
SPEA-R 590	Energy Policy from a Nation-State Perspective	(3 cr.)
SPEA-R 625	Environmental Economics and Policy	(3 cr.)
SPEA-R 643	Natural Resource Management and Policy	(3 cr.)
SPEA-R 674	Energy Economics and Policy	(3 cr.)
SPEA-V 527	Urban Sustainability ( <i>This course is offered at IUPUI</i> )	(3 cr.)
SPEA-V 559	Principles and Practices of Social Entrepreneurship	(3 cr.)
SPEA-X 511/ SPEA-E 501	Human Behavior and Energy Consumption	(3 cr.)

### Natural Environment

SPEA-E 460	Fisheries and Wildlife Management	(3 cr.)
SPEA-E 517	BMP Design for Healthy Urban Watersheds	(3 cr.)
SPEA-E 522	Urban Forest Management	(3 cr.)
SPEA-E 528	Forest Ecology and Management	(3 cr.)
SPEA-E 534	Restoration Ecology	(3 cr.)
SPEA-E 540	Wetlands Ecology and Management	(4 cr.)

SPEA-E 545	Lake and Watershed Management	(3 cr.)
SPEA-E 555	River Management	(2 cr.)
SPEA-E 555	Urban Ecology	(3 cr.)
SPEA-E 557	Conservation Biology	(3 cr.)
SPEA-E 591/R 591	Climate Change Impacts on Natural Resources	(3 cr.)

### Environmental Protection

SPEA-E 515	Fundamentals of Air Pollution	(3 cr.)
SPEA-E 539	Aquatic Chemistry	(3 cr.)
SPEA-E 552	Environmental Engineering	(3 cr.)
SPEA-E 562	Solid and Hazardous Waste Management	(3 cr.)
SPEA-E 564	Organic Pollutants	(3 cr.)
SPEA-E 574	Energy Systems	(3 cr.)

### Analytical Tools (6 credit hours)

In consultation with a concentration advisor, select **two** of the following courses or other graduate courses approved as equivalent substitutions:

SPEA-E 529	Application of Geographical Information Systems	(3 cr.)
SPEA-M 547	Negotiation and Alternative Dispute Resolution for Public Affairs	(3 cr.)
SPEA-P 507	Data Analysis & Modeling for Public Affairs	(3 cr.)
SPEA-P 541	Benefit Cost Analysis	(3 cr.)
SPEA-P 562	Public Program Evaluation	(3 cr.)

### Specialized

(18 credit hours) In consultation with advisors, students may design curricula that anticipate their career and educational goals and reflect their background and training. Specialized concentrations must be approved by the student's faculty advisor and the appropriate faculty program director to ensure high standards of rigor, depth, and breadth. Specialized concentrations must be declared within the first 24 credit hours of a student's program

### Online Master of Public Affairs

All online M.P.A. students will complete the public affairs concentration (18 credit hours).

Courses should be selected in conjunction with the faculty program director and/or academic advisor.

## Master of Public Affairs Dual Degree Programs

Master of Public Affairs–Master of Science in Environmental Science (M.P.A.–M.S.E.S.)

Master of Public Affairs–Doctor of Jurisprudence (M.P.A.–J.D.)

Master of Public Affairs–Master of Arts in Arts Administration (M.P.A.–M.A.A.A.)

Other Dual M.P.A. Degree Programs

Other Dual M.P.A. International Degree Programs

### Master of Public Affairs–Master of Science in Environmental Science

This combined master's program is a 60-credit hour program that gives the student more depth and breadth than is possible in a single degree. M.P.A. and M.S.E.S. degrees are awarded concurrently after the student has completed the requirements for both degrees.

#### Application and Admission

The student must apply to and be accepted by both the Master of Public Affairs program and the Master of Science in Environmental Science program. The normal criteria for admission to each program apply.

#### Program Requirements

(60 credit hours) The combined M.P.A.–M.S.E.S. program requires a minimum of 60 credit hours distributed among four components: environmental science core, public affairs core, environmental science and policy concentration, and professional experience.

#### Public Affairs Core

#### Required Courses (15 credit hours)

SPEA-E 543	Environmental Management	(3 cr.)
SPEA-F 560	Public Finance and Budgeting	(3 cr.)
SPEA-V 506	Statistical Analysis for Effective Decision Making	(3 cr.)
<b>OR</b>		
SPEA-E 538	Statistics for Environmental Science	(3 cr.)
SPEA-V 517	Public Management Economics	(3 cr.)
SPEA-V 540	Law and Public Affairs	(3 cr.)

#### Environmental Science Core Competencies

Each student should demonstrate a competency in the following areas of environmental science: mathematics, statistics, chemistry, engineering principles, and ecology. The selection of courses may vary according to the student's background. Some or all of the following course categories may be appropriate to be determined in consultation with the gatekeepers for each course category.

**Required Courses (12 credit hours)**

SPEA-E 526	Applied Mathematics for Environmental Science	(3 cr.)
SPEA-E 527	Applied Ecology	(3 cr.)
SPEA-E 536	Environmental Chemistry	(3 cr.)
SPEA-E 552	Environmental Engineering	(3 cr.)

**Tool Skill Courses (3 credit hours)**

Tools courses provide students with quantitative, technical and analytical tools to enhance problem-solving abilities. Strategic choices in tool courses can deepen or broaden your skill set; discussions with advisors, including the program director, may be appropriate. The course list below includes many of the most commonly used tools courses, but other courses may be approved by an advisor, including appropriate topics courses (E555 and V550).

SPEA-E 502	Water Quality Modeling	(3 cr.)
SPEA-E 518	Vector-based Geographic Information Systems	(3 cr.)
SPEA-E 529	Application of Geographic Information Systems	(3 cr.)
SPEA-E 554	Groundwater Flow Modeling	(3 cr.)
SPEA-E 555	Introduction to Coding for Environment and Policy	(1 cr.)
SPEA-E 555	Python Programming for Environment and Policy	(1 cr.)
SPEA-E 555	Using R for Environment and Policy	(1 cr.)
SPEA-E 560	Environmental Risk Analysis	(3 cr.)
SPEA-P 507	Data Analysis and Modeling for Public Affairs	(3 cr.)
SPEA-P 539	Management Science for Public Affairs	(3 cr.)
SPEA-P 541	Benefit Cost Analysis	(3 cr.)
SPEA-P 562	Public Program Evaluation	(3 cr.)

**Capstone****Required Course (3 credit hours)**

Choose one of the following courses:

SPEA-E 517	BMP Design for Healthy Urban Watersheds	(3 cr.)
SPEA-E 546	Stream Ecology	(3 cr.)
SPEA-E 560	Environmental Risk Analysis	(3 cr.)
SPEA-V 600	Capstone in Public and Environmental Affairs	(3 cr.)
*GLOBASE	Capstone in Global Business and Social Enterprise	(3 cr.)

\*Please note only second year students can count GLOBASE as a capstone.

**Program Options**

Dual degree students can pursue one of six concentration options.

**1. Environmental Management Concentration (24 credit hours)****Required Courses (12 credit hours)**

In consultation with an advisor, choose four of the following courses:

SPEA-E 515	Fundamentals of Air Pollution	(3 cr.)
SPEA-E 520	Environmental Toxicology	(3 cr.)
SPEA-E 528	Forest Ecology and Management	(3 cr.)
SPEA-E 539	Aquatic Chemistry	(3 cr.)
SPEA-E 540	Wetlands Ecology and Management	(4 cr.)
SPEA-E 542	Hazardous Materials	(3 cr.)
SPEA-E 545	Lake and Watershed Management	(3 cr.)
SPEA-E 562	Solid and Hazardous Waste Management	(3 cr.)
SPEA-R 643	Natural Resource Management and Policy	(3 cr.)

**Electives (12 credit hours)**

In consultation with an advisor, choose four of the following, including at least two law/management/policy-focused electives.

**Science-Focused Electives:**

SPEA-E 502	Water Quality Modeling	(3 cr.)
SPEA-E 514	Changing Landscape of Toxic Chemical Regulations	(3 cr.)
SPEA-E 534	Restoration Ecology	(3 cr.)

SPEA-E 544	Subsurface Microbiology and Bioremediation	(3 cr.)
SPEA-E 550	Soil Science and Management	(3 cr.)
SPEA-E 554	Groundwater Flow Modeling	(3 cr.)
SPEA-E 564	Organic Pollutants: Environmental Chemistry & Fate	(3 cr.)
SPEA-E 574	Energy Systems	(3 cr.)
SPEA-E 591	Climate Change Impacts on Natural Resources	(3 cr.)

### Law, Management, and Policy-Focused Electives:

SPEA-E 512	Risk Communication	(3 cr.)
SPEA-R 512	Climate Law and Policy	(3 cr.)
SPEA-R 521	Domestic Environmental Policy	(3 cr.)
SPEA-R 531	Water Law	(3 cr.)
SPEA-R 532	Water Policy and Economics	(3 cr.)
SPEA-R 533	Public Natural Resource Law	(3 cr.)
SPEA-R 563	Sustainability in a Tri-sectoral World	(3 cr.)
SPEA-R 564	Environmental and Natural Resource Policy Design and Implementation	(3 cr.)
SPEA-R 625	Environmental Economics and Policy	(3 cr.)
SPEA-R 643	Natural Resource Management and Policy	(3 cr.)
SPEA-R 645	Environmental Law	(3 cr.)
SPEA-R 674	Energy Economics and Policy	(3 cr.)

### Tools Electives:

SPEA-E 518	Vector-Based Geographic Information Systems	(3 cr.)
SPEA-E 529	Application of Geographic Information Systems	(3 cr.)
SPEA-E 555	Intro to Coding for Environment and Policy	(1 cr.)
SPEA-E 555	Python Programming for	(1 cr.)

SPEA-E 555	Environment and Policy Using R for Environment and Policy	(1 cr.)
SPEA-E 560	Risk Analysis	(3 cr.)
SPEA-I 516	Public Management Information Systems	(3 cr.)
SPEA-M 547	Negotiation and Dispute Resolution for Public Affairs	(3 cr.)
SPEA-M 654	Public Program Management and Contracting	(3 cr.)
SPEA-P 507	Data Analysis and Modeling for Public Affairs	(3 cr.)
SPEA-P 541	Benefit Cost Analysis	(3 cr.)
SPEA-P 562	Public Program Evaluation	(3 cr.)

## 2. Environmental Systems Analysis and Modeling Concentration (27 credit hours)

### Required Courses (9 credit hours)

The following three courses:

SPEA-E 560	Environmental Risk Analysis	(3 cr.)
SPEA-P 507	Data Analysis and Modeling for Public Affairs	(3 cr.)
SPEA-P 539	Management Science for Public Affairs	(3 cr.)

### Electives (18 credit hours)

In consultation with a concentration advisor, select a total of 6 classes, including at least 2 classes from the Sciences section and 2 classes from the Policy and Administration section.

**Science** (choose at least two of the following courses):

SPEA-E 502	Water Quality Modeling	(3 cr.)
SPEA-E 515	Fundamentals of Air Pollution Control	(3 cr.)
SPEA-E 518	Vector-Based Geographic Information Systems	(3 cr.)
SPEA-E 529	Application of Geographic Information Systems	(3 cr.)
SPEA-E 539	Aquatic Chemistry	(3 cr.)
SPEA-E 554	Groundwater Flow Modeling	(3 cr.)
SPEA-E 555	Fluid Mechanics	(3 cr.)

SPEA-E 555	Intro to Coding for Environment and Policy	(1 cr.)
SPEA-E 555	Python Programming for Environment and Policy	(1 cr.)
SPEA-E 555	Using R for Environment and Policy	(1 cr.)
SPEA-E 564	Organic Pollutants: Environmental Chemistry and Fate	(3 cr.)
*GEOG-G 588	Applied Spatial Statistics	(3 cr.)

**Policy and Administration** (choose at least two of the following courses):

SPEA-P 541	Benefit Cost Analysis	(3 cr.)
SPEA-P 562	Public Program Evaluation	(3 cr.)
SPEA-R 625	Environmental Economics and Policy	(3 cr.)
SPEA-R 674	Energy Economics and Policy	(3 cr.)

### 3. Energy Concentration (24 credit hours)

#### Required Courses (6 credit hours)

The following courses are required:

SPEA-E 574	Energy Systems	(3 cr.)
SPEA-R 674	Energy Economics and Policy	(3 cr.)

#### Electives (18 credit hours)

In consultation with a concentration advisor, students select a mixture of science and policy courses related to energy in accordance to professional goals. At least two courses must be taken from each group. Examples include:

#### Natural Science Elective Group (6 credit hours):

SPEA-E 503	Natural Gas: Technical and Policy Challenges	(3 cr.)
SPEA-E 515	Fundamentals of Air Pollution	(3 cr.)
SPEA-E 518	Vector -based Geographic Information Systems	(3 cr.)
SPEA-E 529	Application of Geographic Information Systems	(3 cr.)
*EAS-G 571	Principles of Petroleum Geology	(3 cr.)

*EAS-G 576	Climate Change	(3 cr.)
*EAS-G 587	Organic Geochemistry	(3 cr.)
*GEOG-G 532	Physical Climatology	(3 cr.)
*GEOG-G 544	Climate Change Impacts	(3 cr.)

#### Economics, Public Policy and Law Elective Group (6 credit hours):

SPEA-E 501/X511	Human Behavior and Energy Consumption	(3 cr.)
SPEA-E 535	International Environment Policy	(3 cr.)
SPEA-P 541	Benefit Cost Analysis	(3 cr.)
SPEA-R 512/ LAW-L 660	Climate Law and Policy	(3 cr.)
SPEA-R 521	Domestic Environmental Policy	(3 cr.)
SPEA-R 533	Public Natural Resources	(3 cr.)
SPEA-R 563	Sustainability in a Tri-Sectoral World	(3 cr.)
SPEA-R 564	Environmental and Natural Resource Policy Design and Implementation	(3 cr.)
SPEA-R 590	Energy Policy from a Nation-State Perspective	(3 cr.)
SPEA-R 625	Environmental Economics and Policy	(3 cr.)
SPEA-R 626	Energy Policy	(3 cr.)
SPEA-R 643	Natural Resource Management and Policy	(3 cr.)
SPEA-R 645	Environmental Law	(3 cr.)
SPEA-S 596	Sustainable Development	(3 cr.)
SPEA-V 550/*LAW-L 644	Energy Law and Policy	(3 cr.)

### 4. Water Management Concentration (25 credit hours)

#### Required Courses (10 credit hours)

SPEA-E 556	Limnology	(4 cr.)
SPEA-R 531	Water Law	(3 cr.)
<b>or</b>		
SPEA-R 532	Water Policy and Economics	(3 cr.)
	One physical science class from the list below	(3 cr.)

**Water Science (6 - 9 credit hours without overlap with courses used for requirements)**

**Physical Sciences:**

SPEA-E 502	Water Quality Modeling	(3 cr.)
SPEA-E 539	Aquatic Chemistry	(3 cr.)
SPEA-E 554	Groundwater Flow Modeling	(3 cr.)
SPEA-E 555	Fluid Mechanics	(3 cr.)
*EAS-G 690	Fluvial Processes and Sediment Transport (P: SPEA-E 555 Fluid Mechanics)	(3 cr.)

**Ecology and Management:**

SPEA-E 460	Fisheries and Wildlife Management	(3 cr.)
SPEA-E 461	Fisheries and Wildlife Management Lab	(3 cr.)
SPEA-E 517	BMP Design for Healthy Urban Watersheds	(3 cr.)
SPEA-E 540	Wetlands Ecology and Management	(4 cr.)
SPEA-E 545	Lake and Watershed Management	(3 cr.)
SPEA-E 546	Stream Ecology	(3 cr.)
SPEA-E 550	Soil Science and Management	(3 cr.)

**Policy and Administration (6-9 credit hours without overlap with courses used for requirements)**

SPEA-P 541	Benefit Cost Analysis	(3 cr.)
SPEA-P 562	Public Program Evaluation	(3 cr.)
SPEA-R 512	Climate Law and Policy	(3 cr.)
SPEA-R 521	Domestic Environmental Policy	(3 cr.)
SPEA-R 531	Water Law	(3 cr.)
SPEA-R 532	Water Policy and Economics	(3 cr.)
SPEA-R 563	Sustainability in a Tri-sectoral World	(3 cr.)
SPEA-R 564	Environmental and Natural Resource Policy Design and Implementation	(3 cr.)
SPEA-R 625	Environmental Economics and Policy	(3 cr.)
SPEA-R 643	Natural Resource Management and Policy	(3 cr.)

SPEA-R 645	Environmental Law	(3 cr.)
SPEA-X 511	Human Behavior and Energy Consumption	(3 cr.)
*GEOG-G 553	Water and Society	(3 cr.)

**5. Specialized Concentration**

(21 credit hours) Select four M.S.E.S. courses from one of the listed M.S.E.S. concentrations and three M.P.A. courses from one of the listed M.P.A. concentrations.

**6. Any M.S.E.S. or M.P.A. Concentration**

Any M.S.E.S. concentration plus 9 additional credit hours from MPA concentration courses outside of the E series of SPEA courses, with the exception of E535 International Environmental Policy, which will be an acceptable course.

**Or**

Any M.P.A. concentration plus 12 additional credit hours from the M.S.E.S. tools and concentration courses in the E series of SPEA courses (excluding E535 International Environmental Policy).

**Experiential Requirement**

Each MPA-MSES student must obtain professionally relevant experience through one of the following options: an approved internship (includes research internships) (SPEA-V 585 or SPEA-E 589; 0-6 credit hours), completion of the MSES thesis concentration, or the award of prior professional experience credit. Students are encouraged to discuss with faculty members the relative merits of their experience opportunities, according to individual career objectives.

**Master of Public Affairs–Doctor of Jurisprudence**

The combined Master of Public Affairs–Doctor of Jurisprudence program enables the student to take a four-year sequence of courses leading to both degrees.

**Application and Admission**

The applicant must have a bachelor's degree from an accredited institution of higher education and must apply separately to both the Maurer School of Law and the School of Public and Environmental Affairs.

If the applicant is admitted to only one school, the applicant is permitted to attend that school and is, of course, required to meet the graduation requirements of that school. It is recommended that the student apply to both schools simultaneously for the combined M.P.A.–J.D. program. It is possible, however, for a person already enrolled in the Maurer School of Law to apply for admission to the O'Neill School of Public and Environmental Affairs up to the end of the second year of law study. It is also possible for a student enrolled in the O'Neill School of Public and Environmental Affairs to seek admission to the Maurer School of Law up to the end of the first year of the M.P.A. course of study.

**Academic Standing**

Grade point averages in the Maurer School of Law and the O'Neill School of Public and Environmental Affairs are computed separately. To continue in the program, the student must meet the academic standards in each school. A student failing in one school but meeting academic standards in the other may complete work

for the degree in the school in which the student is able to meet the academic standards. Such completion must be according to the same conditions (credit hours, residency, etc.) required of regular (noncombination) degree candidates; that is, 82 credit hours in law and 48 credit hours in SPEA.

### School Residency

Students in the dual M.P.A.–J.D. program should enroll in courses through the O'Neill School of Public and Environmental Affairs in the first year of the program and through the Maurer School of Law in the second year of the program. Alternatively, dual M.P.A.–J.D. students do have the option of enrolling in courses through the School of Law—Bloomington in the first year and in O'Neill in the second year. In the third and fourth years, or until the program is completed, students should enroll through the school in which the majority of their credit hours reside in each enrollment period.

### Program Requirements

(115 credit hours)

#### Master of Public Affairs Requirements

(36 credit hours) Students are required to complete 36 credit hours of O'Neill courses distributed among the M.P.A. core and a specialization area.

#### Required Courses (21 credit hours)

SPEA-F 560	Public Finance and Budgeting	(3 cr.)
SPEA-V 502	Public Management	(3 cr.)
SPEA-V 506	Statistical Analysis for Effective Decision Making	(3 cr.)
SPEA-V 517	Public Management Economics	(3 cr.)
SPEA-V 540	Law and Public Affairs	(3 cr.)
SPEA-V 600	Capstone in Public and Environmental Affairs	(3 cr.)
SPEA-V 640	Law, Public Management, and Public Policy	(3 cr.)

#### Specialization Area (15 credit hours)

The student chooses a field of specialization and develops a program of specialization courses in consultation with a O'Neill faculty advisor.

#### Doctor of Jurisprudence Requirements

(79 credit hours) Students are required to complete 79 credit hours of law courses and to satisfy all requirements for the degree Doctor of Jurisprudence. For specific requirements, see the Maurer School of Law Bulletin.

#### Other Dual M.P.A. Degree Programs

In addition to dual degree programs with the Indiana University School of Law—Bloomington, the O'Neill School of Public and Environmental Affairs collaborates with centers on area studies, other Indiana University Bloomington departments, and professional schools to deliver dual degree programs. O'Neill's combined master's

degree programs address the demand for specialists with expertise in policy, management, and science and the expertise and skill offered by the partner program. Candidates for the combined degree programs, excluding the program with the Maurer School of Law, complete the core requirements for the M.P.A. degree, additional course credits in a specialized concentration for a total of 36 credit hours in the O'Neill School of Public and Environmental Affairs, plus the required courses of the participating dual program. In every case students must apply separately to and be accepted into both programs to participate in a dual degree program.

Dual degree students (other than the M.P.A.–J.D.) must complete:

- the core requirements for the M.P.A. and a specialized O'Neill concentration (36 credit hours) to include:

#### Required Courses

SPEA-F 560	Public Finance and Budgeting	(3 cr.)
SPEA-V 502	Public Management	(3 cr.)
SPEA-V 506	Statistical Analysis for Effective Decision Making	(3 cr.)
SPEA-V 517	Public Management Economics	(3 cr.)
SPEA-V 540	Law and Public Affairs	(3 cr.)
SPEA-V 600	Capstone in Public and Environmental Affairs	(3 cr.)

#### Specialized Area

Students may design and develop a program of specialization courses in consultation with a O'Neill faculty advisors.

To determine the requirements for participating dual degree departments or schools, refer to the section of the University Graduate School Bulletin about the participating unit or visit the appropriate web page.

O'Neill participates with the following units in the M.P.A. program:

Master of Public Affairs–Master of Arts in African American and African Diaspora Studies (M.P.A.–M.A.)  
[Department of African American and African Diaspora Studies](#)

Master of Public Affairs–Master of Arts in African Studies (M.P.A.–M.A.)  
[Department of African Studies](#)

Master of Public Affairs–Master of Arts in Central Eurasian Studies (M.P.A.–M.A.)  
[Department of Central Eurasian Studies](#)

Master of Public Affairs–Master of Arts in East Asian Studies (M.P.A.–M.A.)  
[Department of East Asian Languages and Cultures](#)

Master of Public Affairs–Master of Arts in Latin American and Caribbean Studies (M.P.A.–M.A.)

[The Center for Latin American and Caribbean Studies](#)

Master of Public Affairs–Master of Informatics Science (M.P.A.–M.I.S.)

[School of Informatics, Computing and Engineering](#)

Master of Public Affairs–Master of Library Science (M.P.A.–M.L.S.)

[School of Informatics, Computing and Engineering](#)

Master of Public Affairs–Master of Arts in Near Eastern Languages and Cultures (M.P.A.–M.A.)

[Near Eastern Languages and Cultures](#)

Master of Public Affairs–Master of Arts in Russian and East European Studies (M.P.A.–M.A.)

[Russian and East European Institute](#)

Master of Public Affairs–Master of Arts in European Studies (M.P.A.–M.A.)

[European Studies](#)

### Master of Public Affairs–Master of Arts in Arts Administration

Students pursuing a dual Master of Public Affairs (Nonprofit Management Concentration) / Master of Arts in Arts Administration will complete the core requirements of the MPA, the Nonprofit Management concentration and the MAAA. When combined with electives and experiential requirements, students will take a total of 63 credit hours (with at least 21 credit hours taken in each program), which would ordinarily be completed with five semesters of course work plus an internship.

#### Application and Admission

The student must apply to and be accepted by both the Master of Public Affairs program and the Master of Arts Administration program. The normal criteria for admission to each program apply.

#### MPA Core (15 credit hours)

##### Required Courses

SPEA-F 560	Public Finance and Budgeting	(3 cr.)
SPEA-V 502	Public Management	(3 cr.)
SPEA-V 506	Statistical Analysis for Effective Decision Making	(3 cr.)
SPEA-V 517	Public Management Economics	(3 cr.)
SPEA-V 540	Law and Public Affairs	(3 cr.)

#### MAAA Core (18 credit hours)

##### Required Courses

AADM-Y 502	Introduction to Arts Administration and Organizational Behavior	(3 cr.)
AADM-Y 530	Audience Development and Marketing the Arts	(3 cr.)

AADM-Y 562	Legal Issues in the Arts	(3 cr.)
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#### Area I: Performing Arts

Choose one of the following

AADM-Y 505	Programming the Performing Arts	(3 cr.)
AADM-Y 508	Performing Arts Organizations Management	(3 cr.)
AADM-Y 511	Performing Arts Center Management	(3 cr.)

#### Area II: Visual Arts

Choose one of the following

AADM-Y 506	Curating for Museums and Galleries	(3 cr.)
AADM-Y 525	Museum Management	(3 cr.)

#### Area III: Arts and Cultural Policy

Choose one of the following

AADM-Y 551	Cultural Planning and Urban Development	(3 cr.)
AADM-Y 559	Public Policy in the Arts	(3 cr.)

#### Nonprofit Management (6 credit hours)

SPEA-N 521	The Nonprofit and Voluntary Sector	(3 cr.)
AADM-Y 558	Fund Development for Nonprofits	(3 cr.)

#### Financial Management (3 credit hours)

Choose one of the following

SPEA-F 526	Financial Management for Nonprofit Organizations	(3 cr.)
AADM-Y 515	Financial Management for the Arts	(3 cr.)

#### Capstone/Additional Management Core (6 credit hours)

Choose one of the following combinations

SPEA-N 525 and SPEA-V 600	Management in the Nonprofit Sector (3 cr.) <b>and</b> Capstone in Public and Environmental Affairs (3 cr.)
<b>or</b>	
AADM-Y 504 and AADM-Y 650	Arts Organizations in the Public and Private Sectors (3 cr.) <b>and</b>

Seminar in Arts Administration (3 cr.)

**Electives (9 credit hours)**

Any graduate-level electives, chosen in consultation with a concentration advisor.

**Experiential (6 credit hours)**

AADM-Y 550	Practicum in Arts Administration	(3 cr.)
AADM-Y 750	Internship in Arts Administration	(3 cr.)

**International Dual M.P.A. Degrees and Programs**

Since fall 2015, select O'Neill graduate students have the opportunity to pursue concurrent masters degrees at O'Neill and an international partner university. Courses in these programs are taught in English. You must apply separately and be accepted by each program to participate in this opportunity.

**South Korea: Seoul National University**

Complete a dual degree with Seoul National University (SNU). SNU's Graduate School of Public Administration (GSPA) and SPEA have joined together to offer dual MPA degrees from the two institutions. GSPA aims to educate high-level civil servants, cultivate new future leaders of civil society, and provide top-class executive programs for current leaders in the public and private sectors. GSPA is located in a beautiful mountainous region south of the Han River in southeast Seoul, a vibrant city of 12 million people and site of South Korea's capital. The Seoul Metropolitan region is not only the thriving hub of South Korea, but a gateway to East Asia, within hours of Tokyo, Beijing, and Hong Kong.

**Dual Degree Student Admission Requirements**

Students wishing to pursue the dual MPA program will have to apply to both IUB O'Neill and SNU GSPA separately and fulfill each university's admission criteria independently. In order to qualify as dual degree applicants, students must apply to both programs concurrently or be currently enrolled in one of the programs upon application to the other. Additionally, applicants to O'Neill will have to pass IU's international student English language requirements. Korean language testing will not be required since SNU GSPA courses are taught in English.

**Dual Degree Credit Hour and Graduation Requirements**

	<b>SNU GSPA Students</b>	<b>IUB SPEA Students</b>
<b>Year 1</b>	<b>24 GSPA hours*</b> 8 courses at 3 hours each <b>or</b> 7 courses: 6 at 3 hours; one at 6 hours <b>3 SPEA hours</b>	<b>27 SPEA hours***</b> 9 courses at 3 hours each <b>or</b> <b>3 online SPEA hours</b>

1 class at 3 hours - taught via video-conference

<b>Summer Credit</b>	<b>6 SPEA hours</b> 2 classes at 3 hours	<b>6 SPEA hours</b> 2 classes at 3 hours
<b>Year 2</b>	<b>27 SPEA hours***</b> 9 classes at 3 hours	<b>24 GSPA hours*</b> 8 courses at 3 hours each <b>or</b> 7 courses: 6 at 3 hours; one at 6 hours
SNU GSPA	24 total credits	
IUB SPEA	36 total credits	
	60 total credits	

\* = chosen concentration, electives, two independent study courses

\*\* = combination of summer programs (O'Neill Study Abroad), directed readings, internship

\*\*\*=combination of core and concentration, elective courses, and one independent study

Note: core O'Neill courses include 4 courses for a total of 12 hours

Note: after core courses are satisfied, students have a remaining 24 hours to distribute towards one (or multiple concentrations at O'Neill)

Note: independent study refers to development of a thesis

**SNU GSPA MPA thesis requirement**

For the SNU GSPA MPA degree, students in the dual MPA program must submit a Master's thesis proposal and complete their Master's thesis, which has to be approved by SNU GSPA committee members according to the SNU GSPA academic calendar (i.e. either by mid-June or mid-December of the relevant year).

**Total credit hour summary**

For the SNU GSPA MPA degree, students will take 24 hours of credit at SNU GSPA out of the 36 credits required for that degree (66.7% GSPA credit). For the IUB SPEA MPA degree, students will take 36 hours of credit at IUB O'Neill out of the 48 credits required for that degree (75% SPEA credit).

**Master of Environmental Sustainability**

The Master of Environmental Sustainability program produces trained professionals ready to start confronting environmental issues from the moment they graduate. The degree is designed to combine a solid foundation with immense flexibility to combine science, policy, and tools courses in ways that best match student interests and career goals. A capstone course provides a finishing client-focused experience that requires students to bring many aspects of their degree to the project and to work with people with a diversity of backgrounds and training.

**Degree Requirements**

(36 credit hours) The core requirements of the M.E.S. degree consist of two three-credit courses: E513

Environmental Project Management and E543 Environmental Management. Each student must also complete the requirements of one concentration (27 credits) and complete one capstone course (3 credits).

### Environmental Sustainability Core (6 credit hours)

The following two courses:

SPEA-E 513	Environmental Project Management	(3 cr.)
SPEA-E 543	Environmental Management	(3 cr.)

### Capstone Course

(3 credit hours) The capstone course gives MES students an opportunity to use their knowledge and skills to address a real-world, client-based problem. Students from a variety of backgrounds work together on a semester-long project for an individual, organization, or agency. This requirement may be met in one of the following ways:

SPEA-V 600	Capstone in Public and Environmental Affairs	(3 cr.)
SPEA-E 517	Best Management Practices for Healthy Urban Watersheds	(3 cr.)

### Professional Experience Credit

The O'Neill School of Public and Environmental Affairs at Indiana University - Bloomington may grant credit to students who have had relevant professional experience. Credit for professional experience reduces degree-program credit requirements.

Professional-experience credit may be granted in the core, concentration or capstone portion of the MES degree, or in combinations of these, at the discretion of the MES Program Director. Professional-experience credit will result in a reduction in the total number of credit hours required for the MES degree program. Students will see this reflected in their online Academic Advising Report once the decision is shared with O'Neill's Graduate Records Office.

Students are eligible to apply:

1. Once they have been unconditionally admitted to the O'Neill-BL MES degree program.
2. Before they have completed 24 hours of coursework.
3. If they have relevant, full-time work experience gained prior to the start of O'Neill graduate studies.
  - Relevant experience is above the entry level, involved some independent managerial, analytic, or scientific responsibility and complements the student's academic program and future public service career. Work in any sector (public, nonprofit, or business) and work in any part of the world is eligible for consideration. All MES students are equally eligible to apply. Experience that is unrelated to a career in environmental sustainability, or has not involved responsibilities beyond entry-level work, generally does not qualify for professional experience. The work is generally assumed to have

been paid, full-time work, but students may make the case for highly relevant volunteer and part-time work.

How much can I apply for?

Decisions about credit for professional experience are made separately from decisions about military credit-reductions, volunteer credit-reductions, and transfer credit. For the MES, professional-experience credit is limited to 6 credits. Total credit reduction from professional experience, transfer credit, and other credit reductions is limited to 9 credits.

Suggested application guidelines based on years of professional experience:

- To receive a 3-credit-hour reduction, a student must have a minimum of two years' technical, administrative, scientific, or policy-level work experience with a government, nonprofit, or private agency.
- 6 credit-hours is generally possible for two to four years or more of relevant full-time analytic, technical, managerial, scientific, and/or science-based policymaking experience in environmental science, environmental management, or science-based, environmental policy, with significant responsibilities, for example, in research design, program leadership, budgetary oversight, organizational or staff development, analysis, or planning.

How do I apply?

1. Applications must be received before completing 24-credit hours.
2. If you have held more than one position, **select the most relevant one** as your primary position, for which additional detail will be required.
3. Fully complete the Professional Experience Application, found in the Current Student Portal, and include a current, complete resume. A complete resume includes (1) all prior jobs and job titles, including clear information on part-time versus full-time positions, (2) all prior degrees and graduation dates, (3) the month and year in which you matriculated into the O'Neill MES program, (4) relevant volunteer assignments such as board service, and (5) distinguishes full-time jobs from part-time jobs.
4. Please provide the specific number of credit hours you are requesting for reduction, not a range.
5. Return the completed application to the O'Neill Graduate Records Office in room A328 or via email to [oneillrc@indiana.edu](mailto:oneillrc@indiana.edu).
6. The MES Faculty Program Director will review your application and determine the amount of Professional Experience credit to be granted.

### Concentrations

(27 credit hours) Each concentration must include at least 6 credits of fundamental science courses and at least 6 credits of applications courses. Courses will be chosen in conjunction with an advisor to ensure the best match to student interests and career goals. Each student should select one of the following concentrations:

- Environmental Quality and Toxicology
- Municipal Sustainability

- Sustainable Natural Resource Conservation and Management
- Sustainable Water Resources

### Master of Environmental Sustainability Concentrations

#### Environmental Quality and Toxicology Concentration

The environmental quality and toxicology concentration (27 credit hours) prepares students to address issues such as air pollution, water quality, contaminants, and solid and hazardous wastes using quantitative tools such as risk assessment and best practices such as risk communication. Graduates will be prepared to work in the public, private, or non-profit sectors. States and municipalities are becoming increasingly innovative in this area, and SPEA students will be well equipped to work at these levels as well as at national and international levels.

#### Fundamental Science Electives (6-21 credit hours)

Select at least 6 credit hours, but no more than 21 credit hours of the following courses: (students may also take science electives from the general science electives list that appears after the concentration-specific course lists)

SPEA-E 431	Water Supply and Wastewater Treatment	(3 cr.)
SPEA-E 451	Air Pollution and Control	(3 cr.)
SPEA-E 502	Water Quality Modeling	(3 cr.)
SPEA-E 503	Natural Gas: Technical and Policy Challenges	(3 cr.)
SPEA-E 515	Fundamentals of Air Pollution	(3 cr.)
SPEA-E 520	Environmental Toxicology	(3 cr.)
SPEA-E 536	Environmental Chemistry	(3 cr.)
SPEA-E 539	Aquatic Chemistry	(3 cr.)
SPEA-E 542	Hazardous Materials	(3 cr.)
SPEA-E 554	Groundwater Flow Modeling	(3 cr.)
SPEA-E 564	Organic Pollutants: Environmental Chemistry and Fate	(3 cr.)
GOEG-G 551	Physical Hydrology	(3 cr.)

#### Applications (6-21 credit hours)

Select at least 6 credit hours, but no more than 21 credit hours of the following courses: (students may also take applications electives from the general application electives list that appears after the concentration-specific course lists)

SPEA-E 501/ SPEA-X 511	Human Behavior and Energy Consumption	(3 cr.)
SPEA-E 512	Risk Communication	(3 cr.)

SPEA-E 514	Changing Landscape of Toxic Chemical Regulations	(3 cr.)
SPEA-E 517	BMP Design for Healthy Urban Watersheds	(3 cr.)
SPEA-E 518	Vector-based Geographic Information Systems	(3 cr.)
SPEA-E 529	Application of Geographic Information Systems	(3 cr.)
SPEA-E 552	Environmental Engineering	(3 cr.)
SPEA-E 560	Environmental Risk Analysis	(3 cr.)
SPEA-E 562	Solid and Hazardous Waste Management	(3 cr.)
SPEA-E 574	Energy Systems	(3 cr.)
SPEA-R 674	Energy Economics and Policy	(3 cr.)

#### Municipal Sustainability Concentration

The municipal sustainability concentration (27 credit hours) prepares students to address issues associated with air pollution, waste management, water management, and green-space management in towns and cities. Graduates will be prepared to work in the public, private, or non-profit sectors. Relevant employment will not come only at the municipal level; states and nations must also work with and plan for cities, so employment will be available at all levels from municipal to international.

#### Fundamental Science Electives (6-21 credit hours)

Select at least 6 credit hours, but no more than 21 credit hours of the following courses: (students may also take science electives from the general science electives list that appears after the concentration-specific course lists)

SPEA-E 431	Water Supply and Wastewater Treatment	(3 cr.)
SPEA-E 451	Air Pollution and Control	(3 cr.)
SPEA-E 460	Fisheries and Wildlife Management	(3 cr.)
SPEA-E 461	Fisheries & Wildlife Management Laboratory	(3 cr.)
SPEA-E 502	Water Quality Modeling	(3 cr.)
SPEA-E 515	Fundamentals of Air Pollution	(3 cr.)
SPEA-E 520	Environmental Toxicology	(3 cr.)
SPEA-E 522	Urban Forest Management	(3 cr.)

SPEA-E 527	Applied Ecology	(3 cr.)
SPEA-E 539	Aquatic Chemistry	(3 cr.)
SPEA-E 540	Wetlands Ecology and Management	(4 cr.)
SPEA-E 542	Hazardous Materials	(3 cr.)
SPEA-E 546	Stream Ecology	(3 cr.)
SPEA-E 555	Fluid Mechanics	(3 cr.)
SPEA-E 555	Urban Ecology	(3 cr.)
SPEA-E 556	Limnology	(4 cr.)

### Applications (6-21 credit hours)

Select at least 6 credit hours, but no more than 21 credit hours of the following courses: (students may also take applications electives from the general application electives list that appears after the concentration-specific course lists)

SPEA-E 501/ SPEA-X 511	Human Behavior and Energy Consumption	(3 cr.)
SPEA-E 512	Risk Communication	(3 cr.)
SPEA-E 514	Changing Landscape of Toxic Chemical Regulations	(3 cr.)
SPEA-E 517	BMP Design for Healthy Urban Watersheds	(3 cr.)
SPEA-E 534	Restoration Ecology	(3 cr.)
SPEA-E 545	Lake and Watershed Management	(3 cr.)
SPEA-E 552	Environmental Engineering	(3 cr.)
SPEA-E 555	Environmental Monitoring	(3 cr.)
SPEA-E 555	Food Systems and Community Resilience	(3 cr.)
SPEA-E 560	Environmental Risk Analysis	(3 cr.)
SPEA-E 562	Solid and Hazardous Waste Management	(3 cr.)
SPEA-E 574	Energy Systems	(3 cr.)
SPEA-E 591/ SPEA-R 591	Climate Change Impacts on Natural Resources	(3 cr.)
SPEA-I 516	Public Management Information Systems	(3 cr.)
SPEA-L 563	Planning and Community Development	(3 cr.)
SPEA-L 564	Urban Management	(3 cr.)

SPEA-L 568	Management of Local Government Services	(3 cr.)
SPEA-M 654	Public Program Management and Contracting	(3 cr.)
SPEA-R 512	Climate Law and Policy	(3 cr.)
SPEA-R 532	Water Policy and Economics	(3 cr.)
SPEA-R 563	Sustainability in a Tri-sectoral World	(3 cr.)
SPEA-R 674	Energy Economics and Policy	(3 cr.)
SPEA-S 515	Sustainable Communities	(3 cr.)

### Sustainable Natural Resource Conservation and Management Concentration

The sustainable natural resource conservation and management concentration (27 credit hours) provides training in conservation and management of ecosystems and their biodiversity. Graduates will be prepared for public, private, and non-profit positions in agencies, companies, and organizations at local to international levels. Increasingly, positions are available in towns and cities (urban forestry, green space management, urban wildlife management) as well as conserved and managed natural areas.

### Fundamental Science Electives (6-21 credit hours)

Select at least 6 credit hours, but no more than 21 credit hours of the following courses: (students may also take science electives from the general science electives list that appears after the concentration-specific course lists)

SPEA-E 460	Fisheries and Wildlife Management	(3 cr.)
SPEA-E 461	Fisheries and Wildlife Management Laboratory	(3 cr.)
SPEA-E 522	Urban Forest Management	(3 cr.)
SPEA-E 527	Applied Ecology	(3 cr.)
SPEA-E 528	Forest Ecology and Management	(3 cr.)
SPEA-E 540	Wetlands Ecology and Management	(4 cr.)
SPEA-E 546	Stream Ecology	(3 cr.)
SPEA-E 550	Soil Science and Management	(3 cr.)
SPEA-E 555	Plants and Plant Communities	(3 cr.)
SPEA-E 555	Urban Ecology	(3 cr.)
SPEA-E 556	Limnology	(4 cr.)
SPEA-E 557	Conservation Biology	(3 cr.)
BIOL-B 300	Vascular Plants	(3 cr.)
BIOL-L 376	Biology of Birds	(3 cr.)

**Applications (6-21 credit hours)**

Select at least 6 credit hours, but no more than 21 credit hours of the following courses: (students may also take applications electives from the general application electives list that appears after the concentration-specific course lists)

SPEA-E 534	Restoration Ecology	(3 cr.)
SPEA-E 545	Lake and Watershed Management	(3 cr.)
SPEA-E 555	Food Systems and Community Resilience	(3 cr.)
SPEA-E 591/ SPEA-R 591	Climate Change Impacts on Natural Resources	(3 cr.)
SPEA-R 512	Climate Law and Policy	(3 cr.)
SPEA-R 513	Wildlife Law	(3 cr.)
SPEA-R 531	Water Law	(3 cr.)
SPEA-R 533	Public Natural Resources Law	(3 cr.)

**Sustainable Water Resources Concentration**

The sustainable water resources concentration (27 credit hours) provides training in issues of water quality, water quantity, and aquatic ecology. Students may choose courses in all three areas or may focus on one or two areas. Graduates will be prepared to work in the public, private, or non-profit sectors. States and municipalities are becoming increasingly innovative in this area, and SPEA students will be well equipped to work at these levels as well as at national and international levels.

**Fundamental Science Electives (6-21 credit hours)**

Select at least 6 credit hours, but no more than 21 credit hours of the following courses: (students may also take science electives from the general science electives list that appears after the concentration-specific course lists)

SPEA-E 431	Water Supply and Wastewater Treatment	(3 cr.)
SPEA-E 460	Fisheries and Wildlife Management	(3 cr.)
SPEA-E 461	Fisheries & Wildlife Management Laboratory	(3 cr.)
SPEA-E 502	Water Quality Modeling	(3 cr.)
SPEA-E 527	Applied Ecology	(3 cr.)
SPEA-E 539	Aquatic Chemistry	(3 cr.)
SPEA-E 540	Wetlands Ecology and Management	(4 cr.)
SPEA-E 546	Stream Ecology	(3 cr.)
SPEA-E 550	Soil Science and Management	(3 cr.)
SPEA-E 555	Fluid Mechanics	(3 cr.)

SPEA-E 555	Watershed Hydrology	(3 cr.)
SPEA-E 555	Urban Ecology	(3 cr.)
SPEA-E 556	Limnology	(4 cr.)
GEOG-G 551	Physical Hydrology	(3 cr.)

**Applications (6-21 credit hours)**

Select at least 6 credit hours, but no more than 21 credit hours of the following courses: (students may also take applications electives from the general application electives list that appears after the concentration-specific course lists)

SPEA-E 534	Restoration Ecology	(3 cr.)
SPEA-E 545	Lake and Watershed Management	(3 cr.)
SPEA-E 552	Environmental Engineering	(3 cr.)
SPEA-E 555	Food Systems and Community Resilience	(3 cr.)
SPEA-R 531	Water Law	(3 cr.)
SPEA-R 532	Water Policy and Economics	(3 cr.)
SPEA-E 591/ SPEA-R 591	Climate Change Impacts on Natural Resources	(3 cr.)

**General M.E.S. Fundamental Science and Applications Electives**

The following courses are available as electives for all concentrations for which they may be relevant. Science or applications electives listed under the individual concentrations are particularly focused on that concentration. Science or applications electives listed here are potentially relevant to more than one concentration, and may also occur as concentration electives. Note that some general science or applications electives serve as prerequisites for other science or applications electives.

Science electives:

ANTH-E 527	Environmental Anthropology	(3 cr.)
BIOL-B 300	Vascular Plants	(3 cr.)
BIOL-L 376	Biology of Birds	(3 cr.)
BIOL-L 579	Community Ecology	(3 cr.)
BIOL-L 581	Behavioral Ecology	(3 cr.)
BIOL-Z 406	Vertebrate Zoology	(3-5 cr.)
BIOL-Z 460	Animal Behavior	(3 cr.)
BIOL-Z 620	Quantitative Biodiversity	(3 cr.)
GEOG-G 551	Water Resources	(3 cr.)
GEOG-G 577	Scientific Programming in MATLAB	(3 cr.)

GEOL-G 544	Methods in Analytical Geochemistry	(3 cr.)	SPEA-R 521	Domestic Environmental Policy	(3 cr.)
GEOL-G 547	Instrumentation for Atmospheric Science	(3 cr.)	SPEA-R 531	Water Law	(3 cr.)
GEOL-G 550	Surface Water Hydrology	(3 cr.)	SPEA-R 533	Public Natural Resource Law	(3 cr.)
GEOL-G 576	Climate Change	(3 cr.)	SPEA-R 563	Sustainability in a Tri-sectoral World	(3 cr.)
			SPEA-R 564	Environmental and Natural Resource Policy Design and Implementation	(3 cr.)

## Applications electives:

SPEA-E 518	Vector-based Geographic Information Systems	(3 cr.)	SPEA-R 625	Environmental Economics and Policy	(3 cr.)
SPEA-E 529	Application of Geographic Information Systems	(3 cr.)	SPEA-R 643	Natural Resource Management and Policy	(3 cr.)
SPEA-E 535	International Environmental Policy	(3 cr.)	SPEA-R 645	Environmental Law	(3 cr.)
SPEA-E 538	Statistics for Environmental Science	(3 cr.)	SPEA-S 596	Sustainable Development	(3 cr.)
SPEA-E 560	Environmental Risk Analysis	(3 cr.)	SPEA-V 517	Public Management Economics	(3 cr.)
SPEA-I 516	Public Management	(3 cr.)	SPEA-V 550	Communications for Public and Nonprofit Sectors (online)	(3 cr.)
SPEA-I 519	Database Management Systems	(3 cr.)	SPEA-V 550	Environmental Policy (online)	(3 cr.)
SPEA-L 564	Urban Management	(3 cr.)	ANTH-E 621	Food and Culture	(3 cr.)
SPEA-M 547	Negotiation and Dispute Resolution	(3 cr.)	GEOG-G 515	Sustainable Urbanism	(3 cr.)
SPEA-M 654	Public Program Management and Contracting	(3 cr.)	GEOG-G 544	Climate Change Impacts	(3 cr.)
SPEA-N 521	The Nonprofit and Voluntary Sector	(3 cr.)	GEOG-G 549	Political Ecology	(3 cr.)
SPEA-N 557	Proposal Development and Grant Administration	(3 cr.)	GEOG-G 553	Water and Society	(3 cr.)
SPEA-N 558	Fund Development for Nonprofits	(3 cr.)	GEOG-G 561	Human Dimensions of Global Environmental Change	(3 cr.)
SPEA-P 507	Data Analysis and Modeling for Public Affairs	(3 cr.)	GEOG-G 578	Global Change, Food, and Farming Systems	(3 cr.)
SPEA-P 539	Management Science for Public Affairs	(3 cr.)	SPH-O 510	Human Health and the environment	(3 cr.)
SPEA-P 541	Benefit-Cost Analysis	(3 cr.)	SPH-O 517	Ecosystem Management	(3 cr.)
SPEA-P 562	Public Program Evaluation	(3 cr.)	SPH-R 511	Organizational Leadership of Leisure Services	(3 cr.)
SPEA-R 513	Wildlife Law	(3 cr.)	SPH-R 523	Policy Studies in Outdoor Recreation and Tourism	(3 cr.)
			SPH-R 524	Strategic Fundraising and Partnerships for	(3 cr.)

SPH-R 525	Park, Recreation and Public Lands Foundations of Conservation, Parks, and Recreation	(3 cr.)
SPH-R 530	Comprehensive Park, Recreation and Facility Planning and Design	(3 cr.)

## Master of Science in Environmental Science

The Master of Science in Environmental Science (M.S.E.S.) program educates professionals who combine specialization in an area of environmental science with the analytical and policy skills necessary to apply that knowledge in a broader context. This degree program includes an experiential requirement, usually fulfilled by an internship; this requirement can also be fulfilled by the M.S.E.S. thesis concentration or through prior professional experience.

For students desiring more in-depth study in environmental science, the M.S.E.S. program is an excellent preparation for entry into the Ph.D. in Environmental Science program. Alternatively, students desiring more in-depth preparation in policy, law, or other related fields can combine their M.S.E.S. degree with a degree in Public Affairs (M.P.A.–M.S.E.S), law (M.S.E.S.–J.D.), or a number of other disciplines in Chemistry, Geological Sciences, or Physics.

### Program Qualifications

The M.S.E.S. Admissions Committee looks for applicants with an adequate background in quantitative and natural science subjects. As a minimum, you must have completed at least one (1) semester of Calculus and Chemistry with a lab. Familiarity with statistics and biology/ecology is considered desirable. An applicant who does not meet these minimum requirements may be admitted with a calculus and/or chemistry deficiency. In these cases, SPEA is interested in assisting you with options to address the deficiency(ies) that may have been identified by the M.S.E.S. Admissions Committee.

### Entrance Requirements

All students must have undergraduate coursework relevant to their intended area of focus in the M.S.E.S. degree program. Students are expected to have an adequate background in quantitative natural science subjects (e.g., mathematics, chemistry, and biology/ecology), which may vary according to the concentration the student selects.

### Prior Experience:

A student's experiential requirement may be satisfied through Prior Experience (PE). Depending upon the type and amount of experience, a student may qualify for a credit reduction as well. There are three categories of PE (Professional, Military, and Volunteer) available to MPA, MSES, MPA-MSES, and MES students. MAAA and MAAA-MPA students have different guidelines for PE, as they are governed by the University Graduate School. Applications for the different types of PE may be picked up in the Master's Programs Office (MPO – SPEA A304) or online via the Current Student Portal in the Forms section. Completed forms should be returned to the O'Neill Graduate Records Office (SPEA A328 or [oneillrc@indiana.edu](mailto:oneillrc@indiana.edu)) to be advanced to the appropriate Faculty Program Director for review.

- PE waivers and credit reductions are granted for experience gained prior to taking courses in the MPA, MES, and MSES programs.
- Applications for PE must be submitted within the first 24-credit hours or they will be denied.

- Students may be approved for more than one type of PE, but the combined credit reduction cannot exceed 12-credit hours.
- Credit reductions cannot result in the elimination of degree or concentration requirements. Students receiving prior experience credit reductions should carefully plan the balance of their program with an advisor.
- A student may not apply for PE with any of O'Neill's outside, dual degree programs (e.g., MPA-MA, MSES-JD). All of O'Neill's outside dual degree programs reflect a discounted credit hour program in an effort to streamline the academic demands for the student. Further credit reductions are not negotiable. This does not apply to O'Neill's dual MPA-MSES and MAAA-MPA degree.
- Determination of PE credit is made separately from decisions about transfer of credit. Under no circumstances will the prior experience credit and transfer credit total more than 21-credit hours.

### Professional Experience:

Experiential waivers and credit reductions can be granted for prior professional or technical work experience. The appropriate Faculty Program Director determines if the experience qualifies for a waiver and/or reduction. In general, credit reductions require work experience above entry level that involves some independent managerial, analytic, or scientific responsibility and work that articulates with the student's current field of study. Applicants may appeal a professional credit decision by submitting a request, in writing, for reconsideration and providing additional information. Students receiving prior professional experience credit should carefully plan the balance of their program with a faculty advisor.

### General guidelines to qualify for Professional Experience:

Work must have been full-time, either paid or unpaid. To receive a waiver of the degree's experiential requirement, work experience should roughly equal or surpass that of a summer internship. To qualify for credit reduction in addition to a waiver of the experiential requirement, experience must have been with a single entity for at least two years (consulting work may present an exception). Position may be with government, private firm, or nonprofit organization, but the work must be explicitly related to a MSES career path, regardless of the type of employer. Employing entity may be domestic or international. Documentation from supervisors may be required.

### MSES Guidelines:

- To receive a 3-credit-hour reduction, a student must have a minimum of two years' technical, administrative, scientific, and/or science-based environmental policy experience with a government, nonprofit, or private agency.
- 6 credit-hours is generally possible for two to four years of relevant full-time analytic, technical, administrative, scientific, and/or science-based, environmental policy experience, with significant responsibilities, for example, in research design, program leadership, budgetary oversight, organizational or staff development, analysis, or planning.
- A 9-credit-hour reduction is possible for five to seven years of relevant full-time research, analytic,

technical, administrative, and/or science-based policy experience. At this point, at least one higher-level, multi-year assignment is expected, including directing research, responsibility for supervision of staff, budget preparation, or organizational control of public or nonprofit agencies or private companies.

- 12-credit-hours is possible for eight or more years of relevant experience such as outlined in the bullet above, leading to one or more executive or similarly senior assignments.

### Military Experience:

Students with at least two years of active duty or full-time guard/reserve service OR four years of part-time guard/reserve service with the United States military are eligible for an experiential waiver and a minimum 6-credit reduction. Up to a 12-credit reduction is possible for four years of active duty or full-time guard/reserve service OR eight years of part-time guard/reserve service with the United States military. Proof of service will be required.

### Volunteer Experience:

Students who have participated as a volunteer in Peace Corps, AmeriCorps, or Teach For America are eligible for a credit reduction based on years of service, as well as a waiver of their experiential component. The O'Neill School will grant a 3-credit reduction for one year of service and a 6-credit reduction for two years of service. Proof of service will be required.

### Accelerated Master of Science in Environmental Science

On the Bloomington campus, the Accelerated Master's Program (AMP) allows exceptional undergraduate O'Neill students to earn both their undergraduate degree and a Master of Public Affairs (MPA) or Master of Science in Environmental Science (MSES) within an accelerated time frame (generally five years).

Participation in this program may allow the student to fulfill some graduate program requirements during their senior or fourth year. Depending upon the path chosen, some graduate courses may count for both graduate and undergraduate degree requirements. For additional information, including major specific requirements, students should meet with their undergraduate academic advisor.

Students wishing to participate in the AMP must meet these minimum requirements:

- Have a minimum undergraduate cumulative GPA of 3.5 for the MPA or 3.0 for the MSES.
- Earn at least 96 credit hours in the undergraduate degree before AMP start, including specified courses in the major (see undergraduate advising for major specific requirements).
- Complete the undergraduate internship prior to AMP start, and if a O'Neill honors student, complete the honors thesis requirement.
- Satisfy all undergraduate general education, minors, and/or certificate requirements before AMP start.
- Complete an academic advising planning session and statement of academic intent prior to the beginning of junior or third year (at least one year prior to intended AMP start).

### Degree Requirements

The M.S.E.S. program requires 48 credit hours distributed among four sets of courses:

- science courses
- policy and management courses
- tool skill courses
- and an experiential requirement

There are no required courses per se; however, each student is expected to demonstrate several competencies, depending on his or her concentration. These competencies include relevant natural and physical sciences, economics, policy or law, and quantitative problem solving. A Curriculum Advisory Committee works with the student to ensure that these competencies are met and that the student is pursuing a suitable plan of study. This curriculum provides students with a general knowledge of environmental science, the tool skills to allow them to apply that knowledge, and a specialized area of expertise.

### Environmental Science Core Competencies Required courses (15 credit hours)

Each student should demonstrate a competency in the following areas of environmental science: mathematics, statistics, chemistry, engineering principles, and ecology. The selection of courses may vary according to the students background. Some or all of the following course categories may be appropriate to be determined in consultation with the gatekeepers for each course category.

SPEA-E 526	Applied Mathematics for Environmental Science	(3 cr.)
SPEA-E 527	Applied Ecology	(3 cr.)
SPEA-E 536	Environmental Chemistry	(3 cr.)
SPEA-E 538	Statistics for Environmental Science	(3 cr.)
<b>OR</b>		
SPEA-V 506	Statistical Analysis for Effective Decision Making	(3 cr.)
SPEA-E 552	Environmental Engineering	(3 cr.)

### Economics, Management, and Policy Core Competencies

(Typically 6–12 credit hours) Each student should demonstrate a competency in the following areas of environmental management. The selection of courses may vary according to the student's concentration and professional objectives. Courses should be selected in consultation with a faculty advisor.

SPEA-E 535	International Environmental Policy	(3 cr.)
SPEA-E 543	Environmental Management	(3 cr.)

SPEA-R 625	Environmental Economics and Policy	(3 cr.)
SPEA-R 643	Environmental Resource Management and Policy	(3 cr.)
SPEA-R 645	Environmental Law	(3 cr.)
SPEA-S 596	Sustainable Development	(3 cr.)
SPEA-V 517	Public Management Economics	(3 cr.)

### Tool Skill Courses

(Typically 3–9 credit hours) Students are encouraged to acquire competency in analytical methods by focusing on tool skills appropriate to their concentration. Courses should be selected in consultation with a faculty advisor.

SPEA-E 502	Water Quality Modeling	(3 cr.)
SPEA-E 518	Vector-based Geographic Information Systems	(3 cr.)
SPEA-E 529	Applications of Geographic Information Systems	(3 cr.)
SPEA-E 554	Groundwater Flow Modeling	(3 cr.)
SPEA-E 555	Introduction to Coding for Environment and Policy	(1 cr.)
SPEA-E 555	Python Programming for Environment and Policy	(1 cr.)
SPEA-E 555	Using R for Environment and Policy	(1 cr.)
SPEA-E 560	Environmental Risk Analysis	(3 cr.)
SPEA-P 507	Data Analysis and Modeling for Public Affairs	(3 cr.)
SPEA-P 539	Management Science for Public Affairs	(3 cr.)
SPEA-P 541	Benefit Cost Analysis	(3 cr.)
SPEA-P 562	Public Program Evaluation	(3 cr.)

### Capstone Course

(3 credit hours) Each candidate for the M.S.E.S. degree should take a course during which they participate in a team to carry out an integrative project that addresses a multidisciplinary problem. Completion of the MSES Thesis Concentration satisfies the MSES capstone requirement. Students interested in completing a research

thesis will find additional information on the MSES Thesis Concentration pages. This requirement may be met in one of the following ways:

- SPEA-V 600 Capstone in Public and Environmental Affairs, sections with an environmental focus.
- An alternative course with a similar structure, such as SPEA-E 546 Stream Ecology, SPEA-E 517 BMP Design for Healthy Urban Watersheds or SPEA-E 560 Environmental Risk Analysis or other approved course.
- Completion of the MSES Thesis Concentration satisfies the MSES capstone requirement. Students interested in completing a research thesis will find additional information on the MSES Thesis Concentration pages.

All capstone projects are expected to culminate in a formal report and public presentation.

### Experiential Requirement

Each candidate for the MSES degree must obtain professionally relevant experience through one of the following options: an approved internship (includes research internships) (SPEA-E 589; 0–6 credit hours), completion of the MSES thesis concentration, or the award of prior professional experience credit. Students are encouraged to discuss with faculty members the relative merits of their experience opportunities, according to individual career objectives.

### Concentrations

(18 credit hours) Each student should select one of the following concentrations. Topics courses and independent study credits may be included in any concentrations with the approval of a faculty advisor.

- [Ecology and Conservation](#)
- [Energy](#)
- [Environmental Chemistry, Toxicology, and Risk Assessment](#)
- [Water Resources](#)
- [Specialized](#)
- [Thesis](#)

### Ecology and Conservation Concentration

The ecology and conservation concentration (18 credit hours) focuses on problem-solving techniques applied to current ecological issues. The diversity of the earth's living species in both natural and managed ecosystems offers students a variety of study areas within ecology and conservation, including forest ecology and management, fisheries and wildlife management, soil and watershed management, endangered species, and wetlands. Courses should be selected in consultation with a faculty advisor.

### Field and Identification Core (6 credit hours)

Select two courses from the following list:

SPEA-E 460	Fisheries and Wildlife Management	(3 cr.)
SPEA-E 461	Fisheries and Wildlife	(3 cr.)

	Management Laboratory	
SPEA-E 528	Forest Ecology and Management	(3 cr.)
SPEA-E 540	Wetlands Ecology and Management	(4 cr.)
SPEA-E 546	Stream Ecology	(3 cr.)
SPEA-E 555	Plants and Plant Communities	(3 cr.)
SPEA-E 556	Limnology	(4 cr.)
BIOL-B 300	Vascular Plants	(4 cr.)
BIOL-L 376	Biology of Birds	(4 cr.)

### Electives (12 credit hours)

Take an additional four classes from the above list or from the additional electives listed below.

SPEA-E 517	BMP Design for Healthy Urban Watersheds	(3 cr.)
SPEA-E 520	Environmental Toxicology	(3 cr.)
SPEA-E 522	Urban Forest Management	(3 cr.)
SPEA-E 534	Restoration Ecology	(3 cr.)
SPEA-E 545	Lake and Watershed Management	(3 cr.)
SPEA-E 550	Soil Science and Management	(3 cr.)
SPEA-E 555	Urban Ecology	(3 cr.)
SPEA-E 557	Conservation Biology	(3 cr.)
SPEA-E 591	Climate Change Impacts on Natural Resources	(3 cr.)
BIOL-L 579	Community Ecology	(3 cr.)
GEOL-G 544	Methods in Analytical Geochemistry	(3 cr.)

### Energy Concentration

The energy concentration (18 credit hours) provides students an educational experience in topics associated with energy production, distribution, and use, using an interdisciplinary approach in science, technology, and public policy. This concentration allows flexibility in the choice of courses used to meet the concentration requirements and to meet each student's professional goals.

### Required Courses (6 credit hours)

SPEA-E 574	Energy Systems	(3 cr.)
SPEA-R 674	Energy Economics and Policy	(3 cr.)

### Electives (12 credit hours)

SPEA-E 503	Natural Gas: Technical and Policy Challenges	(3 cr.)
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SPEA-E 515	Fundamentals of Air Pollution	(3 cr.)
SPEA-E 518	Vector-Based Geographic Information Systems	(3 cr.)
SPEA-E 529	Application of Geographic Information Systems	(3 cr.)
SPEA-E 591	Climate Change Impacts on Natural Resources	(3 cr.)
SPEA-R 515	Renewable and Nuclear Energy	(3 cr.)
*EAS-A 547	Instrumentation for Atmospheric Science	(3 cr.)
*EAS-G 534	Atmospheric Dynamics II: Synoptic to Global Scale	(3 cr.)
*EAS-G 564	Atmospheric Dynamics I: Boundary-Layer Meteorology	(3 cr.)
*EAS-G 571	Principles of Petroleum Geology	(3 cr.)
*EAS-G 576	Climate Change	(3 cr.)
*EAS-G 587	Organic Geochemistry	(3 cr.)
*GEOG-G 532	Physical Climatology	(3 cr.)
*GEOG-G 544	Climate Change Impacts	(3 cr.)

Note: Credit will not be given for both SPEA-E 518 and SPEA-E 529

### Environmental Chemistry, Toxicology, and Risk Assessment Concentration

The environmental chemistry, toxicology, and risk assessment concentration (18 credit hours) addresses the fate and transport of chemicals in the environment and the hazards and risks to human health and the environment associated with chemical pollution. Courses on the chemical/physical/biological reactions of pollutants in soil, aquatic, and atmospheric systems are included. Additional courses study the hazards associated with chemicals used in modern society, technologies available to manage and remediate contaminated sites, the toxicological effects of chemical exposure, and methods to assess risks associated with chemicals in the environment. Courses should be selected in consultation with a faculty advisor.

#### Core (9 credit hours)

Select one course from each of the following three groups:

#### Environmental Chemistry

SPEA-E 515	Fundamentals of Air Pollution	(3 cr.)
SPEA-E 521	PCBs, Dioxins and Flame Retardants	(3 cr.)

SPEA-E 539	Aquatic Chemistry	(3 cr.)
SPEA-E 564	Organic Pollutants: Environmental Chemistry and Fate	(3 cr.)
SPEA-E 570	Environmental Soil Science	(3 cr.)

#### Toxicology

SPEA-E 514	The Changing Landscape of Toxic Chemical Regulations	(3 cr.)
SPEA-E 520	Environmental Toxicology	(3 cr.)

#### Risk Analysis

SPEA-E 560	Environmental Risk Analysis	(3 cr.)
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#### Electives (9 credit hours)

Select an additional three courses from the above lists or from the additional electives listed below:

SPEA-E 502	Water Quality Modeling	
SPEA-E 542	Hazardous Materials	(3 cr.)
SPEA-E 544	Subsurface Microbiology and Bioremediation	(3 cr.)
SPEA-E 554	Groundwater Flow Modeling	(3 cr.)
SPEA-E 562	Solid and Hazardous Waste Management	(3 cr.)
EAS-A 547	Instrumentation for Atmospheric Science	(3 cr.)
EAS-G 587	Organic Geochemistry	(3 cr.)

#### Water Resources Concentration

The water resources concentration (18 credit hours) emphasizes scientific principles of water quantity and quality. Courses provide information and problem-solving skills using biological, chemical, and physical descriptions of water in the environment. Courses should be selected in consultation with a faculty advisor.

#### Core (9 credit hours)

Take three courses including at least one course from each section.

#### Physical and Chemical Aspects of Water:

SPEA-E 502	Water Quality Modeling	(3 cr.)
SPEA-E 539	Aquatic Chemistry	(3 cr.)
SPEA-E 554	Groundwater Flow Modeling	(3 cr.)
SPEA-E 555	Watershed Hydrology	(3 cr.)

EAS-G 544	Methods in Analytical Geochemistry	(3 cr.)
GEOG-G 551	Physical Hydrology	(3 cr.)
GEOL-G 550	Surface Water Hydrology	(3 cr.)

### Ecological Aspects of Water:

SPEA-E 516	Fisheries Management	(2 cr.)
SPEA-E 540	Wetlands Ecology and Management	(4 cr.)
SPEA-E 544	Subsurface Microbiology and Bioremediation	(3 cr.)
SPEA-E 546	Stream Ecology	(3 cr.)
SPEA-E 556	Limnology	(4 cr.)

### Electives (9 credit hours)

Select an additional three classes from the above lists or from the additional electives listed below.

SPEA-E 460	Fisheries and Wildlife Management	(3 cr.)
SPEA-E 461	Fisheries and Wildlife Management Lab	(3 cr.)
SPEA-E 517	BMP Design for Healthy Urban Watersheds	(3 cr.)
SPEA-E 534	Restoration Ecology	(3 cr.)
SPEA-E 545	Lake and Watershed Management	(3 cr.)
SPEA-E 557	Conservation Biology	(3 cr.)
SPEA-E 591	Climate Change Impacts on Natural Resources	(3 cr.)

### Specialized Concentration

(18 credit hours) In consultation with advisors, students may design curricula that anticipate their career and educational goals and reflect their background and training. Specialized concentrations must be approved by the student's faculty advisor and the appropriate faculty program director to ensure high standards of rigor, depth, and breadth. Specialized concentrations must be declared within the first 24 credit hours of a student's program

### Thesis Concentration

Students who wish to pursue their own research may do so under the MSES thesis concentration (18 credit hours). Note that a master's thesis is generally not required for admission to doctoral programs, although research experience (for example, through GAships or research internships) is strongly recommended. Students interested in research experience and considering a future doctoral degree should talk with the MSES faculty advisors to

determine what kinds of research experience will be most useful to them.

Students pursue the M.S.E.S. thesis concentration under the guidance of a major professor and thesis committee comprising at least 3 SPEA faculty (including the major advisor). Students must find a faculty member willing to work with them as a major professor, and must do so early in their degree, preferably in their first semester.

M.S.E.S. thesis concentrations must have a minimum of 18 credits, comprising environmental science coursework and research credit (E625), and may have as much as 24 credits. The mix of research and courses is designed and agreed upon among the student, major advisor, and other committee members, and must be approved by the M.S.E.S program director. When the thesis is completed, the student must successfully defend the thesis, providing a public presentation about the research and then making a closed-door defense to the thesis committee.

M.S.E.S. students taking the thesis concentration must still meet the requirement for at least 6 credits of Economics/Management/Policy coursework, which will typically fall outside the thesis concentration. The capstone requirement and experiential requirement are met by the thesis concentration: students do not need to take a specific capstone course nor are they required to complete an internship. This does not prevent thesis students from taking a capstone course or undertaking a traditional internship if they wish to do so.

For M.P.A.-M.S.E.S. students, the M.S.E.S. thesis concentration fulfills the concentration requirement for the M.S.E.S. degree. M.P.A.-M.S.E.S. students must also complete 12 concentration credits from the M.P.A. curriculum, as outlined in the requirements for the M.P.A.-M.S.E.S. degree. Alternatively, students may choose to complete an entire M.P.A. concentration.

Completion of the M.S.E.S. thesis concentration fulfills the capstone and experiential requirements for the M.P.A.-M.S.E.S. dual degree. This does not prevent thesis students from taking a capstone course or undertaking a traditional internship if they wish to do so.

## Master of Science in Environmental Science Dual Degree Programs

Master of Science in Environmental Science-Master of Public Affairs (M.S.E.S.-M.P.A.)

Master of Science in Environmental Science-Doctor of Jurisprudence (M.S.E.S.-J.D.)

Master of Science in Environmental Science-Master of Science in Intelligent Systems Engineering (M.S.E.S.-M.S.I.S.E.)

Master of Science in Environmental Science-Master of Science in Chemistry (M.S.E.S.-M.S.)

Master of Science in Environmental Science-Master of Science in Geological Sciences (M.S.E.S.-M.S.)

Master of Science in Environmental Science-Master of Sciences in Physics (M.S.E.S.-M.S.)

### Master of Science in Environmental Science–Doctor of Jurisprudence

The combined Master of Science in Environmental Science–Doctor of Jurisprudence program is a four-year, 115-credit-hour sequence of courses and research that provides depth and breadth in both environmental science and law. Both degrees are awarded when the student meets the degree requirements of the Maurer School of Law and O'Neill.

#### Application and Admission

The student must have a bachelor's degree in a physical or life science, engineering, or related field. Students interested in the dual M.S.E.S.–J.D. must apply to both the Maurer School of Law and the O'Neill School of Public and Environmental Affairs. Students normally apply to both schools concurrently for the combined program. It is possible, however, for a person already enrolled in the Maurer School of Law to apply for admission to the O'Neill School of Public and Environmental Affairs up to the end of the second year of law study. A student enrolled in O'Neill may seek admission to the Maurer School of Law up to the end of the first year of the M.S.E.S. program

#### Academic Standing

Grade point averages in the School of Law—Bloomington and O'Neill are computed separately. To continue in the program, the student must meet the academic standards in each school. A student failing in one school but meeting academic standards in the other may complete work for the degree in the school in which academic standards are being met. Such completion must be according to the same conditions required of regular (noncombination) degree candidates; that is, 82 credit hours for law and 48 credit hours for O'Neill. Students are eligible for honors in each school based on the criteria of each school.

#### Program Advisors

Students enrolled in the combined program are required to have a O'Neill faculty advisor and are encouraged to seek an advisor from the faculty of the Maurer School of Law. The co-advisors can then review and counsel with respect to each student's course selection for each semester to assure attainment of educational objectives.

#### School Residency

Students in the dual M.S.E.S.–J.D. program should enroll in courses through O'Neill the first year of their programs and through the Maurer School of Law in the second year of their programs. Alternatively, dual M.S.E.S.–J.D. students have the option of enrolling in courses through the Maurer School of Law in the first year and O'Neill in the second year. In the third and fourth years, or until the dual program is completed, students should enroll through the school in which the majority of their credit hours resides in each enrollment period.

#### Program Requirements (115 credit hours)

##### Master of Science in Environmental Science Requirements (36 credit hours)

Students are required to complete 36 credit hours of courses distributed among the environmental science competencies, environmental sciences focus, and a multidisciplinary capstone project.

### Environmental Science core competencies (15 credit hours)

Select 15 credit hours in consultation with an advisor:

SPEA-E 512	Risk Communication	(3 cr.)
SPEA-E 518	Vector-based Geographic Information Systems	(3 cr.)
SPEA-E 526	Applied Mathematics for Environmental Science	(3 cr.)
SPEA-E 527	Applied Ecology	(3 cr.)
SPEA-E 529	Applications for Geographic Information Systems	(3 cr.)
SPEA-E 536	Environmental Chemistry	(3 cr.)
SPEA-E 538	Statistics for Environmental Science	(3 cr.)
SPEA-E 560	Environmental Risk Analysis	(3 cr.)
SPEA-P 541	Benefit Cost Analysis	(3 cr.)
SPEA-P 562	Public Program Evaluation	(3 cr.)
SPEA-R 625	Environmental Economics and Policy	(3 cr.)
SPEA-R 643	Natural Resource Management	(3 cr.)
SPEA-V 517	Public Management Economics	(3 cr.)

### Environmental Science Focus (18 credit hours)

Select 18 credit hours in consultation with an advisor. Students are required to develop an area of specialization approved by a O'Neill faculty advisor. It is recommended that this be done in consultation with both dual law and environmental science faculty advisors.

### Capstone Course (3 credit hours)

select one of the following:

SPEA-E 517	BMP Design for Healthy Urban Watersheds	(3 cr.)
SPEA-E 546	Stream Ecology	(3 cr.)
SPEA-E 560	Environmental Risk Analysis	(3 cr.)
SPEA-E 625	Research in Environmental Science	(3 cr.)
SPEA-V 600	Capstone in Public and Environmental Affairs	(3 cr.)

### Doctor of Jurisprudence Requirements (79 credit hours)

Students are required to complete 79 credit hours of law courses and to satisfy all requirements for the degree Doctor of Jurisprudence. For specific requirements, see the Maurer School of Law Bulletin.

### Dual M.S.E.S. - M.S. Intelligent Systems Engineering

Master of Science in Environmental Science–Master of Science in Intelligent Systems Engineering (M.S.E.S.–M.S.I.S.E)

Students must earn at least 51 credits in total, including at least 21-credits each in the M.S.E.S. and M.S.I.S.E. programs. The M.S.E.S. and M.S.I.S.E. degrees are awarded concurrently after the student has completed the requirements for both degrees.

### MSES Core Requirements (9 credit hours)

These courses establish the fundamental competencies required of environmental engineers and scientists.

The following two courses:

SPEA-E 513	Environmental Project Management	(3 cr.)
SPEA-E 538	Statistics for Environmental Science <b>OR</b>	(3 cr.)
SPEA-V 506	Statistical Analysis for Effective Decision Making	(3 cr.)

**Note:** With demonstration of prior coursework in statistics and/or probability theory, these credits can be replaced with any course from the next list.

Select **one** course from the following list:

SPEA-E 431	Water supply and Wastewater Treatment	(3 cr.)
SPEA-E 515	Fundamentals of Air Pollution	(3 cr.)
SPEA-E 520	Environmental Toxicology	(3 cr.)
SPEA-E 527	Applied Ecology	(3 cr.)
SPEA-E 536	Environmental Chemistry	(3 cr.)
SPEA-E 550	Soil Science and Management	(3 cr.)
SPEA-E 555	Fluid Mechanics	(3 cr.)
SPEA-E 564	Organic Pollutants: Environmental Chemistry and Fate	(3 cr.)
SPEA-E 574	Energy Systems	(3 cr.)

### Economics, Management, and Policy Core Competencies (6 credit hours)

Justification: Courses in this section provide context for environmental and intelligent systems engineering, including how science impacts and is impacted by social, political, and economic systems.

SPEA-E 535	International Environmental Policy	(3 cr.)
SPEA-E 543	Environmental Management	(3 cr.)
SPEA-E 560	Environmental Risk Analysis	(3 cr.)
SPEA-P 539	Management Science for Public Affairs	(3 cr.)
SPEA-P 541	Benefit Cost Analysis	(3 cr.)
SPEA-R 512	Climate Law and Policy	(3 cr.)
SPEA-R 521	Domestic Environmental Policy	(3 cr.)
SPEA-R 531	Water Law	(3 cr.)
SPEA-R 532	Water Policy and Economics	(3 cr.)
SPEA-R 533	Public Natural Resource Law	(3 cr.)
SPEA-R 590	Energy Policy: A Nation State Perspective	(3 cr.)
SPEA-R 625	Environmental Economics and Policy	(3 cr.)
SPEA-R 643	Natural Resource Management and Policy	(3 cr.)
SPEA-R 645	Environmental Law	(3 cr.)
SPEA-R 674	Energy Economics and Policy	(3 cr.)
SPEA-S 596	Sustainable Development	(3 cr.)
SPEA-V 517	Public Management Economics	(3 cr.)
SPEA-V550	Energy Law and Policy	(3 cr.)
SPEA-X 511	Human Behavior and Energy Consumptions	(3 cr.)

Other SPEA courses may be approved by advisor.

### MSISE Core Requirements (7 credit hours)

These courses establish the fundamental competencies required of environmental engineers and scientists.

The following **two** courses:

ENGR-E 500	Introduction to Intelligent Systems Engineering	(1 cr.)
SPEA-E 552	Environmental Engineering	(3 cr.)

Select **one** course from the following list:

ENGR-E 501	Introduction to Computer Engineering	(3 cr.)
ENGR-E 502	Introduction to Cyberphysical Systems	(3 cr.)
ENGR-E 503	Introduction to Intelligent Systems	(3 cr.)
ENGR-E 504	Introduction to Bioengineering	(3 cr.)
ENGR-E 505	Introduction to Nanoengineering	(3 cr.)
ENGR-E 506	Introduction to Neuroengineering	(3 cr.)

### MSISE Computing Tools Requirements (3 credit hours)

Familiarity with multiple computing languages and the ability to learn to operate across them is a requisite skillset in this field.

Select at least 3 credits from the following courses:

ENGR-E 501	Introduction to Computer Engineering	(3 cr.)
ENGR-E 502	Introduction to Cyberphysical Systems	(3 cr.)
ENGR-E 503	Introduction to Intelligent Systems	(3 cr.)
ENGR-E 511	Machine Learning and Signal Processing	(3 cr.)
ENGR-E 516	Engineering Cloud Computing	(3 cr.)
ENGR-E 517	High Performance Computing	(3 cr.)
ENGR-E 533	Deep Learning Systems	(3 cr.)
INFO-D 590	Data Science Onramp (variable topics)	(1-3 cr.)
SPEA-E 555	Intro to Coding for Environment and Policy	(1 cr.)
SPEA-E 555	Python Programming for Environment and Policy	(1 cr.)
SPEA-E 555	Using R for Environment and Policy	(1 cr.)

**Note:** Students may apply for a Computing Tools Waiver based on previously completed coursework or existing expertise, in which case these 3 credits would be replaced by an ENGR course with instructor approval. *Other courses may be approved by advisor.*

### Experiential Requirement (0-3 credit hours)

Each candidate for the MS-ES/ISE dual degree program must obtain professionally relevant experience through one of the following options:

1. Approved Internship SPEA-E 589 or ENGR-E 591 (0-3 credit hours)

The student will work with the O'Neill Career Hub to arrange for a suitable internship. Internships vary greatly according to the expectations and requirements of the sponsor. Students are expected to give careful attention in the selection of an internship suitable to their professional goals. Typically, students do not use credit hours for the internship, and as a result, have minimal fees for the experience. However, students who want the additional credit hours can receive up to 3 credit hours for an internship involving the appropriate amount of work; these students will owe fees for the 3 credit hours.

2. Prior Professional Experience (3 credit hours)

Students who have had significant environmental management, computing, technical or design work experience in the past may receive 3 credit hours. To receive 3 credit hours, a student must have a minimum of one year's work experience. Under no circumstances will prior professional experience credit and transfer credit total more than 12 hours. Students receiving prior professional experience credit should carefully plan the balance of their program with their faculty advisors.

### Capstone Requirements (3 credit hours)

Each candidate for the MS-ES/ISE dual degree program should take a 3-credit hour course during which they participate in a team to carry out an integrative project that addresses a multidisciplinary problem, or the candidate should conduct a graduate-level research project that culminates in a publication or thesis. Capstone course credit may be double-counted in either Concentration or Tool Skill requirements.

The capstone requirement may be met in one of the following ways:

SPEA-V 600	Capstone in Public and Environmental Affairs (sections with an environmental focus)
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Or an approved alternative course with a similar structure. Current approved courses include:

SPEA-E 517	BMP Design for Healthy Urban Watersheds	(3 cr.)
SPEA-E 546	Stream Ecology	(3 cr.)
SPEA-E 560	Environmental Risk Analysis	(3 cr.)
ENGR-E 790	ISE Capstone Design I	(3 cr.)
ENGR-E 791	ISE Capstone Design II	(3 cr.)
<b>or</b>	Additional approved courses of a similar format	

### MS-ES/ISE DUAL DEGREE CONCENTRATION / TRACK (at least 20 credit hours)

Courses taken for the concentration allow schools to acquire competency in tools, skills, methods, and

approaches used in environmental science and intelligent systems engineering. Courses taken to fulfill requirements cannot be “double counted”

### **SPEA Environmental Science Electives**

At least 6 credit hours must be selected from the following:

SPEA-E 502	Water Quality Modeling	(3 cr.)
SPEA-E 514	Changing Landscape of Toxic-Chemical Regulation	(3 cr.)
SPEA-E 517	BMP Design for Healthy Urban Watersheds	(3 cr.)
SPEA-E 518	Vector Based GIS	(3 cr.)
SPEA-E 520	Environmental Toxicology	(3 cr.)
SPEA-E 529	Application of Geographic Information Systems	(3 cr.)
SPEA-E 534	Restoration Ecology	(3 cr.)
SPEA-E 540	Wetlands Ecology and Management	(3 cr.)
SPEA-E 542	Hazardous Materials	(3 cr.)
SPEA-E 545	Lake and Watershed Management	(3 cr.)
SPEA-E 546	Stream Ecology	(3 cr.)
SPEA-E 554	Groundwater Flow Modeling	(3 cr.)
SPEA-E 555	Intro to Coding for Environment and Policy	(1 cr.)
SPEA-E 555	Python Programming for Environment and Policy	(1 cr.)
SPEA-E 555	Using R for Environment and Policy	(1 cr.)
SPEA-E 555	Topics in Environmental Science (approved on an individual basis by an advisor)	(1-4 cr.)
SPEA-E 556	Limnology	(4 cr.)
SPEA- E 560	Environmental Risk Analysis	(3 cr.)
SPEA-E 562	Solid and Hazardous Waste Management	(3 cr.)
SPEA-E 591	Climate Change Impacts on Natural Resources	(3 cr.)

### **Intelligent Systems Engineering Electives**

At least 11 credit hours must be selected from the following:

ENGR-E 501	Introduction to Computer Engineering	(3 cr.)
ENGR-E 502	Introduction to Cyberphysical Systems	(3 cr.)
ENGR-E 503	Introduction to Intelligent Systems	(3 cr.)
ENGR-E 504	Introduction to Bioengineering	(3 cr.)
ENGR-E 505	Introduction to Nanoengineering	(3 cr.)
ENGR-E 506	Introduction to Neuroengineering	(3 cr.)
ENGR-E 510	Engineering Distributed Systems	(3 cr.)
ENGR-E 511	Machine Learning and Signal Processing	(3 cr.)
ENGR-E 512	Advanced Computer Architecture	(3 cr.)
ENGR-E 513	Engineering Compilers	(3 cr.)
ENGR-E 514	Embedded Systems	(3 cr.)
ENGR-E 516	Engineering Cloud Computing	(3 cr.)
ENGR-E 517	High Performance Computing	(3 cr.)
ENGR-E 518	Engineering Networks	(3 cr.)
ENGR-E 519	Engineering Operating Systems	(3 cr.)
ENGR-E 522	Sensors and Remote Sensing	(3 cr.)
ENGR-E 523	Internet of Things	(3 cr.)
ENGR-E 525	Robotics I	(3 cr.)
ENGR-E 531	Physical Optimization	(3 cr.)
ENGR-E 532	Systems Engineering	(3 cr.)
ENGR-E 533	Deep Learning Systems	(3 cr.)
ENGR-E 534	Big Data Applications	(3 cr.)
ENGR-E 537	Rapid Prototyping for Engineering	(3 cr.)
ENGR-E 540	Computational Methods for 3-D Biomaterials	(3 cr.)
ENGR-E 541	Simulating Cancer as an Intelligent System	(3 cr.)

ENGR-E 551	Nanoscale Simulation and Engineering Applications	(3 cr.)
ENGR-E 565	Image Processing for Medical Applications	(3 cr.)
ENGR-E 583	Information Visualization	(3 cr.)
ENGR-E 584	Scientific Visualization	(3 cr.)
ENGR-E 599	Topics in Engineering	(1-3 cr.)

Additional electives that may be used to meet the required total credit hours for the dual degree include any courses listed above not used to satisfy a degree requirement. Additional approved electives are included below from closely related disciplines. Courses not listed may be approved by an advisor with justification.

#### SPEA non-E courses

SPEA-I 516	Public Management Information Systems	(3 cr.)
SPEA-I 519	Database Management Systems	(3 cr.)
SPEA-I 611	Design of Information Systems	(3 cr.)
SPEA-I 613	Implementation of Information Systems	(3 cr.)
SPEA-P 507	Data Analysis and Modeling for Public Affairs	(3 cr.)

#### Geography courses

GEOG-G 532	Physical Climatology	(3 cr.)
GEOG-G 538	Geographic Information Systems	(3 cr.)
GEOG-G 588	Applied Spatial Statistics	(3 cr.)

#### Earth and Atmospheric Sciences courses

EAS-G 514	Geophysical Signal Analysis	(3 cr.)
EAS-G 534	Dynamic Meteorology: Synoptic to Global Scale	(3 cr.)
EAS-G 538	Air Pollution Meteorology	(3 cr.)
EAS-G 540	Physical Meteorology and Climatology	(3 cr.)

EAS-G 544	Methods in Analytical Geochemistry	(3 cr.)
EAS-G 547	Instrumentation for Atmospheric Science	(3 cr.)
EAS-G 548	Sustainable Energy Systems	(3 cr.)
EAS-G 559	Earth Surface Processes	(3 cr.)
EAS-G 564	Dynamic Meteorology: Boundary-layer Meteorology	(3 cr.)
EAS-G 576	Climate Change	(3 cr.)
EAS-G 594	Numerical Weather Prediction	(3 cr.)
EAS-G 612	Inverse Methods in Geophysics	(2 cr.)
EAS-G 690	Advanced Geology Seminar, Mathematical Modeling in the Geosciences	(3 cr.)
EAS-G 690	Advanced Geology Seminar, Fluvial Processes and Sediment Transport	(3 cr.)

#### Biology / Biotech courses

BIOL-B 572	Photobiology	(3 cr.)
BIOL-L 510	Introduction to the Research Laboratory	(3 cr.)
BIOL-L 519	Bioinformatics: Theory and Application	(3 cr.)
BIOL-L 522	Advanced Eukaryotic Molecular Genetics	(3 cr.)
BIOL-L 523	Critical Analysis of the Scientific Literature	(1-6 cr.)
BIOL-L 560	Physiological Ecology	(3 cr.)
BIOL-L 572	Microbial Ecology	(3 cr.)
BIOL-L 575	Ecosystem Structure and Function	(3 cr.)
BIOL-L 577	Theoretical Ecology	(3 cr.)
BIOL-M 511	Molecular Biology of Prokaryotes	(3 cr.)

#### Informatics courses

INFO-D 590	Data Science Onramp (variable topics)	(1-3 cr.)
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INFO-I 400/I590	Environmental Policy, Health & Design	(3 cr.)
INFO-I 590	Smart Cities	(3 cr.)

#### Information and Library Science courses

ILS-Z 503	Representation and Organization	(3 cr.)
ILS-Z 510	Introduction to Information Studies	(3 cr.)
ILS-Z 511	Database Design	(3 cr.)
ILS-Z 512	Information Systems Design	(3 cr.)

#### Mathematics courses

MATH-M 511/M 512	Real Variable I & II	(3 cr.)
MATH-M 513/M 514	Complex Variables I & II	(3 cr.)
MATH-M 540/M 541	PDEs I & II	(3 cr.)
MATH-M 544/M 545	ODEs I & II	(3 cr.)
MATH-M 571/M 572	Numerical Methods I & II	(3 cr.)
MATH-M 671/M 672	Numerical Differential and Integral Equations I & II	(3 cr.)

#### Physics courses

PHYS-P 555	Quantum Computation and Information	(3 cr.)
PHYS-P 582	Biological and Artificial Neural Networks	(3 cr.)
PHYS-P 583	Signal Processing and Information Theory in Biology	(3 cr.)
PHYS-P 609	Computational Physics	(3 cr.)
PHYS-P 610	Computational Physics II	(3 cr.)

#### Statistics courses

STAT-S 501	Statistical Methods I	(3 cr.)
STAT-S 503	Statistical Methods II	(3 cr.)
STAT-S 520	Introduction to Statistics	(3 cr.)
STAT-S 611	Statistical Computing	(3 cr.)

#### Chemistry courses

CHEM-C 501	Chemical Instrumentation	(3 cr.)
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CHEM-C 503	Spectrometric Methods of Structure Determination	(3 cr.)
CHEM-C 540	Advanced Organic Chemistry	(3 cr.)
CHEM-C 565	Nuclear Chemistry	(3 cr.)
CHEM-C 566	Molecular Optical Spectroscopy	(3 cr.)
CHEM-C 567	Chemical Statistical Mechanics	(3 cr.)
CHEM-C 572	Computational Chemistry and Molecular Modeling	(3 cr.)
CHEM-C 611	Electroanalytical Chemistry	(1.5-3 cr.)
CHEM-C 612	Spectrochemical Methods of Analysis	(1.5-3 cr.)
CHEM-C 613	Mass Spectrometry and Stable Isotopes	(1.5-3 cr.)
CHEM-C 614	Chromatography	(1.5-3 cr.)
CHEM-C 616	Surface Analysis and Surface Chemistry	(1.5 cr.)
CHEM-C 633	Inorganic Chemistry of Main Group Elements	(2 cr.)
CHEM-C 634	Transition Metal Chemistry	(3 cr.)

#### Dual M.S.E.S. - M.S. in Chemistry

Master of Science in Environmental Science–Master of Science in Chemistry (M.S.E.S.–M.S.)

[Department of Chemistry](#)

Students in the MSES-MS Chemistry program take 51 credit hours (of which, at least 21 credits must be from both O'Neill and Chemistry). Note that double counting of courses among components is permitted, so long as overall credit requirements are met.

#### Chemistry Core (9 credit hours)

In consultation with an advisor, select 3 courses from the following list:

CHEM-C 503	Methods of Structure Determination	(3 cr.)
CHEM-C 540	Advanced Organic Chemistry	(3 cr.)
CHEM-C 565	Nuclear Chemistry	(3 cr.)
CHEM-C 566	Spectroscopy	(3 cr.)
CHEM-C 567	Statistical Mechanics	(3 cr.)
CHEM-C 572	Computational Chemistry and Molecular Modeling	(3 cr.)

CHEM-C 611	Electroanalytical Chemistry	(1.5-3 cr.)
CHEM-C 613	Mass Spectrometry	(1.5-3 cr.)
CHEM-C 614	Chromatography	(1.5-3 cr.)
CHEM-C 616	Surface Analysis and Surface Chemistry	(1.5-3 cr.)
CHEM-C 633	Inorganic Chemistry of Main Group Elements	(3 cr.)
CHEM-C 634	Transition Metal Chemistry	(3 cr.)

SPEA-R 643	Natural Resource Management and Policy	(3 cr.)
SPEA-R 645	Environmental Law	(3 cr.)
SPEA-R 674	Energy Economics and Policy	(3 cr.)
SPEA-S 596	Sustainable Development	(3 cr.)
SPEA-V 517	Public Management Economics	(3 cr.)

### Environmental Science Core Competencies (9 credit hours)

In consultation with an advisor, select three courses from the following list:

SPEA-E 515	Fundamentals of Air Pollution	(3 cr.)
SPEA-E 526	Applied Mathematics for Environmental Science	(3 cr.)
SPEA-E 527	Applied Ecology	(3 cr.)
SPEA-E 536	Environmental Chemistry	(3 cr.)
SPEA-E 538	Statistics for Environmental Science	(3 cr.)
SPEA-E 539	Aquatic Chemistry	(3 cr.)
SPEA-E 552	Environmental Engineering	(3 cr.)
SPEA-E 564	Organic Pollutants: Environmental Chemistry and Fate	(3 cr.)
SPEA-E 570	Environmental Soil Science	(3 cr.)

### Economics, Management, and Policy Core Competencies (Typically 6-9 credit hours)

Students are encouraged to acquire competency in these areas of environmental management. The selection of courses will vary according to the student's professional objectives and an advisor can approve alternative courses that may be relevant.

SPEA-E 535	International Environmental Policy	(3 cr.)
SPEA-E 543	Environmental Management	(3 cr.)
SPEA-E 574	Energy Systems	(3 cr.)
SPEA-R 590	Energy Policy from a Nation-State Perspective	(3 cr.)
SPEA-R 625	Environmental Economics and Policy	(3 cr.)

### Tool Skills Courses (3 credit hours)

Students are encouraged to acquire competency in analytical methods by focusing on tool skills appropriate to their professional objectives.

SPEA-E 512	Risk Communication	(3 cr.)
SPEA-E 518	Vector-based Geographic Information Systems	(3 cr.)
SPEA-E 529	Application of Geographic Information Systems	(3 cr.)
SPEA-E 538 / SPEA-V 506	Statistics for Environmental Science	(3 cr.)
SPEA-E 554	Groundwater Flow Modeling	(3 cr.)
SPEA-E 560	Environmental Risk Analysis	(3 cr.)
SPEA-M 547	Negotiation and Dispute Resolution for Public Affairs	(3 cr.)
SPEA-P 507	Data Analysis and Modeling for Public Affairs	(3 cr.)
SPEA-P 539	Management Science for Public Affairs	(3 cr.)
SPEA-P 541	Benefit-Cost Analysis	(3 cr.)
SPEA-P 562	Public Program Evaluation	(3 cr.)
CHEM-C 501	Chemical Instrumentation	(4 cr.)
CHEM-C 503	Methods of Structure Determination	(3 cr.)
CHEM-C 565	Nuclear Chemistry	(3 cr.)
CHEM-C 566	Spectroscopy	(3 cr.)
CHEM-C 567	Statistical Mechanics	(3 cr.)
CHEM-C 572	Computational Chemistry and Molecular Modeling	(3 cr.)

CHEM-C 611	Electroanalytical Chemistry	(1.5-3 cr.)
CHEM-C 613	Mass Spectrometry	(1.5-3 cr.)
CHEM-C 615	Bioanalytical Chemistry	(1.5-3 cr.)
CHEM-C 616	Surface Analysis and Surface Chemistry	(1.5-3 cr.)

### Dual Program Capstone (3 credit hours)

Each candidate for the MSES-MS in Chemistry dual degree program should take a 3-credit hour course during which they participate in a team to carry out an integrative project that addresses a multidisciplinary problem, or the candidate should conduct a graduate-level research project that culminates in a publication or thesis (theses will be formatted according to Chemistry Department requirements). Capstone course credit may be double-counted in either Concentration or Tool Skill requirements.

The capstone requirement may be met in one of the following ways:

SPEA-V 600	Capstone in Public and Environmental Affairs	(3 cr.)
SPEA-E 560	Environmental Risk Analysis (or an approved alternative course with a similar structure)	(3 cr.)
Master's Thesis	(Completed under the supervision of a graduate faculty member, overseen and approved by a graduate committee consisting of the research advisor and one of the advisors for the dual degree program, or a publication resulting from similar research).	(3 cr.)

### Experiential Requirement (0-3 credit hours)

Each candidate for the MSES-MS in Chemistry dual degree program must obtain professionally relevant experience through one of the following options:

#### 1. Approved Internship (0-3 credit hours)

The student will work with the O'Neill Career Hub to arrange for a suitable internship. Internships vary greatly according to the expectations and requirements of the sponsor. Students are expected to give careful attention in the selection of an internship suitable to their professional goals. Typically, students do not use credit hours for the internship, and as a result, have minimal fees for the experience. However, students who want the additional credit hours can receive up to 3 credit hours for an

internship involving the appropriate amount of work; these students will owe fees for the 3 credit hours.

#### 2. Prior Experience (3 credit hours)

3. Three credits of research experience in the laboratory of a graduate faculty member

Graduate research course numbers are, in the Chemistry department, CHEM-C 8X0 and in the MSES, SPEA-E 625. More involved research projects that culminate in a thesis or publication can be applied toward the capstone course requirement (see above).

### Environmental Chemistry, Toxicology, and Risk Assessment Concentration (15-18 credit hours)

This concentration addresses the fate and transport of chemicals in the environment and the hazards and risks to human health and the environment associated with chemical pollution. Courses on the chemical/physical/biological reactions of pollutants in soil, aquatic, and atmospheric systems are included. Additional courses study the hazards associated with chemicals used in modern society, technologies available to manage and remediate contaminated sites, the toxicological effects of chemical exposure, and methods to assess risks associated with chemicals in the environment.

*\*At least two courses should be selected from the Chemistry Department and at least two courses should be selected from O'Neill. An advisor can approve alternative courses that may be relevant.*

SPEA-E 515	Fundamentals of Air Pollution	(3 cr.)
SPEA-E 520	Environmental Toxicology	(3 cr.)
SPEA-E 537	Environmental Chemistry Laboratory	(3 cr.)
SPEA-E 539	Aquatic Chemistry	(3 cr.)
SPEA-E 542	Hazardous Materials	(3 cr.)
SPEA-E 554	Groundwater Flow Modeling	(3 cr.)
SPEA-E 560	Environmental Risk Analysis	(3 cr.)
SPEA-E 562	Solid and Hazardous Waste Management	(3 cr.)
SPEA-E 591	Climate Change Impacts on Natural Resources	(3 cr.)
CHEM-C 581	Macromolecular Structure and Interactions	(1.5 cr.)
CHEM-C 632	Structure, Function, and Spectroscopy of Metal Ions in Biological Systems	(3 cr.)
CHEM-C 634	Transition Metal Chemistry	(3 cr.)
CHEM-C 636	Organometallic Chemistry and Catalysis	(3 cr.)
CHEM-M 501	Nanomaterials	(3 cr.)

CHEM-M 503	Supramolecular Chemistry	(3 cr.)
EAS-G 571	Principles of Petroleum Geology	(3 cr.)
EAS-G 576	Climate Change	(3 cr.)
EAS-G 587	Organic Geochemistry	(3 cr.)
GEOG-G 532	Physical Climatology	(3 cr.)

### Dual M.S.E.S.-M.S. in Geological Sciences

Master of Science in Environmental Science–Master of Science in Geological Sciences (M.S.E.S.–M.S.)

[Department of Earth and Atmospheric Sciences](#)

Students must earn at least 51 credits in total, including a minimum of 21 credit hours in the Department of Earth and Atmospheric Sciences as well as in the O'Neill School of Public and Environmental Affairs. Note that double-counting of courses among components is permitted, so long as overall credit requirements are met. In double-counting, multiple requirements may be met by a single course, but credits only count once towards credit totals. Degrees are awarded concurrently after the student has completed the requirements for both degrees.

### Program Requirements (51 credit hours)

The combined M.S. in Geological Sciences–MSES program requires a minimum of 51 credit hours distributed among six components:

- Geological Sciences Core
- Environmental Science Core
- Economics, Policy, and Law Competencies
- Tool Skills
- Dual Geological Sciences-Environmental Science Concentration
- an experiential component or an environmentally focused thesis project

The student must complete a minimum of 21 credit hours in the Department of Earth & Atmospheric Sciences as well as in the O'Neill School of Public and Environmental Affairs. Note that double-counting of courses among components is permitted, so long as overall credit requirements are met. In double-counting, multiple requirements may be met by a single course, but credits only count once towards credit totals.

### Geological Sciences Core (9 credit hours)

Select course from the following list:

EAS-X 429	Field Geology in the Rocky Mountains	(6 cr.)
EAS-G 513	Seismology I	(3 cr.)
EAS-G 517	Optical Mineralogy	(3 cr.)
EAS-G 520	Mechanics for the Earth Sciences	(1 cr.)
EAS-G 524	Carbonate Facies and Environments	(3 cr.)
EAS-G 554	Fundamentals of Plate Tectonics	(3 cr.)
EAS-G 559	Earth Surface Processes	(3 cr.)

EAS-G 561	Paleoecology	(3 cr.)
EAS-G 572	Basin Analysis and Hydrocarbons	(3 cr.)
EAS-G 576	Climate Change Science	(3 cr.)
EAS-G 581	Surficial Geology	(3 cr.)
EAS-G 583	Isotope Geochemistry	(3 cr.)
EAS-G 587	Organic Geochemistry	(3 cr.)
EAS-G 589	Geomicrobiology	(3 cr.)
EAS-G 591	Physical Sedimentology	(3 cr.)

### Environmental Science Core (9 credit hours)

Select three courses from the following list:

SPEA-E 515	Fundamentals of Air Pollution	(3 cr.)
SPEA-E 526	Applied Mathematics for Environmental Science	(3 cr.)
SPEA-E 527	Applied Ecology	(3 cr.)
SPEA-E 536	Environmental Chemistry	(3 cr.)
SPEA-E 538	Statistics for Environmental Science	(3 cr.)
SPEA-E 539	Aquatic Chemistry	(3 cr.)
SPEA-E 552	Environmental Engineering	(3 cr.)
SPEA-E 564	Organic Pollutants: Environmental Chemistry and Fate	(3 cr.)

### Economics, Management, and Policy Core Competencies (6-9 credit hours)

Students are encouraged to acquire competency in these areas of environmental management. The selection of courses will vary according to the student's professional objectives and an advisor can approve alternative courses that may be relevant.

SPEA-E 513	Environmental Project Management	(3 cr.)
SPEA-E 535	International Environmental Policy	(3 cr.)
SPEA-E 543	Environmental Management	(3 cr.)
SPEA-P 507	Data Analysis and Modeling for Public Affairs	(3 cr.)
SPEA-P 541	Benefit Cost Analysis	(3 cr.)
SPEA-R 512	Climate Law and Policy	(3 cr.)

SPEA-R 521	Domestic Environmental Policy	(3 cr.)
SPEA-R 531	Water Law	(3 cr.)
SPEA-R 532	Water Policy and Economics	(3 cr.)
SPEA-R 564	Environmental and Natural Resource Policy Design and Implementation	(3 cr.)
SPEA-R 590	Energy Policy: A Nation State Perspective	(3 cr.)
SPEA-R 625	Environmental Economics and Policy	(3 cr.)
SPEA-R 626	Energy Policy Seminar	(3 cr.)
SPEA-R 643	Natural Resource Management and Policy	(3 cr.)
SPEA-R 645	Environmental Law	(3 cr.)
SPEA-R 674	Energy Economics and Policy	(3 cr.)
SPEA-S 596	Sustainable Development	(3 cr.)
SPEA-V 517	Public Management Economics	(3 cr.)

### Tool Skill Courses (3-6 credit hours)

Students are encouraged to acquire competency in analytical methods by focusing on tool skills appropriate to their professional objectives. Students pursuing the research option (see below) may use research-course credits to satisfy the Tools requirement, if appropriate.

SPEA-E 502	Water Quality Modeling	(3 cr.)
SPEA-E 518	Vector-based Geographic Information Systems	(3 cr.)
SPEA-E 529	Applications of Geographic Information Systems	(3 cr.)
SPEA-E 538	Statistics for Environmental Science	(3 cr.)
SPEA-E 554	Groundwater Flow Modeling	(3 cr.)
SPEA-E 560	Environmental Risk Analysis	(3 cr.)
SPEA-P 507	Data Analysis and Modeling for Public Affairs	(3 cr.)
SPEA-P 539	Management Science for Public Affairs	(3 cr.)
SPEA-P 541	Benefit Cost Analysis	(3 cr.)

SPEA-P 562	Public Program Evaluation	(3 cr.)
EAS-G 520	Mechanics for Earth Sciences	(3 cr.)
EAS-G 544	Methods in Analytical Geochemistry	(3 cr.)
EAS-G 562	Geometric Morphometrics	(3 cr.)
EAS-G 563	Quantitative Paleontology	(3 cr.)
EAS-G 582	Computational Methods for Earth Scientists	(3 cr.)
EAS-G 583	Isotope Geochemistry	(3 cr.)
EAS-G 586	Geochemical Modeling	(3 cr.)
EAS-G 612	Inverse Methods in Geophysics	(3 cr.)
EAS-G 685	Evolution of Ecosystems	(3 cr.)

### Dual Geological Sciences – Environmental Science Master's Concentration

Required Courses (Typically 15 to 18 credit hours)

This concentration supports the Geological Sciences and MSES degrees with courses in laboratory and environmental chemistry, toxicology, and risk assessment, as well as energy-related courses. Courses taken to satisfy the core requirements may not also satisfy concentration requirements. Students pursuing the research option (see below) may use research-course credits to satisfy part of the concentration requirement.

At least two courses should be selected from the Earth & Atmospheric Sciences Department and at least two courses should be selected from the O'Neill School. An advisor can approve alternative courses that may be relevant.

SPEA-E 502	Water Quality Modeling	(3 cr.)
SPEA-E 503	Natural Gas: Technical and Policy Challenges	(3 cr.)
SPEA-E 512	Risk Communication	(3 cr.)
SPEA-E 514	Changing Landscape of Toxic-Chemical Regulation	(3 cr.)
SPEA-E 515	Fundamentals of Air Pollution	(3 cr.)
SPEA-E 517	BMP Design for Healthy Urban Watersheds	(3 cr.)
SPEA-E 520	Environmental Toxicology	(3 cr.)
SPEA-E 536	Environmental Chemistry	(3 cr.)
SPEA-E 539	Aquatic Chemistry	(3 cr.)

SPEA-E 542	Hazardous Materials	(3 cr.)
SPEA-E 544	Subsurface Microbiology and Bioremediation	(3 cr.)
SPEA-E 545	Lake and Watershed Management	(3 cr.)
SPEA-E 552	Environmental Engineering	(3 cr.)
SPEA-E 554	Groundwater Flow Modeling	(3 cr.)
SPEA-E 555	Fluid Mechanics	(1 cr.)
SPEA-E 560	Environmental Risk Analysis	(3 cr.)
SPEA-E 562	Solid and Hazardous Waste Management	(3 cr.)
SPEA-E 564	Organic Pollutants: Environmental Chemistry and Fate	(3 cr.)
SPEA-E 574	Energy Systems	(3 cr.)
SPEA-E 591	Climate Change Impacts on Natural Resources	(3 cr.)
EAS-G 532	Physical Climatology	(3 cr.)
EAS-G 551	Physical Hydrology	(3 cr.)
EAS-G 559	Earth Surface Processes	(3 cr.)
EAS-G 561	Paleoecology	(3 cr.)
EAS-G 572	Basin Analysis and Hydrocarbons	(3 cr.)
EAS-G 576	Climate Change Science	(3 cr.)
EAS-G 581	Surficial Geology	(3 cr.)
EAS-G 583	Isotope Geochemistry	(3 cr.)
EAS-G 587	Organic Geochemistry	(3 cr.)
EAS-G 588	Paleobiogeography	(3 cr.)
EAS-G 589	Geomicrobiology	(3 cr.)
EAS-G 685	Evolution of Ecosystems	(3 cr.)

### Capstone Course (3 credit hours) Professional-Degree students

Each candidate for the M.S. in Geological Sciences-M.S.E.S. dual degree program should take a 3-credit hour course during which they participate in a team to carry out an integrative project that addresses a multidisciplinary problem. Capstone course credit may be double-counted in either Concentration or Tool Skill requirements, if appropriate. The capstone requirement may be met in one of the following ways:

1. SPEA-V 600 Capstone in Public and Environmental Affairs, sections with an environmental focus.

2. An approved alternative course with a similar structure, such as SPEA-E 517 BMP Design for Healthy Urban Watersheds, SPEA-E 560 Environmental Risk Analysis, EAS-G 690 Environmental & Energy Diplomacy, or other approved course.

### Experiential Requirement (0-3 credit hours) Professional-Degree Students

Each candidate for the M.S. in Geological Sciences-MSES dual-degree program must obtain professionally relevant experience through one of the following options.

1. Approved Internship (0-3 credit hours) The student will work with the O'Neill Career Hub and the Department of Earth & Atmospheric Sciences to arrange for a suitable internship. Internships vary greatly according to the expectations and requirements of the sponsor. Students are expected to give careful attention in the selection of an internship suitable to their professional goals. Typically, students do not use credit hours for the internship, and as a result, have no fees for the experience. However, students who want the additional credit hours can receive up to 3 credit hours for an internship involving the appropriate amount of work; these students will owe fees to the relevant school for the 3 credit hours.
2. Professional Experience (3 credit hours) Students who have had significant environmental management, technical or administrative work experience in the past may receive 3 credit hours. Students must apply to receive Professional Experience credit and their experience must meet O'Neill guidelines. Professional experience credit and transfer credit, together, may not total more than 18 hours. Students receiving prior professional experience credit should carefully plan the balance of their program with their faculty advisors.

### Research Requirement (6-9 credit hours) Research-Option Students

Candidates choosing to focus primarily on research may replace the capstone experience with a graduate-level research project that culminates in a master's thesis (following EAS thesis or report option definition but not O'Neill thesis definition) or research project. The research/thesis may be directed by a member of the graduate faculty from either the Department of Earth & Atmospheric Sciences or the O'Neill School, but the advisory committee must include at least one member from both departments. Up to nine hours of research, either from EAS-G 810 or SPEA-E 625, may be counted in either the Concentration or Tool Skill requirements as appropriate. The capstone and experiential (internship) requirements are waived for students taking the research option.

### Dual M.S.E.S.-M.S. in Physics

Master of Science in Environmental Science–Master of Science in Physics (M.S.E.S.-M.S.)  
[Department of Physics](#)

This dual master's program is a 51-credit hour (two-year) program that gives the student more depth and breadth than is possible in a single degree. The student must complete a minimum of 21 credit hours in each of the degree programs. M.S. in Physics and M.S.E.S. degrees

are awarded concurrently after the student has completed the requirements for both degrees.

### Application, Admission, and Degree Planning

The student must apply to the Department of Physics and be accepted into the MS in Physics degree program and apply to the O'Neill School of Public and Environmental Affairs (SPEA) and be accepted into the Master of Science in Environmental Science (MSES) degree program. The students must design their dual-degree curriculum in consultation with the graduate advisor of the Physics Department and the program director for the MSES program in O'Neill. Both must approve the course choices on a semester-by-semester basis. The students will use a multi-semester planning form and a degree program checklist for this purpose; a blank copy of each is attached to this proposal. The dual-degree program is designed to be completed in two (2) years, but must be completed within six (6) years.

#### Physics MS admissions requirements:

Physics P221, P222, P301 (or equivs)  
Math M211,212,311 (or equivs)

#### O'Neill MSES admissions requirements:

Differential and integral calculus - Math M211 or equivalent

One semester of inorganic chemistry with lab - C103 or C117 and C127, or equivalent

#### Requirements

The dual M.S. in Physics and M.S.E.S. in the O'Neill program requires a minimum of 51 credit hours distributed among six components: physics core; O'Neill core; economics, policy, and law competencies; tool skills; a physics or O'Neill concentration; and professional experience. At least 2 of the physics courses must be at 500-level or higher. Details provided below.

### Physics Core (9 credit hours)

Choose three of the following (core choices may not double count in the concentration)

PHYS-P 331	Theory of Electricity and Magnetism I	(3 cr.)
PHYS-P 340	Thermodynamics and Statistical Mechanics	(3 cr.)
PHYS-P 350	Applied Physics Instrumentation Lab	(3 cr.)
PHYS-P 453	Introduction to Quantum Mechanics	(3 cr.)
PHYS-P 454	Modern Physics	(3 cr.)
PHYS-P 460	Modern Optics	(3 cr.)
PHYS-P 510	Environmental Physics (credit not given for both P 510 and E 574 within a student's program)	(3 cr.)
PHYS-P 511	Quantum Mechanics	(3 cr.)

PHYS-P 551	Modern Physics Laboratory	(3 cr.)
PHYS-P 556	Statistical Physics	(3 cr.)
PHYS-P 575	Introduction to Biophysics	(3 cr.)

### O'Neill Core (9 credit hours)

Choose three of the following (core choices may not double count in the concentration)

SPEA-E 515	Fundamentals of Air Pollution	(3 cr.)
SPEA-E 536	Environmental Chemistry	(3 cr.)
SPEA-E 538	Statistics for Environmental Science	(3 cr.)
SPEA-E 552	Environmental Engineering	(3 cr.)
SPEA-E 574	Energy Systems (credit will not be given for both E574 and P510 within a given student's program)	(3 cr.)

### O'Neill Economics, Management, and Policy Competency (6 credit hours)

SPEA-E 513	Environmental Project Management	(3 cr.)
SPEA-E 543	Environmental Management	(3 cr.)
SPEA-R 532	Water Policy and Economics	(3 cr.)
SPEA-R 625	Environmental Economics and Policy	(3 cr.)
SPEA-R 645	Environmental Law	(3 cr.)
SPEA-R 674	Energy Economics and Policy	(3 cr.)
SPEA-S 596	Sustainable Development	(3 cr.)
SPEA-V 517	Public Management Economics	(3 cr.)
SPEA-V 550	Energy Law	(3 cr.)

*Other courses may be approved by the O'Neill advisor*

### Tool Skill Courses (Typically 3–6 credit hours)

Students are encouraged to acquire competency in analytical methods by focusing on tool skills appropriate to their professional objectives. Courses should be selected in consultation with faculty advisors from both programs. Tool skill courses may double count with the concentration, but degree credit totals must still be met.

PHYS-P 540	Analog and Digital Electronics	(3 cr.)
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PHYS-P 548	Mathematical Methods for Biology	(3 cr.)
PHYS-P 583	Signal Processing and Information Theory in Biology	(3 cr.)
PHYS-P 609	Computational Physics	(3 cr.)
SPEA-E 502	Water Quality Modeling	(3 cr.)
SPEA-E 518	Vector-based Geographic Information Systems	(3 cr.)
SPEA-E 529	Application of Geographic Information Systems	(3 cr.)
SPEA-E 554	Groundwater Flow Modeling	(3 cr.)
SPEA-E 560	Environmental Risk Analysis	(3 cr.)
SPEA-P 507	Data Analysis and Modeling for Public Affairs	(3 cr.)
SPEA-P 541	Benefit Cost Analysis	(3 cr.)
SPEA-P 562	Public Program Evaluation	(3 cr.)

Other courses may be approved by the O'Neill advisor

### Capstone course (3 credit hours)

Students must enroll in a 3-credit O'Neill capstone course (SPEA-V 600 – only environmentally-oriented sections as approved by the O'Neill program director, SPEA-E 560 Environmental Risk Analysis, or SPEA-E 517 Best Management Practices for Healthy Urban Watersheds). The capstone course may double-count in concentration, if desired, but degree totals must still be met. The capstone requirement may be waived for students who apply for Professional Experience credit.

### Experiential Requirement (0-3 credit hours)

1. Approved internship (SPEA-E 589)
2. MS research (PHYS-P 802) or MSES research internship (SPEA-E 589)

The experiential requirement may be waived for students who file for Professional Experience credit.

### Physics-O'Neill Concentration (21 credit hours)

Must include at least 6 credit hours from Physics and at least 6 credit hours from O'Neill. Remaining courses to be chosen from graduate classes from either unit, with advisors' consent.

### O'Neill concentration options

Any O'Neill core course from the list above that was not used for core credit.

SPEA-E 501	Human Behavior and Energy Consumption	(3 cr.)
SPEA-E 502	Water Quality Modeling	(3 cr.)

SPEA-E 503	Natural Gas: Technical and Policy Challenges	(3 cr.)
SPEA-E 514	Changing Landscape of Toxic-Chemical Regulation	(3 cr.)
SPEA-E 517	BMP Design for Healthy Urban Watersheds	(3 cr.)
SPEA-E 518	Vector-based Geographic Information Systems	(3 cr.)
SPEA-E 520	Environmental Toxicology	(3 cr.)
SPEA-E 539	Aquatic Chemistry	(3 cr.)
SPEA-E 542	Hazardous Materials	(3 cr.)
SPEA-E 554	Groundwater Flow Modeling	(3 cr.)
SPEA-E 555	Intro to Coding for Environment and Policy	(1 cr.)
SPEA-E 555	Python Programming for Environment and Policy	(1 cr.)
SPEA-E 555	Using R for Environment and Policy	(1 cr.)
SPEA-E 555	Fluid Mechanics	(3 cr.)
SPEA-E 555	Watershed Hydrology	(3 cr.)
SPEA-E 560	Environmental Risk Analysis	(3 cr.)
SPEA-E 562	Solid and Hazardous Waste Management	(3 cr.)
SPEA-E 564	Organic Pollutants: Environmental Chemistry and Fate	(3 cr.)
SPEA-E 591	Climate Change Impacts on Natural Resources	(3 cr.)
SPEA-R 515	Renewable and Nuclear Energy	(3 cr.)

### Physics concentration options

PHYS-P 508	Current Research in Physics	(3 cr.)
PHYS-P 510	Environmental Physics	(3 cr.)
PHYS-P 551	Modern Physics Laboratory/Statistical Physics	(3 cr.)
PHYS-P 556	Statistical Physics	(3 cr.)
PHYS-P 557	Solid State Physics	(3 cr.)

PHYS-P 572	Radiation Oncology Physics	(3 cr.)
PHYS-P 578	Radiation Biophysics Modeling and Computation in Biophysics	(3 cr.)
PHYS-P 581	Signal Processing and Information Theory in Biology	(3 cr.)
PHYS-P 583	Signal Processing and Information Theory in Biology	(3 cr.)
PHYS-P 609	Computational Physics	(3 cr.)

### Concentration options from other departments

GEOG-G 551	Physical hydrology	(3 cr.)
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Other courses from Physics, O'Neill, (including research courses SPEA-E 625 or PHYS-P 802 or other departments may be used in the concentration with approval of both advisors.

## Master of Science in Healthcare Management Joint Degree

The Master of Science in Healthcare Management joint degree (36 credit hours) is aimed at recent college graduates who are seeking the skills and credentials that will enable them to obtain entry level positions (and then to progress quickly) in the healthcare management field. Students must complete a minimum of 18 credit hours in Kelley and a minimum of 15 credit hours in O'Neill.

### MSHM Requirement I: Kelley Core (18 credit hours)

BUS-X 545	Business Foundations	Summer semester (6 cr.)
BUKD-C 580	Operations Management	Fall semester, Online (3 cr.)
BUKD-C 522	Information Technology	Spring semester, Online (3 cr.)
BUKD-X 520	Kelley Washington Campus Program	Spring semester, Spring Break (3 cr.)
BUKD-X 531	Healthcare Operations Analytics	Spring semester, Online (3 cr.)

### MSHM Requirement II: O'Neill Core (15 credits)

SPEA-H 525	Health Economics for Policy & Management	Fall semester (3 cr.)
SPEA-H 526	Healthcare Finance	Fall semester (3 cr.)
SPEA-H 549	Health Policy	Spring semester (3 cr.)
SPEA-V 550	Healthcare Leadership	Fall semester (3 cr.)
SPEA-V 600	Capstone in Public and Environmental Affairs	Spring semester (3 cr.)

### MSHM Requirement III: Electives (3 cr.)

Students must choose at least three elective credit hours from the list provided below. Note that this list is not comprehensive and will continue to grow as course offerings expand.

BUKD-E 731	Supply Chain Management - Sourcing	Online (3 cr.)
BUKD-E 735	Supply Chain Management: Project Management and Process Analysis	Online (3 cr.)
BUS-G 492	Predictive Analytics for Business Strategy	15 Weeks (3 cr.)
BUS-G 579	Business Economics and Public Policy	15 Weeks (3 cr.)
BUS-K 507	Intro to Spreadsheet Modeling	7 Weeks (1.5 cr.)
BUS-K 513	Predictive Analytics and Data Mining	7 Weeks (1.5 cr.)
BUS-M 503	Marketing Research	7 Weeks (1.5 cr.)
BUS-M 522	New Products Management	7 Weeks (1.5 cr.)
BUS-M 530	Business Marketing Strategy and Management	7 Weeks (1.5 cr.)
BUS-M 574	Pricing Management	7 Weeks (1.5 cr.)
BUS-P 550	Business Process Design	7 Weeks (1.5 cr.)
INFO-I 507	Intro to Health Informatics	(3 cr.)
INFO-I 535	Management, Access, and Use of Big and Complex Data	(3 cr.)
LAW-B 536	Health Law	(3 cr.)
SPEA-H 527	International Healthcare Systems	(3 cr.)
SPEA-M 547	Negotiation and Dispute Resolution	(3 cr.)
SPEA-N 522	Human Resource Mgmt in Nonprofit Organizations	(3 cr.)
SPEA-N 525	Management in the Nonprofit Sector	(3 cr.)
SPEA-N 558	Fund Development for Nonprofits	(3 cr.)
SPEA-P 562	Public Program Evaluation	(3 cr.)
SPEA-V 557	Proposal Development	(3 cr.)

	and Grant Administration	
SPEA-V 550	Practicum in Healthcare Management I	(1.5 cr.)
SPEA-V 550	Practicum in Healthcare Management II	(1.5 cr.)
SPH-B 650	Public Health Policy and Politics in the U.S.	(3 cr.)

## Master of Arts in Arts Administration

### Program Goals and Objectives

Arts administrators are extraordinary individuals. They must function as managers, fundraisers, planners, educators, conciliators, facilitators, communicators, and most important, as leaders. They must be realists as well as idealists, respectful of the needs of both art and business, and forward-looking yet mindful of the past.

Since 1971 the Indiana University Arts Administration Program has been committed to the development of such leaders. The program, a 16-month, multidisciplinary course of study leading to an M.A. in Arts Administration, is broad-based in outlook and curriculum and strives to achieve a balance of artistic and management concerns, theory and hands-on experience. Students complete three semesters of course work, on-campus practicums, and a supervised internship off campus. The program seeks to serve students who are at the beginning stages of their careers as well as older students wishing to change careers.

Though small in size, the City of Bloomington provides an ideal setting for the program. The city's thriving arts community includes more than 150 arts organizations as well as the internationally acclaimed Lotus World Music and Arts Festival. On the IU Bloomington campus, the Jacobs School of Music presents more than 1,000 concerts and events each year, and a new production opens almost every other week on one of the two stages in the Department of Theatre, Drama & Contemporary Dance. Other cultural organizations on campus include the IU Auditorium, which offers touring Broadway productions; the Eskenazi Museum of Art, one of the nation's finest university art museums; the Mathers Museum of World Cultures; the African American Arts Institute; the IU Cinema; and the Lilly Library of rare books and manuscripts.

### Degree requirements

(45 credit hours) The program requires 45 credit hours of course work. A typical schedule includes 13 credit hours the first semester and 13 credit hours in the second semester. The third semester of 13 credit hours includes the capstone seminar course, leaving six credits for either the fourth semester or one or both summers. In addition to the required and elective 3-credit courses, students register for one credit of practicum each of their first three semesters. Some students finish in three semesters plus some summer work, while others stay four semesters.

In the summer following the second semester of course work most students complete a seven week internship

in an arts organization of their choice. These students are able to complete their degree in December of their second year of study. Some students opt to complete their internship in the spring following their final fall semester of course work. Recent sites have included Carnegie Hall, the St. Paul Chamber Orchestra, the Smithsonian, the Museum of Fine Arts–Houston, the Seattle International Film Festival, the Indianapolis Museum of Art, the Abrons Art Center, and the Barrier Island Group for the Arts (BIG ARTS) on Sanibel Island. While there is no thesis requirement, extensive writing projects are part of the capstone seminar course and internship experiences.

### Introduction Course (3 credit hours)

AADM-Y 502	Organizational Behavior and the Arts	(3 cr.)
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### Management and Policy Courses (9 credit hours)

#### Area I: Performing Arts

Choose one of the following:

AADM-Y 505	Programming the Performing Arts	(3 cr.)
AADM-Y 508	Performing Arts Organization Management	(3 cr.)
AADM-Y 511	Performing Arts Center Management	(3 cr.)

#### Area II: Visual Arts

Choose one of the following:

AADM-Y 506	Curating for Museums and Galleries	(3 cr.)
AADM-Y 525	Museum Management	(3 cr.)

#### Area III: Arts and Cultural Policy

Choose one of the following:

AADM-Y 551	Cultural Planning and Urban Development	(3 cr.)
AADM-Y 559	Public Policy in the Arts	(3 cr.)

### Skill Building Courses (9 credit hours)

AADM-Y 515	Financial Management for the Arts	(3 cr.)
AADM-Y 530	Audience Development and Marketing the Arts	(3 cr.)
AADM-Y 558	Fund Development for Nonprofit Organizations	(3 cr.)

### Theory and Survey Courses (6 credit hours)

AADM-Y 504	Arts Organizations (3 cr.) in the Public and Private Sectors
AADM-Y 562	Legal Issues in the (3 cr.) Arts

### Electives (9 credit hours)

Elective courses, any 500+ level course	
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### Experiential Requirement (6 credit hours)

AADM-Y 550	Practicum in Arts (3 cr.) Administration
AADM-Y 750	Internship in Arts (3 cr.) Administration

### Capstone (3 credit hours)

AADM-Y 650	Seminar in Arts (3 cr.) Administration
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## Master of Arts in Arts Administration Dual Degree Programs

[Master of Arts in Arts Administration-Master of Arts in Folklore and Ethnomusicology \(M.A.A.A.-M.A.F.E.\)](#)

Master of Arts in Administration-Master of Museum and Heritage Studies (M.A.A.A.-M.M.H.S.)

### Dual Master of Arts in Arts Administration and Master of Arts in Folklore and Ethnomusicology (M.A.A.A.-M.A.F.E.)

The Indiana University Bloomington, O'Neill School of Public and Environmental Affairs and the Department of Folklore and Ethnomusicology offers a dual degree, Master of Arts in Arts Administration and Master of Arts in Folklore and Ethnomusicology. This degree is intended for a range of students, especially, although not exclusively, those interested in leadership and administration in museums and festivals. The two programs are each of national and international distinction. The dual degree gives students an opportunity over the course of three years of full time study (with a total of 60 credit hours), to earn degrees from each of these distinguished programs, combine classroom and practicum work from both programs.

### Application and Admission

Students must apply for admission to the Master's Programs for both the Arts Administration program at the O'Neill School of Public and Environmental Affairs and the Department of Folklore and Ethnomusicology. Admissions criteria established for each program must be met; acceptance into one program does not guarantee acceptance into the other. To graduate under the dual degree option, the two degrees must be awarded simultaneously.

### M.A. in Arts Administration (36 hours)

Students are required to complete 36 credit hours of courses distributed among the MAAA core, experiential learning, and electives.

### MAAA Requirement I: Core (24 credit hours)

Students are required to take the following courses:

AADM-Y 502	Introduction to Arts (3 cr.) Administration and Organizational Behavior
AADM-Y 504	Arts Organizations (3 cr.) in the Public and Private Sectors
AADM-Y 515	Financial (3 cr.) Management for the Arts
AADM-Y 525	Museum (3 cr.) Management
AADM-Y 530	Audience (3 cr.) Development and Marketing the Arts
AADM-Y 551	Cultural Planning (3 cr.) and Urban Development
AADM-Y 558	Fund (3 cr.) Development for Nonprofit Organizations
AADM-Y 562	Legal Issues in the (3 cr.) Arts

### MAAA Requirement II: Experiential (6 credit hours)

Students must complete three 50-hour arts management practicum projects, as well as a 280-hour internship.

**1. Practicum (Y550)** – Three different 50-hour arts management projects are completed throughout the three semesters of coursework. Students can register for all three credits at once or one credit per semester, as long as the total number of credits equals three. Students should seek advice from an advisor before beginning practicum work.

**2. Internship (Y750)** – Each student is required to complete a 280-hour internship. These internships give students an excellent opportunity to apply classroom theory and techniques to real-life experiences. Students should register for AADM-Y 750 either in the summer between their second and third semesters, summer between their fourth and fifth or in the spring following the fifth semester in the program. *Before registering, students must submit an internship contract with the Career Hub (O'Neill 200) for approval. To obtain credit, students must complete all required paperwork.*

### Practicum and Internship Guidelines for International Master's Candidates:

International Students completing their Master of Arts in Arts Administration must meet with an advisor from the [Office of International Services](#) *prior to* beginning practicum and internship work. Students must apply for curricular practical training (CPT) in each semester that they will complete practicum and/or internship work that is either off campus or a paid opportunity. Arts Administration requires immediate participation in Curricular Practical Training, and therefore a request for CPT must be made to the Office of International Services (OIS). A student may begin CPT only after receiving his or her Form I-20 with an endorsement from an advisor at

OIS. For more information on CPT, please visit <https://ois.iu.edu/living-working/employment/f1/curricular.html> or call (812) 855-9086.

### MAAA Requirement III: Seminar

Choose one of the following:

AADM-Y 650	Seminar in Arts Administration	(3 cr.)
FOLK-F 850	Thesis	(1-15 cr.)

### MAAA Requirement IV: Electives (a maximum of 6 credit hours)

Depending on the capstone option chosen, 3-6 credit hours of arts administration electives are required, for a total of 36 credit hours in the arts administration program. Courses should be chosen in consultation with an academic advisor.

### MAFE Requirements (24 credit hours)

Students take at least 24 credit hours in folklore and ethnomusicology. For a complete list of folklore course options please visit the UGS Bulletin or <http://www.indiana.edu/~folklore/graduate/dualma.shtml>.

### Dual Master of Arts in Arts Administration and Master of Museum and Heritage Studies (MAAA-MMHS) with Australian National University (ANU)

In spring 2017, the Arts Administration program launched a partnership with the Museum and Heritage Studies program at Australia National University (ANU). Graduate students in Arts Administration may now pursue a two year dual degree when they receive a Masters of Arts in Arts Administration from SPEA and a Master of Museum and Heritage Studies from ANU. You must apply to both programs concurrently and be accepted to both programs in order to participate in this opportunity. ANU is located in Canberra, Australia and boasts a beautiful campus and diverse array of course offerings. Please contact the Arts Administration program at [maaainfo@indiana.edu](mailto:maaainfo@indiana.edu) for more information.

### M.A. in Arts Administration (30 credit hours) Program Requirements

24 SPEA credits hours of the following compulsory courses:

AADM-Y 502	Introduction to Arts Administration and Organizational Behavior	(3 cr.)
AADM-Y 504	Arts Organizations in the Public and Private Sectors	(3 cr.)
AADM-Y 515	Financial Management for the Arts	(3 cr.)
AADM-Y 525	Museum Management	(3 cr.)
AADM-Y 530	Audience Development and Marketing the Arts	(3 cr.)
AADM-Y 551	Cultural Planning and Urban Development	(3 cr.)

AADM-Y 558	Fund Development for Nonprofits	(3 cr.)
AADM-Y 550	Practicum in Arts Administration	(3 cr.)

**Practicum:** As part of AADM-Y 550, students are required to complete 3 practicums with partnering organizations. Each practicum consist of a 50 hour commitment to an organization to complete a project. Practicums are graded on a pass/fail basis and students receive one credit for each completed practicum. Students do not need to complete the practicums at a particular time, but they must complete 3 total practicums during their time at Indiana University.

A maximum of 6 O'Neill credit hours from completion of any graduate courses at IU. (Students may be particularly interested in the following electives, but may fulfil the 6 O'Neill credit hour elective requirement with any graduate courses at IU):

AADM-Y 500	Graphic Design	(3 cr.)
AADM-Y 505	Programming the Performing Arts	(3 cr.)
AADM-Y 506	Curating in Galleries and Museums	(3 cr.)
AADM-Y 511	Performing Arts Center Management	(3 cr.)
AADM-Y 522	IT Applications for the Arts	(3 cr.)
AADM-Y 526	Art and Social Change	(3 cr.)
AADM-Y 559	Public Policy and the Arts	(3 cr.)
AADM-Y 562	Legal Issues in the Arts	(3 cr.)

### M.A. in Museum and Heritage Studies (48 units) Program Requirements

30 credit hours from completion of the following compulsory courses:

HUMN8027	Critical Issues in Heritage and Museum Studies	(3 cr.)
MUSC8004	Internship (transfers as 3 IU credits to SPEA)	(3 cr.)
MUSC8006	Indigenous Collections and Exhibitions	(3 cr.)
MUSC8012	Understanding Learning in Museum and Heritage	(3 cr.)
MUSC8017	Museums and Collections Key Concepts	(3 cr.)

6 credit hours from completion of courses from the following list:

MUSC8013	Museum Education and Heritage Interpretation Study Tour	(3 cr.)
MUSC8014	Design and Delivery of Exhibitions	(3 cr.)
MUSC8019	Repatriation: Principles, Policy, Practice	(3 cr.)

A minimum of 6 credit hours from completion of courses on the following list:

MUSC8009	Museums and Collections: Research Project	(3 cr.)
MUSC8011	Museums and Collections: Extended Research Project	(3 cr.)

A maximum of 6 credit hours from completion of courses on the following list: (transfers as 3 IU credits to SPEA)

ARTV8100	Points of View	(3 cr.)
ARTV8107	Arguing Objects	(3 cr.)
HIST6237	Digital History, Digital Heritage	(3 cr.)
HUMN8010	Material Culture Studies	(3 cr.)
MUSC8008	Museums, Art and Society in the Asia-Pacific	(3 cr.)
MUSC8013	Museum Education and Heritage Interpretation Study Tour	(3 cr.)
MUSC8016	Museum Learning: The Politics of Dress	(3 cr.)

### Research Component Requirement

On the compulsory list there are at least 12 units of courses that have at least a 50% research requirement assessment, therefore this degree satisfies the research component requirement.

## Doctor of Philosophy in Environmental Science

This doctoral program is administered by the School of Public and Environmental Affairs in cooperation with the Departments of Biology, Chemistry, Geography, and Geological Sciences. The Ph.D. in environmental science degree is awarded by the University Graduate School.

The program provides a rigorous, comprehensive education in environmental science. The specific objectives of the program are:

- to conduct advanced research and scientific analysis of environmental events, issues, and problems

- to further understanding of the nature and management of natural and human environments
- to provide an opportunity for students and faculty members in several departments to engage in collaborative environmental research in an interdisciplinary mode

### Admission

A student must apply to the School of Public and Environmental Affairs for doctoral studies; those accepted will be recommended to the University Graduate School for formal admission into the Ph.D. program. Applicants to this program must have completed at least a bachelor's degree in science, mathematics, engineering, or a related field. Prospective students are required to submit:

- a statement of purpose, which should be as specific as possible and, preferably, should refer to potential research mentors by name
- official results of the Graduate Record Examinations (GRE)
- official transcripts of all undergraduate and graduate course work completed
- three letters of recommendation. Applicants whose native language is not English must also submit results of the Test of English as a Foreign Language (TOEFL)

### Degree Requirements

- substantial knowledge in a primary environmental science concentration
- breadth in related environmental science and policy
- an understanding of research methods
- an in-depth knowledge of the dissertation topic
- a dissertation that demonstrates the student's ability to analyze, explain, and interpret research clearly and effectively

### Advisory Committee

During the first semester of enrollment, each student must organize an advisory committee. Normally this committee consists of at least four faculty members: at least two should be from the School of Public and Environmental Affairs; the others may be from other departments or from outside the university. Membership of the advisory committee is approved by the director of the Doctoral Program in Environmental Science and the dean of the University Graduate School. At least three members of the advisory committee must be full members of the graduate faculty.

### Fields of Study

Each student should define a principal field of study, which may be interdisciplinary. The student should prepare a proposal outlining a program of course work that the student believes lies within that principal field.

Each student should also prepare a program of course work that fulfills the requirement of breadth in environmental science and policy. The breadth requirement may be fulfilled by using a wide spectrum of environmentally related courses, including areas such as economics, law, and management, in addition to other science courses.

Each student should also prepare a statement of courses or activities for meeting the research methods requirement. Normally these include subjects such as

computer science, geographic information systems, remote sensing, statistics, and mathematical modeling, although other technical skill areas such as electronics and analytical chemical techniques may be appropriate for some students.

### **Narrative Statement**

Each student must prepare a narrative statement that includes a discussion of the student's previous educational experiences, a statement of career objectives, a statement of research interests, and a proposed program of course work.

Each student must submit the narrative statement to the advisory committee for approval, usually during the first semester in the program.

### **Course Requirements**

The exact nature and amount of course work in each of the three areas—principal field of study, breadth in environmental science and policy, and research methods—is determined by the advisory committee after review and approval of the student's proposed plan of study in each of these areas. Selection of specific courses is based on obtaining

- adequate knowledge for qualifying examinations
- appropriate preparation for a research project
- a mixture of courses that meets the individual professional goals of the student

The Ph.D. degree requires the completion of at least 90 credit hours in advanced study and research beyond the bachelor's degree. A student must complete a minimum of 30 credit hours of advanced course work in environmental science and policy. Students must also complete a minimum of 30 credit hours of research, normally taken as SPEA-E 625 or SPEA-E 890. The student, with the approval of the advisory committee, should complete some combination of additional course work and research sufficient to meet the 90 credit hour requirement.

Students are required to enroll in SPEA-E 680 Seminar in Environmental Science and Policy for a total of 4 credit hours (1 credit hour/semester) during the course of their degree program. In the event of an extenuating circumstance, in consultation with their major advisor and approval of the program director, a student could enroll in 2 credit hours of SPEA-E 680 during a semester. Students must give at least one seminar presentation in SPEA-E 680 as part of their Ph.D. in environmental science requirement.

Students should note that 30 credit hours of advanced course work, if properly selected, and 6 credit hours of research, may be applied toward the Master of Science in Environmental Science (M.S.E.S.) degree. With an additional 12 credit hours of approved course work, a student may be awarded the M.S.E.S. degree while completing the requirements for the Ph.D. in environmental science. Completion of the M.S.E.S. degree as part of this doctoral program is not a requirement; however, this option may be appropriate for some students.

### **Qualifying Examinations**

Before a student is admitted to candidacy, all requirements determined by the advisory committee must be met and the qualifying examinations passed. A student

who fails qualifying examinations may retake them only once.

The decision to admit a student to doctoral candidacy is made by the advisory committee, which evaluates the student's performance in the written examination, research proposal, and oral examination.

### **Written Examination**

This examination should be taken by the end of a student's fifth semester in the Ph.D. program. The exam focuses on topics covered by the student's course work and related to the student's research interests. The examination is written and graded by the student's advisory committee. The written examination is graded as pass, conditional pass, or fail.

### **Research Proposal**

No later than the end of the fifth semester, the student should submit a written research proposal for review by the advisory committee. The proposal should be documented, clearly stating a research objective, the approach to be taken, and the significance of the work.

### **Oral Examination**

Each candidate is examined orally by the advisory committee. The oral examination expands upon the written examination and covers the student's research proposal.

### **Research Committee**

Upon the student's successful completion of the qualifying examination, a research committee is formed. Normally this committee consists of at least four faculty members: at least two should be from the School of Public and Environmental Affairs; the others may be from other IU departments. The director of the Doctoral Program in Environmental Science recommends the student's research committee to the dean of the University Graduate School. At least three members of the research committee must be full members of the graduate faculty.

### **Dissertation**

A dissertation is required and must be of sufficient value to warrant publication. The dissertation must represent a substantial research effort, both in quality and quantity. The dissertation requirement may be met by preparing a traditional dissertation or by preparing a portfolio of research documents including publications, manuscripts in press, and completed manuscripts suitable for submission to a journal. These documents may have multiple authors, although the doctoral candidate must demonstrate that he or she made significant contributions to at least two of the publications or manuscripts submitted for review. The research portfolio must have introductory and concluding chapters to integrate across the topics. The research portfolio also must be prepared to meet the University Graduate School's requirements for dissertations. A public presentation of the dissertation research is required. The dissertation must be approved by the research committee.

## **Doctor of Philosophy in Public Affairs**

The Doctoral Program in Public Affairs was created to take advantage of the unique strengths of SPEA's interdisciplinary faculty and research programs, both of which have earned wide recognition from peer institutions, national and international agencies, and

professional groups. The curriculum equips students with the necessary skills for independent research and analysis of problems, issues, and solutions in government and the nonprofit sector in four major fields:

- **Public Finance:** the theory and practice of fiscal administration, including public budgeting, revenue administration, and financial management
- **Public Management:** the design and operation of government institutions, including strategic/operations management and interrelationships between public and private organizations;
- **Public Policy Analysis:** research methods and quantitative techniques for policy analysis, including the content, design, and evaluation of public programs; and
- **Environmental Policy:** the study of and contribution to public policies that affect the environment, both domestic and international, including legal, economic, and other policy tools and approaches.

Instead of being grounded in a traditional academic discipline, each of the fields has developed from several theoretical literatures applied to real-world public affairs problems. Although research is grounded in the social sciences, the context of inquiry reverses the normal research process. Instead of beginning with questions originating in discipline-based scholarship, the research process begins with public problems and issues. The research challenge, then, is to match available tools of inquiry to the research opportunities presented by problems.

### Admission

Students apply directly to the School of Public and Environmental Affairs; those accepted are recommended to the University Graduate School for formal admission into the Ph.D. program.

Application materials can be found at [www.gradapp.indiana.edu/](http://www.gradapp.indiana.edu/). Applicants to this program must have completed at least a bachelor's degree. Prospective students are required to submit (1) a statement of purpose, which should be as specific as possible and, preferably, should refer to potential research mentors by name; (2) official results of the Graduate Record Examinations (GRE); (3) official transcripts of all undergraduate and graduate work completed; and (4) three letters of recommendation. Applicants whose native language is not English must also submit results of the Test of English as a Foreign Language (TOEFL).

### Degree Requirements

The Ph.D. in Public Affairs degree requires the completion of at least 90 credit hours in advanced study and research beyond the baccalaureate. Typically, two-thirds of the 90 credit hours are taken in formal course work and one-third in thesis credit. Students completing a Master of Public Affairs or similar degree may be allowed to transfer some of their graduate course work (30 hours maximum) if approved by their Progress Review Committees, though a prior master's degree is not required for admission.

- Core Field Requirements
- Research Tool Skills
- Major Fields
- Minor Field

### Major Junctures Preliminary Exam

Students must take the first six core requirement courses during their first year in the program. At the end of their first year, students are required to sit for a preliminary exam on material covered in these six courses. Students will receive a high pass, pass, qualified pass or a fail on this exam. Students receiving a qualified pass will be required to re-take portions of the exam or complete an oral examination. Students who receive a fail on the exam will be required to retake the exam.

### Progress Review Committee

Early in the student's program, but in no case later than the third semester in the program, the student must form a progress review committee. The committee consists of four to five members and includes at least two faculty members from the student's chosen major fields of study and also a representative of his or her minor field. The committee members act as mentors and help monitor the selection and fulfillment of program requirements. The chairperson of the committee serves as the student's principal advisor.

At the end of the first year, the student develops a Progress Review Committee. The committee, in cooperation with the student, defines program objectives, supervises the selection and completion of the minor field, and monitors overall progress toward completion of course work requirements. Members of the Progress Review Committee should be scholars who know the student's academic record and who are recognized experts in the field in which the student will stand for examination. The committee will consist of four to five members chosen by the student in consultation with the director of the Ph.D. program. At least two members of the Progress Review Committee will be chosen from the student's major field. It is required that one member of the Progress Review Committee be a professor and represent the inside or outside minor.

### Third Semester Review

During the third semester, each student holds a third semester review meeting with the Progress Review Committee. The purpose of the meeting is to reach an agreement between the student and the committee about the character and status of the student's program. This meeting also serves as a formal evaluation of the student's performance and prospects. Before the meeting of the Progressive Review Committee, the student develops a Progress Review Statement. The statement needs to include background professional and educational information, course work completed and planned in each concentration and for basic and advanced tool skills, tentative dates for taking the qualifying exam and a discussion of a proposed dissertation topic. Once approved by the committee, the statement serves as a contract for the completion of degree requirements. In the progress review meeting, the committee members review the student's record of past and planned courses, and the likely dissertation topic. The committee determines whether the proposed program of courses will prepare the student for the examination to be taken at the end of the course work as well as for the dissertation.

### Third Year Paper

During the spring semester of the third year, each student will prepare an original research paper to present before the Progress Review Committee. The committee will evaluate the quality of the paper and its presentation. The principal objective of the research paper is to allow the faculty to judge whether the student has the ability to complete all requirements for this research-oriented degree in a timely fashion. Thus, of most importance will be that the paper demonstrates the student's ability to carry out reasonably independent research and write the results in a well-reasoned and coherent fashion. The paper should also demonstrate that the student has a good command of the literature in the area and has the ability to use appropriate research methods in carrying out the analysis. It is anticipated that the progress review paper will be a revision of a substantial research paper prepared to fulfill a requirement for a regular course. (The student can, however, submit an entirely new paper to fulfill this requirement.) The paper should be of a quality warranting presentation at a professional society meeting.

### Qualifying Examinations

Students are required to sit for a qualifying exam in their major fields. SPEA field exams employ a standard format for all students in a field and are offered at predetermined times each year. Each exam is administered by a team of faculty and organized by an exam coordinator for each field. Students will receive a high pass, pass, qualified pass, or a fail for the exam. Students receiving a qualified pass will be asked to re-take portions of the exam, or complete an oral examination. Students who receive a fail on the exam will be required to retake the exam. Upon completion of the exam, signatures of the Committee members and Program Director are required on the Report of Qualifying Examination Committee form. If there is an exam requirement in the minor department, then you must also complete a third exam.

### Dissertation

After filing for candidacy status, the doctoral candidate forms a Research Committee consisting of at least four faculty members, including one representative of the candidate's minor field. This committee may be but is not necessarily identical to the Progress Review Committee. The selection of Research Committee members should reflect the dissertation topic and expertise of the faculty chosen.

The candidate prepares a dissertation proposal to present and defend in a meeting of the Research Committee. The Research Committee is ultimately responsible for determining whether the dissertation is acceptable.

### Placement

The Indiana University School of Public and Environmental Affairs Ph.D. in Public Affairs is ranked as high as #1 among public affairs Ph.D. programs in the United States by the National Research Council. The program is able to recruit highly skilled and talented doctoral students and place graduates in some of the most prestigious public affairs programs in the United States and abroad. Graduates of the program now serve (or once served) on the faculties of Syracuse University, University of Georgia, University of Kansas, University of Washington, Ohio State University, University of Arizona, Dartmouth College, North Carolina State University, Brigham Young University, University of South Carolina,

DePaul University, University of Colorado, Iowa State University, Cleveland State University, Yonsei University, University of Hong Kong and National University of Taipei. In addition, the program enjoys broad support from the faculty.

### Core Requirements

The following six courses are required for all Public Affairs students:

SPEA-M 672	Public Organization and Management II	(3 cr.)
SPEA-P 690	Seminar in Public Policy Process	(3 cr.)
SPEA-P 710	Topics in Public Policy - Microeconomics for Public Policy	(3 cr.)
SPEA-V 606	Statistics for Research in Public Affairs I	(3 cr.)
SPEA-V 607	Statistics for Research in Public Affairs II	(3 cr.)
SPEA-V 680	Research Design and Methods in Public Affairs	(3 cr.)

Students must take these six courses during their first year in the program.

In addition to the six courses listed above, the following two courses are required for all Public Affairs students:

- SPEA-V 621 Seminar in Teaching Public and Environmental Affairs (2 cr.) This course prepares students for college teaching and their professional responsibilities toward current and future students. It is taken in the student's second year in the program.
- SPEA-P 691 Workshop in Public Policy (0 -1 cr.) Each student is required to take this zero to one-credit hour course for credit for three semesters. The workshop provides an experiential base that prepares students to critique research in the field, prepare manuscripts for publication, and to defend new ideas and theories. The course meets once a week for 90 minutes.

### Research Tool Skills

Students must take SPEA-V 606, SPEA-V 607 and SPEA-V 680 as part of the core requirements.

In addition, students must demonstrate either (1) advanced proficiency in quantitative analysis or specialized research skills by completing two additional courses approved by the student's Progress Review Committee, or (2) proficiency in a language appropriate to his/her field of study and approved by the Progressive Review Committee. To qualify as language-proficient, a student must take a language proficiency exam from the appropriate language department at Indiana University

### Major Fields

Students select one of the four SPEA Public Affairs major fields (identified below) to prepare for their qualifying examinations. For this field, the student must complete required courses and approved electives.

### Public Management

The design and operation of government and not-for-profit institutions, including strategic/operations management and interrelationships between public, private, and civil society organizations.

Required courses:

SPEA-M 671	Public Organization and Management I	(3 cr.)
SPEA-P 710	Topics in Public Policy - Public Organization and Management III	(3 cr.)

### Public Finance

The theory and practice of fiscal administration, including public budgeting, revenue administration, and financial management.

Required courses:

SPEA-F 666	Public Revenue	(3 cr.)
SPEA-F 668	Seminar in Public Budgeting	(3 cr.)

### Public Policy Analysis

Research methods and quantitative techniques for policy analysis, including the content, design, and evaluation of public programs.

Required courses:

SPEA-P 664	Seminar in Policy Analysis	(3 cr.)
SPEA-P 673	Public Policy Analysis and Management Science/Operations Research	(3 cr.)

### Environmental Policy

Economics, law, politics, and implementation of environmental policies in the United States and abroad.

Required courses:

SPEA-P 710	<i>Policy</i> Topics in Public Policy: Domestic Environmental Policy	(3 cr.)
	<b>or</b>	
	SPEA-P 710 Topics in Public Policy: International Environmental Policy	
SPEA-R 625	<i>Economics</i> Environmental Economics	(3 cr.)
SPEA-R 645	<i>Law</i>	(3 cr.)

Environmental Law

**or**  
LAW-B 783  
International Environmental Law

### Minor Field

Students select a minor field according to their research interests. Students have the option of taking either: a second major field in SPEA, an external minor field, an internal minor field, or a self-designed or individualized minor approved by the Indiana University Graduate School.

- **External minor field:** For an external minor field, a three to five course sequence is negotiated between the student and the Progress Review Committee, following the requirements of the department or school offering the minor. Among the external minor fields chosen by students in the program are Economics, Finance, Political Science, Sociology, Organizational Behavior and Human Resource Management, Statistics, and Geography.
- **Internal minor field:** For an internal minor field, students may choose any one of the four major fields (public management, public finance, public policy analysis, and environmental policy) or one of the four minor fields (environmental studies, nonprofit management, regional economic development, urban affairs) offered by SPEA. A four-course sequence (12 credit hours) is negotiated between the student and the Progress Review Committee. Students choosing a third major field for their minor field must take the required courses in that field.
- **Self-designed minor field.** Students have the option of a self-designed minor field to provide opportunities for specialized training without requiring the creation and approval of a defined minor field. A four-course sequence (12 credit hours) is negotiated between the student and the Progress Review Committee. Students may combine courses from SPEA and other academic units for their self-designed minor. The University Graduate School must approve a student's proposal for a self-designed minor field (see the University Graduate School Bulletin at <http://bulletins.iu.edu/iu/gradschool/2019-2020/requirements/phd/major-minor.shtml>).

*Courses taken as part of any minor field cannot count toward a major field.*

### Doctor of Philosophy in Public Policy

The Joint Ph.D. Program in Public Policy is a collaborative endeavor of the School of Public and Environmental Affairs and the Department of Political Science.

Its emphasis is on the broad field of public policy, concerning the environment of public policy; the processes of policy formation, management, and implementation; and the analysis and evaluation of policy outputs and results. The institutional setting and design of the program offer a unique educational opportunity. Students in the program receive rigorous social science training and gain

knowledge of government decision-making processes, problem-solving capabilities, and an understanding of the substantive aspects of public problems and their effects on public institutions.

**Admission**

All applicants to the public policy program are subject to approval by a SPEA–Department of Political Science joint admissions committee. Application materials can be found at [www.gradapp.indiana.edu/](http://www.gradapp.indiana.edu/). Applicants for admission and for financial assistance are required to submit a statement of career goals, official results of the Graduate Record Examination (GRE), official transcripts of all undergraduate and graduate work, and a minimum of three letters of recommendation. Students whose native language is not English also must submit results of the Test of English as a Foreign Language (TOEFL). The Joint Program Committee on Admissions and Financial Aid examines each application closely to determine suitability for the program. The committee looks beyond the formal academic record, at the applicant’s demonstrated ability to pursue independent study, language and research skill training, and maturity and experience.

**Degree Requirements**

The University Graduate School requires doctoral students to complete 90 credit hours of graduate credit. Typically, two-thirds of the 90 credit hours are taken in formal course work and one-third in thesis credit. Students holding a Master of Public Affairs or similar degree may be allowed to transfer some of their graduate course work (30 credit hours maximum) if approved by their Progress Review Committee.

- Core Requirements
- Research Tool Skills
- Fields of Concentration

**Major Junctures  
Progress Review Committee**

The Progress Review Committee consists of from four to six faculty members. Two SPEA faculty must be selected for the SPEA concentration and two Political Science faculty for the Political Science concentration. For the shared public policy concentration, there must be one SPEA and one Political Science faculty member. One faculty member is chosen by the student to act as the chair of the committee. The chairperson serves as the student’s mentor and guides the student through the Progress Review and qualifying examination process.

Before the meeting of the Progress Review Committee, the student develops a Progress Review Statement. The statement needs to include background professional and educational information, course work completed and planned in each concentration and for basic and advanced tool skills, tentative dates for taking qualifying exams, and a discussion of a proposed dissertation topic. Once approved by the committee, the statement serves as a contract for the completion of degree requirements.

**Qualifying Examinations**

After completing the course work for a field of concentration, the student is eligible to take the qualifying examination for that concentration. The examinations in fields of concentration offered by the Political Science Department and SPEA are prepared by faculty in those

fields and offered at times scheduled by the Political Science Department and SPEA.

After receiving a pass or qualified pass on each of the two exams, the student schedules the oral examination. Upon completion of the oral examination, signatures of the committee member and program director are required on the “Report of Preliminary Examination Committee” form.

**Dissertation**

After filing for candidacy status, the doctoral candidate forms a Research Committee consisting of at least four faculty members. Two of the members must be School of Public and Environmental Affairs faculty, and two must be from Political Science. This committee may be but is not necessarily identical to the Progress Review Committee. The selection of the Research Committee members should reflect the dissertation topic and expertise of the faculty chosen.

The candidate prepares a dissertation proposal to present and defend in a meeting of the Research Committee. The Research Committee reviews the research proposal and requires changes as needed.

Once the dissertation research is completed, the candidate defends the thesis in an open oral examination meeting. The Research Committee is ultimately responsible for determining whether the dissertation is acceptable.

**Placement**

The Ph.D. Office, the director of the program, and individual faculty members work hard to ensure that graduates of the program are placed in academic or research organizations. Graduates of the Joint Program in Public Policy have been very successful in obtaining such positions. Recent placements include George Washington University, Emory University, Florida State University, University of North Carolina, The Ohio State University, University of Arizona, Georgia Institute of Technology, Ulsan University (Korea), the University of Massachusetts, the U.S. Agency for International Development, and University of Washington.

**Core Requirements**

Public Policy students are required to complete the following courses:

<p>SPEA-M 621 <b>or</b> POLY-Y 550</p>	<p>Seminar in Teaching Public and Environmental Affairs <b>or</b> Political Science and Professional Development (These courses prepare students for college teaching and their professional responsibilities toward current and future students. They are taken in a student’s first year in the program).</p>	<p>(2 cr. <b>or</b> 1-3 cr.)</p>
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SPEA-P 690 <b>or</b> POLY-Y 565	Seminar in Public Policy Process <b>or</b> Public Administration, Law, and Policy: Approaches and Issues (This course is offered alternately each fall semester by SPEA-P 690 and the Department of Political Science Y 565)	(3 cr.)
SPEA-P 691	Workshop in Public Policy (Each student is required to take this 1 credit hour course for three semesters. The workshop features research presentations by faculty, visiting scholars, and advanced students. It prepares students to critique current literature in the field, to prepare manuscripts for presentation and publication, and to defend their ideas and theories. There are two sections offered: one by SPEA and the other by the Workshop in Political Theory and Policy Analysis).	(3 cr.)
SPEA-V 680 <b>or</b> POLY-Y 570	Research Design and Methods in Public Affairs <b>or</b> Introduction to the Study of Politics	(3 cr.)

### Research Tool Skills

Required course work for research skills includes a basic two-semester statistics sequence and two additional elective courses or proficiency in a foreign language.

### Basic Tool Skills

The two-semester quantitative analysis sequence requirement is generally fulfilled through one of the course sequences listed below.

- SPEA-V 606 Statistics for Research in Public Affairs I (3 cr.) and SPEA-V 607 Statistics for Research in Public Affairs II (3 cr.)
- POLS-Y 575 Political Data Analysis I (3 cr.) and POLS-Y 576 Political Data Analysis II (3 cr.)

- SOC-S 554 Statistical Techniques in Sociology I (3 cr.) and SOC-S 650 Statistical Techniques in Sociology II (3 cr.)

### Advanced Tool Skills

In addition, students must demonstrate either

- advanced proficiency in quantitative analysis or specialized research skills by completing two additional courses approved by the student's Progress Review Committee or
- proficiency in a language appropriate to his/her field of study and approved by the Progress Review Committee. To qualify as language proficient, a student must take a language proficiency exam from the appropriate language department at Indiana University

### Fields of Concentration

The School of Public and Environmental Affairs and the Department of Political Science share equally in delivering Public Policy as a field of concentration. Students in the Public Policy Program select two concentration areas—one from SPEA and one from Political Science—in addition to the required concentration in public policy.

These fields of concentration include the following:

SPEA:

- Environmental Policy
- Public Management
- Public Finance
- Policy Analysis
- Political Science:
  - American Politics
  - Comparative Politics
  - International Relations
  - Political Philosophy
  - Political Theory and Methodology

Course offerings in SPEA and Political Science help the student prepare for examinations in these fields, and students supplement their course work with directed readings and research. There is no predetermined set of courses required of all students. Course selection is the responsibility of the student, working in conjunction with his or her Progress Review Committee.

### Doctoral Minors

The School of Public and Environmental Affairs provides course work and other student-related activities for those working toward doctoral degrees in other schools and colleges of Indiana University who select a minor field in public and environmental affairs.

Six minor fields are available:

Environmental Science Minor

Environmental Studies Minor

Nonprofit Management Minor

Public Management Minor

Regional Economic Development Minor

Urban Affairs Minor

### Environmental Science Minor

(9 credit hours) Students in Ph.D. programs at Indiana University may, with the consent of their advisory committee, choose environmental science as an outside minor. The minor is flexible and is usually designed by students in accordance with their needs.

#### Requirements

1. The doctoral candidate must secure a faculty advisor in consultation with the director of the Doctoral Program in Environmental Science. The advisor may not be from the candidate's major department. The candidate's ES minor advisor serves as the representative in all examinations or other requirements of the candidate's Ph.D. program that relate to the minor. The advisor decides on the character of the examination, if any, in the minor field and certifies that the candidate has met the requirements of the minor.
2. The candidate must take at least 9 credit hours of graduate-level courses related to environmental science. The minor will consist of 3 total courses, 9 total credits. The minor will have at least two Environmental courses from SPEA and one elective course. The choice of courses should be made in consultation with the candidate's advisor and must be approved by the director of the Doctoral Program in Environmental Science. Acceptance of the proposed minor is based on two criteria: (1) the courses must have a direct relationship to environmental science, and (2) the courses must not normally be required as part of major or tool skill options in the student's major department. Courses in the minor program should be selected according to the student's interest.
3. A minimum cumulative grade point average of 3.0 (B) must be attained in all courses used for the minor.

### Environmental Studies Minor

(12 credit hours) Students in Ph.D. programs at Indiana University may, with the consent of their advisory committee, choose environmental studies as an outside minor. The minor is flexible and is usually designed by students in accordance with their needs.

#### Requirements

- The doctoral candidate must secure a faculty advisor in consultation with the director of the Doctoral Program in Environmental Science. The advisor may not be from the candidate's major department. The candidate's advisor serves as the representative in all examinations or other requirements of the candidate's Ph.D. program that relate to the minor. The advisor decides on the character of the examination, if any, in the minor field and certifies that the candidate has met the requirements of the minor.
- The candidate must take at least 12 credit hours of graduate-level courses related to environmental studies. These courses must be from at least two different disciplines outside the candidate's major department. The choice of courses should be made in consultation with the candidate's advisor and must be approved by the director of the Doctoral

Program in Environmental Science. Acceptance of the proposed minor is based on two criteria:

- the courses must have a direct relationship to environmental studies
  - the courses must not normally be required as part of major or tool skill options in the student's major department. Courses in the minor program should be selected according to the student's interest. Students majoring in areas other than the natural sciences, for example, may wish to consider the offerings in the natural sciences; similarly, natural science students might consider course offerings in the social and behavioral sciences.
- A minimum cumulative grade point average of 3.0 (B) must be attained in all courses used for the minor.

### Nonprofit Management Minor

(12 credit hours) Students in a Ph.D. program at Indiana University may select nonprofit management as an outside minor.

#### Requirements

- The doctoral student must secure an advisor from the faculty of the School of Public and Environmental Affairs. The faculty advisor will serve as the representative of SPEA in all examinations and other requirements of the student's Ph.D. program that pertain to the minor.
- The minor in nonprofit management requires 12 credit hours of courses approved by the advisor. Three of the four courses must be SPEA courses. The additional course may come from SPEA or from any of a variety of disciplines relevant to nonprofit management.

Some examples of courses appropriate for the SPEA minor in nonprofit management are:

SPEA-F 526	Financial Management for Nonprofit Organizations	(3 cr.)
SPEA-M 602	Strategic Management of Public and Nonprofit Organizations	(3 cr.)
SPEA-M 672	Public Organization and Management II	(3 cr.)
SPEA-N 521	The Nonprofit and Voluntary Sector	(3 cr.)
SPEA-N 522	Human Resource Management in Nonprofit Organizations	(3 cr.)
SPEA-N 523	Civil Society and Public Policy	(3 cr.)
SPEA-N 524	Civil Society in Comparative Perspective	(3 cr.)

SPEA-N 525	Management in the Nonprofit Sector	(3 cr.)
SPEA-N 558	Fund Development for Nonprofits	(3 cr.)
SPEA-N 720	Research and Theory of Nonprofit Management	(3 cr.)
SPEA-P 562	Public Program Evaluation	(3 cr.)
SPEA-V 685	Research Seminar in Management (approved topics)	(3 cr.)

- A minimum cumulative grade point average of 3.0 (B) must be attained in all courses used for the minor.
- Special requirement for 500-level courses. Students taking a 500-level course (and SPEA-M 602) are required to show that they have completed doctoral-level work in conjunction with the course in order to count the course for the minor. Students must alert the instructor to their doctoral status and request additional/alternative assignments. If the instructor is unwilling to do this, the student should select a different course in conjunction with the candidate's advisor.

### Public Management Minor

(12 credit hours) Students in doctoral programs at Indiana University may, with the consent of their advisory committee, select public management as an outside minor.

#### Requirements

- The doctoral candidate must secure an advisor from the faculty of the School of Public and Environmental Affairs. The faculty advisor serves as the representative of SPEA in all examinations and other requirements of the student's Ph.D. program that pertain to the minor.
- The student must take at least 12 credit hours of SPEA graduate-level courses in public management. The choice of courses must be approved by the advisor.
- A cumulative grade point average of at least 3.0 (B) must be maintained.

### Regional Economic Development Minor

(12 credit hours) The minor field in regional economic development involves study in the topics facing regional planners, developmental specialists, and researchers, and an introduction to the body of knowledge in regional development. The study of regional economic development broadens students' perspectives, and students may apply this knowledge to a research agenda that incorporates regional development questions. The student is expected to have studied both micro- and macroeconomics before beginning the minor program.

#### Requirements

- The director of the Institute for Development Strategies serves as the minor advisor. The advisor ensures that prerequisites have been met and

certifies that the candidate has met the requirements of the minor. An examination may be required at the discretion of the advisor.

- The candidate must take at least 12 credit hours of approved courses, which must include two core courses and 6 credit hours of electives. The core curriculum consists of a topics course and a general methodology course. (If the required methodology course has been completed as a requirement for the student's major, an additional elective must be taken to fulfill the minor requirement.) The required topics course is SPEA-D 669 Economic Development, Globalization, and Entrepreneurship. This course is cross-listed as GEOG-G 817 Seminar in Regional Geography. The elective courses may come from a variety of disciplines and must be selected in consultation with and approved by the student's minor advisor.
- A cumulative grade point average of at least 3.0 (B) must be maintained.

### Urban Affairs Minor

(12 credit hours) Students in doctoral programs at Indiana University may, with the consent of their advisory committee, choose urban affairs as an outside minor. The minor is flexible and is designed by students and their advisors in accordance with students' needs.

#### Requirements

- After consulting the director of the Joint Ph.D. in Public Policy Program, the doctoral candidate must secure an advisor from the faculty of the School of Public and Environmental Affairs. This faculty advisor serves as the school's representative in all examinations or other minor program requirements of the candidate's Ph.D. program. The advisor determines the character of the minor examination (if any), participates in the candidate's oral examinations, and certifies that the candidate has met the requirements of the minor.
- The candidate must take at least 12 credit hours of graduate-level courses related to urban affairs. Courses should be selected from at least two departments outside that of the candidate's major. The selection of courses must be approved by the candidate's SPEA advisor.
- A cumulative grade point average of at least 3.0 (B) must be maintained.

## Certificate Programs

### Admission

The student must have a bachelor's degree from an accredited college or university to apply. For the Certificate in Hazardous Materials Management, applicants must have completed one year of general chemistry. For the Certificate in Social Entrepreneurship, applicants must be enrolled in the M.P.A. program in O'Neill or the M.B.A. program in the Kelley School of Business.

### Application

Application forms and literature may be obtained from the same O'Neill offices that offer material for the graduate degree programs. Students should apply to the O'Neill admissions office on the Bloomington campus.

## Application Deadlines

### Residential

Application deadlines for the certificate programs are June 1 for the fall semester and December 1 for the spring semester.

### Online

Application deadlines for the certificate programs are April 1 for the summer semester, August 1 for the fall semester, and December 1 for the spring semester.

### Application Fee

Students must pay a nonrefundable application fee.

### Program Restrictions

- O'Neill graduate certificate programs require 15 credit hours of approved O'Neill coursework with a minimum cumulative GPA of 3.0 (B).
- Course substitutions and course waivers are generally not accepted in certificate programs. However, students may petition the Faculty Program Director for an exception to these policies on the basis of extenuating circumstances.
- The O'Neill School does not allow concurrent admission to an O'Neill graduate degree and an O'Neill graduate certificate that have significant overlap (e.g. MPA degree and Nonprofit Management certificate; MAAA degree and Rural Arts Admin certificate). However, students seeking a degree in Environmental Science are eligible to pursue the Hazardous Materials Management Certificate. When pursuing an O'Neill degree and certificate simultaneously, credits may be shared between the degree and certificate when applicable.
- Students who have made progress toward an O'Neill graduate degree but are unable to complete the program are eligible to use their O'Neill graduate credits toward an O'Neill graduate certificate program.
- Students who have previously completed an O'Neill graduate degree are eligible for admission to an O'Neill graduate certificate as long as the certificate program does not match the student's concentration or focus area in the O'Neill graduate degree. Students who pursue this option may double-count 9 credits of O'Neill graduate coursework between their conferred O'Neill graduate degree and their O'Neill graduate certificate.
- All credits from a conferred O'Neill graduate certificate can count towards an O'Neill graduate degree.
- Students wishing to pursue the Social Entrepreneurship Certificate must first be admitted to the MPA program. All other O'Neill certificates are stand-alone certificates that do not require admission to a degree program.
- Admission to or successful completion of a certificate program does not guarantee subsequent admission to a O'Neill graduate degree program.
- Students enrolled in the certificate program who apply to O'Neill's graduate degree programs must meet all existing admission requirements.
- Students planning to request admission to a O'Neill graduate degree program after successfully completing a certificate program should refer to

the application procedure presented earlier in this bulletin.

- With the exception of the Hazardous Materials Management certificate, students admitted to an O'Neill graduate certificate who wish to continue into an O'Neill graduate degree while also still pursuing the certificate must wait to apply to the degree program until they have completed 9 credit hours of coursework toward the certificate. If successfully admitted to the degree program before 9 credits have been completed, O'Neill will discontinue the certificate record, leaving the degree as the only credential the student will earn.

### Certificates

Seven graduate certificates are offered on the Bloomington campus. Certificate programs are flexible and adaptable to the needs of either precareer or in-service students.

- Certificate in Hazardous Materials Management
- Certificate in Nonprofit Management
- Certificate in Public Budgeting and Financial Management
- Certificate in Public Management
- Certificate in Public and Nonprofit Evaluation
- Certificate in Rural Arts Administration
- Certificate in Social Entrepreneurship

### Certificate in Hazardous Materials Management

The Certificate in Hazardous Materials Management is a 15 credit hour program of study. The program provides managers and technicians in concerned organizations and agencies, public and private, with training in the management of hazardous materials. The certificate program provides an information base that these managers and technicians can use to develop, implement, manage, and assess hazardous waste programs for local, state, and federal regulatory agencies. Graduate students in other disciplines can use the program to supplement their primary fields with course work in hazardous materials management, possibly using the certificate courses as part of a doctoral or master's minor.

### Required Courses (9 credit hours)

SPEA-E 520	Environmental Toxicology	(3 cr.)
SPEA-E 542	Hazardous Materials	(3 cr.)
SPEA-E 562	Solid and Hazardous Waste Management	(3 cr.)

### Electives (6 credit hours)

Two of the following courses:

SPEA-E 510	Hazardous Materials Regulation	(3 cr.)
SPEA-E 515	Fundamentals of Air Pollution	(3 cr.)
SPEA-E 526	Applied Mathematics for Environmental Science	(3 cr.)

SPEA-E 536	Environmental Chemistry	(3 cr.)
SPEA-E 552	Environmental Engineering	(3 cr.)
SPEA-E 553	Creation and Solution of Environmental Models	(3 cr.)
SPEA-E 554	Groundwater Flow Modeling	(3 cr.)
SPEA-E 556	Limnology	(4 cr.)
SPEA-E 560	Environmental Risk Analysis	(3 cr.)
SPEA-H 433	Industrial Hygiene and Radiological Health	(3 cr.)
GEOL-G 430	Principles of Hydrology	(3 cr.)
GEOL-G 451	Principles of Hydrogeology	(3 cr.)
GEOL-G 551	Advanced Hydrogeology	(3 cr.)
GEOL-G 585	Environmental Geochemistry	(3 cr.)

Or other specialty courses with the approval of the graduate program advisor.

### Certificate in Nonprofit Management

The Certificate in Nonprofit Management is a 15 credit hour program of study. The certificate is designed to serve the needs of individuals who would like exposure to the nonprofit sector and nonprofit management skills but who do not wish or need to pursue a degree in nonprofit management. The certificate complements other courses of study or career experience in such areas as social work, library science, public health, or business. Students pursuing a nonprofit management certificate gain an understanding of how to work in and with nonprofit organizations. This certificate is also available to students in the O'Neill Online Program.

### Required Courses (9 credit hours)

SPEA-F 526	Financial Management for Nonprofit Organizations	(3 cr.)
SPEA-N 522	Human Resource Management in Nonprofit Organizations	(3 cr.)
SPEA-N 525	Management in the Nonprofit Sector	(3 cr.)

### Electives (6 credit hours)

Two additional SPEA graduate courses are selected with the approval of the student's advisor. A sampling of current course titles includes:

- SPEA-M 602 Strategic Management of Public and Nonprofit Organizations (3 cr.)
- SPEA-N 521 Nonprofit and Voluntary Sector (3 cr.)
- SPEA-N 523 Civil Society and Public Policy (3 cr.)

- SPEA-N 534 NGO Management for International Development (3 cr.)
- SPEA-N 557 Proposal Development and Grant Management (3 cr.)
- SPEA-N 558 Fund Development for Nonprofit Organizations (3 cr.)

### Certificate in Public Budgeting and Financial Management

The Certificate in Public Budgeting and Financial Management is a 15 credit hour program for those seeking graduate training in the fundamentals of budgeting and finance for government and nonprofit organizations. It is designed for pre-career students, including graduate students in other disciplines who seek to additional capacity-building in their educational program, and for in-service professionals who seek additional expertise in their work or who plan to change their professional roles. The program is for those who wish to acquire additional knowledge and skills in public financial management and control, governmental or nonprofit accounting, and public expenditure planning, management, and control. This certificate is also available to students in the O'Neill Online Program.

### Required Courses (9 credit hours)

SPEA-F 542	Governmental Financial Accounting and Reporting	(3 cr.)
or		
SPEA-F 526	Financial Management for Nonprofit Organizations	(3 cr.)
SPEA-F 560	Public Finance and Budgeting	(3 cr.)
SPEA-V 517	Public Management Economics	(3 cr.)

### Electives (6 credit hours)

Select two from the following courses:

SPEA-F 609	Seminar in Revenue Theory and Administration	(3 cr.)
SPEA-F 610	Government Budget and Program Analysis	(3 cr.)
SPEA-F 667	Seminar in Public Capital and Debt Theory	(3 cr.)

### Certificate in Public Management

The Certificate in Public Management Program is a 15 credit hour program of study in public management. The certificate program is flexible enough to be adapted to the needs of precareer and in-service individuals. Graduate students in other disciplines can use the program to supplement their primary fields with course work in public management, possibly using the certificate courses as part or all of a doctoral or master's degree minor. Career employees of public and private sector agencies seeking courses in public management, and especially

those changing from professional or technical roles to managerial roles, find the certificate program beneficial. This certificate is also available to students in the O'Neill Online Program.

#### Required Courses (9 credit hours)

SPEA-F 560	Public Finance and Budgeting	(3 cr.)
SPEA-M 561	Public Human Resources Management	(3 cr.)
SPEA-V 502	Public Management	(3 cr.)

#### Electives (6 credit hours)

Two additional SPEA graduate public affairs courses approved by the program director.

Note: Students interested in continuing on for the Master of Public Affairs degree should consider electing the two elective courses from the M.P.A. core; one of the courses recommended is V 506 Statistical Analysis for Effective Decision Making.

#### Certificate in Public and Nonprofit Evaluation

The Certificate in Public and Nonprofit Evaluation is a 15 credit hour online program. As it is an online program, it is expected students will complete the program in three semesters. Two courses in each of the first two semesters followed by one semester of one course. This certificate approaches program evaluation as a professional field and not simply a tool. As an additional professional credential, the certificate in evaluation will strengthen the capacity for recipients to utilize evidence driven approaches to assess the effectiveness of programs and services in the public, private, and nonprofit sectors.

#### Required Courses (9 credit hours)

SPCN-P 562	Public Program Evaluation	(3 cr.)
SPCN-V 506	Statistical Analysis for Effective Decision Making	(3 cr.)
SPEA-V 550	Research Methods in Public Affairs	(3 cr.)

#### Electives (6 credit hours)

Two of the following courses:

SPCN-M 561	Public Human Resources Management	(3 cr.)
SPCN-M 602	Strategic Management of Public and Nonprofit Organizations	(3 cr.)
SPCN-N 525	Nonprofit Management	(3 cr.)
SPCN-P 507	Data Analysis and Modeling for Public Affairs	(3 cr.)
SPCN-V 502	Public Management	(3 cr.)

#### Certificate in Rural Arts Administration

The Certificate in Rural Arts Administration is a 15 credit hour program of study. The Rural Arts Administration Certificate prepares students to manage and lead an arts organization in a rural setting, and an understanding of the specific challenges that come with rural arts development in the contemporary era. They will also be familiar with the changing economic and social environment of the rural Midwest, and the key public policy issues affecting rural development, and the arts.

#### Required Courses (9 credit hours)

AADM-Y 502	Organizational Behavior and the Arts	(3 cr.)
AADM-Y 551	Cultural Planning and Community Development	(3 cr.)
AADM-Y 750	Internship in Arts Administration	(3 cr.)

#### Electives (6 credit hours)

Choose any two courses from the following:

AADM-Y 500	Topics in Arts Administration	(3 cr.)
AADM-Y 504	Arts Organizations in the Public and Private Sectors	(3 cr.)
AADM-Y 505	Programming the Performing Arts	(3 cr.)
AADM-Y 506	Curating for Museums and Galleries	(3 cr.)
AADM-Y 508	Performing Arts Organization Management	(3 cr.)
AADM-Y 511	Performing Arts Center Management	(3 cr.)
AADM-Y 515	Performing Arts Center Management	(3 cr.)
AADM-Y 525	Museum Management	(3 cr.)
AADM-Y 530	Audience Development and Marketing the Arts	(3 cr.)
AADM-Y 550	Practicum in Arts Administration	(3 cr.)
AADM-Y 558	Fund Development for Nonprofit Organizations	(3 cr.)
AADM-Y 559	Public Policy and the Arts	(3 cr.)
AADM-Y 562	Legal Issues in the Arts	(3 cr.)

#### Certificate in Social Entrepreneurship

The Certificate in Social Entrepreneurship is an 18 credit hour program of study. The certificate is a cooperative program between the School of Public and Environmental

Affairs and the Kelley School of Business and is available only for students enrolled in the M.P.A. or M.B.A. programs. The Social Entrepreneurship Certificate prepares students for innovatively approaching public needs with a combination of entrepreneurial practices and social purposes—through the for-profit, nonprofit, and governmental sectors.

### Required Courses (6 credit hours)

SPEA-V 559	Principles and Practices of Social Entrepreneurship	(3 cr.)
BUS-W 508	Social Entrepreneurship	(1.5 cr.)
BUS-W 510	Sustainability and Green Business	(1.5 cr.)

### Electives (9 - 12 credit hours)

Nine credit hours required from list below, or other courses, as approved by directors of the certificate program. At least 3 credit hours must be taken at school other than one in which student is enrolled

AADM-Y 511	Performing Arts Center Management	(3 cr.)
AADM-Y 525	Museum Management	(3 cr.)
AADM-Y 530	Audience Development and Marketing the Arts	(3 cr.)
AADM-Y 535	Arts Administration and the Cultural Sector	(3 cr.)
SPEA-F 510	Government Regulation in Market Economics	(3 cr.)
SPEA-F 526	Financial Management for Nonprofit Organizations	(3 cr.)
SPEA-F 542	Government Financial Accounting and Reporting	(3 cr.)
SPEA-F 560	Public Finance and Budgeting	(3 cr.)
SPEA-I 516	Public Management Information Systems	(3 cr.)
SPEA-I 519	Database Management Systems	(3 cr.)
SPEA-L 568	Management of Local Government Services	(3 cr.)
SPEA-L 622	Local Economic Development	(3 cr.)
SPEA-M 504	Public Organizations	(3 cr.)

SPEA-M 547	Negotiation and Dispute Resolution for Public Affairs	(3 cr.)
SPEA-M 561	Public Human Resources Management	(3 cr.)
SPEA-M 602	Strategic Management of Public and Nonprofit Organizations	(3 cr.)
SPEA-N 521	The Nonprofit and Voluntary Sector	(3 cr.)
SPEA-N 522	Human Resource Management in Nonprofit Organizations	(3 cr.)
SPEA-N 525	Management in the Nonprofit Sector	(3 cr.)
SPEA-N 544	Marketing for Nonprofit Organizations	(3 cr.)
SPEA-N 558	Fund Development for Nonprofits	(3 cr.)
SPEA-P 539	Management Science for Public Affairs	(3 cr.)
SPEA-P 541	Benefit Cost Analysis	(3 cr.)
SPEA-P 562	Public Program Evaluation	(3 cr.)
SPEA-V 502	Public Management	(3 cr.)
BUS-F 509	Financial Analysis for Corporate Decisions	(1.5 cr.)
BUS-F 517	Venture Capital and Entrepreneurial Finance	(1.5 cr.)
BUS-J 501	Developing Strategic Capabilities	(1.5 cr.)
BUS-M 511	Marketing Performance and Productivity Analysis	(1.5 cr.)
BUS-M 512	Marketing Strategy (with M511, 4.5 cr.)	(1.5 cr.)
BUS-M 521	Implementation of Marketing Strategies	(1.5 cr.)
BUS-P 510	Service Operations	(1.5 cr.)
BUS-P 552	Project Management	(1.5 cr.)
BUS-P 561	Supply Chain Management and Technologies	(1.5 cr.)

BUS-S 509	Information Systems in Modern Organizations	(1.5 cr.)
BUS-S 510	Managing the Net-Enabled Organization	(1.5 cr.)
BUS-S 520	Managing and Designing Data Base Systems	(1.5 cr.)
BUS-W 503	Creativity and Innovation: Generating New Venture Ideas	(1.5 cr.)
BUS-W 504	New Venture Business Planning	(1.5 cr.)
BUS-W 506	Entrepreneurship Leadership and Practice	(1.5 cr.)
BUS-W 511	Venture Strategy	(1.5 cr.)
BUS-W 516	Organizational Development and Change: The Change Agent	(1.5 cr.)
BUS-W 532	Organization Design Alternatives	(1.5 cr.)
BUS-W 574	Corporate Entrepreneurship and Innovation	(1.5 cr.)

### Social Entrepreneurship Internship (0-3 credit hours)

An internship practicum is also required that can be satisfied by SPEA-V 585 Practicum in Public Affairs (0-3) credit hours, BUS-X 523 and BUS-X 524 Enterprise Experience I and II, or approved experiential credit. The internship consists of:

- A two-month project development period the semester before the internship.
- A three-month full-time (40 hour per week) internship on site at the host organization, agency, or business to execute the project.
- A final evaluation of the project, related to social entrepreneurial approaches.

### Executive Education Program

The Executive Education Program is one of the most prestigious leadership programs in the nation. Offered through the O'Neill School of Public and Environmental Affairs, the Executive Education Program works with the government, nonprofit agencies, and the private sector to prepare leaders and managers to meet today's challenges and anticipate tomorrow's opportunities.

The Executive Education Program offers graduate level programs for the United States Navy and nonprofit organizations. Graduate programs include the Master of Public Affairs (M.P.A.), the Public Management Certificate (P.M.C.), and the Nonprofit Management Certificate (N.P.M.C.).

In 1985, the Executive Education Program formed a partnership with the American Association of State Highway and Transportation Officials (AASHTO),

the leading transportation organization in the United States. Together they created two institutes to challenge and educate transportation leaders, the National Transportation Leadership Institute and the Advanced Leadership Institute, two of the most influential leadership development programs for transportation officials.

In partnership with the Indiana Hospital Association (IHA), the Executive Education Program created a 10-course management curriculum leading to a Certificate in Healthcare Management. Through the IHA Management Institute, managers are equipped with the knowledge, skills, and abilities to help them lead their organizations in a rapidly changing environment. Another partnership is with the Indiana Association of Cities and Towns (IACT). The Executive Education Program was engaged by IACT to develop and deliver professional development programs just for mayors from 2008–2011.

O'Neill's Executive Education Program also offers customized leadership and management programs for local, regional, national, and international clients.

## Centers & Institutes

- The Institute for Development Strategies
- IU Public Policy Institute
- IU Center for Urban Policy and the Environment
- IU Center for Criminal Justice Research
- The Transportation Research Center

### The Institute for Development Strategies

[The Institute for Development Strategies](#), co-sponsored by the School of Public and Environmental Affairs, Office of Research, and the University Graduate School, is a university-wide research program linking faculty resources from various departments and campuses and integrating them with external projects and research being undertaken elsewhere in this country and in other countries. The Institute examines research-related problems in the field of entrepreneurship and economic development at local, national, and international levels. It focuses on strategies for entrepreneurship and economic development and conducts research on the causes and consequences of globalization. Additional information can be found at <https://spea.indiana.edu/institute-development-strategies/home.html>

### IU Public Policy Institute

The IU Public Policy Institute is a collaborative, multidisciplinary research institute within the Indiana University O'Neill School of Public and Environmental Affairs. The Institute serves as an umbrella organization for research centers affiliated with O'Neill SPEA, including the Center for Urban Policy and the Environment and the Center for Criminal Justice Research. The Institute also supports the .

Additional information about the IU Public Policy Institute, the Center for Urban Policy and the Environment, and the Center for Criminal Justice Research, can be found at [www.policyinstitute.iu.edu/](http://www.policyinstitute.iu.edu/).

IU Public Policy Institute  
Breanca Merritt, Director  
334 N. Senate Ave., Suite 300  
Indianapolis, IN 46204-1708

(317) 261-3010  
(317) 261-3050 (fax)

## IU Center for Urban Policy and the Environment

The IU Center for Urban Policy and the Environment is devoted to supporting economic success for Indiana and a high quality of life for all Hoosiers. An applied research organization, CUPE was created by the Indiana University O'Neill School of Public and Environmental Affairs in 1992. The Center works in partnership with community leaders, business and civic organizations, nonprofits, and government. CUPE's work is focused on urban policy, intergovernmental cooperation, community and economic development, housing, environmental issues, and fiscal affairs research essential to developing strategies to strengthen Indiana's economy and quality of life.

### [IU Public Policy Institute](#)

Tom Guevara, Director  
334 N. Senate Ave., Suite 300  
Indianapolis, IN 46204-1708  
(317) 261-3039  
(317) 261-3050 (fax)

## IU Center for Criminal Justice Research

The IU Center for Criminal Justice Research works with public safety agencies and social services organizations to provide impartial applied research on criminal justice and public safety issues. CCJR provides analysis, evaluation, and assistance to criminal justice agencies; and community information and education on public safety questions. Created in 2008 by the Indiana University O'Neill School of Public and Environmental Affairs, CCJR faculty and staff have worked with O'Neill SPEA and the Center for Urban Policy and the Environment on criminal justice and public safety research projects dating back to 1992. Some of the issues CCJR addresses include crime prevention, violent crime, criminal justice systems, policing, traffic safety, and youth.

Additional information about the IU Public Policy Institute, the Center for Urban Policy and the Environment, the Center for Health Policy, and the Center for Criminal Justice Research, can be found at

### [IU Public Policy Institute](#)

334 N. Senate Ave., Suite 300  
Indianapolis, IN 46204-1708  
(317) 261-3000  
(317) 261-3050 (fax)

## The Transportation Research Center

The [Transportation Research Center](#) was established in 1972 as the Institute for Research in Public Safety. Its purpose is to coordinate and facilitate SPEA's research objectives in transportation and related areas, including transportation safety, risk analysis and security, regulatory policy, energy, and the environment. Work in automobile safety focuses on crash investigation, occupant injury, and how these are mitigated with both active and passive safety systems. The center uses a staff of professional researchers, faculty, and graduate students in performing projects for government agencies and the private sector.

## Student Organizations & Services

### Organizations

O'Neill SPEA Alumni Association

### Services

Business–SPEA Information Commons

Career Development Office

### Honor Societies

Alpha Phi Sigma

Pi Alpha Alpha

## O'Neill Alumni Association

O'Neill has a strong commitment to its alumni and considers them among our most valued resources. The O'Neill Office of Alumni Relations strives to maintain lifelong connections with our network of over 32,000 alumni. When O'Neill graduates join the Indiana University Alumni Association, they automatically become members of the O'Neill Alumni Association. The mission of the O'Neill Alumni Association is to inspire and cultivate dynamic interactions among alumni, the school, and current students for the betterment of O'Neill and the professions it serves. Some activities of the Association include the Capitol Hill Colloquium, annual social gatherings in Indianapolis, Denver, Chicago and Washington D.C., and networking and educational opportunities for O'Neill alumni- nationally and globally. The association is also a sponsor of the O'Neill Magazine, our e-newsletter, and manages an endowed scholarship that is awarded annually to O'Neill undergraduate and graduate students. The O'Neill Alumni Association is governed by an elected board of directors comprised of O'Neill Alumni who represent diverse academic and geographic backgrounds. For more information, please visit <https://oneill.indiana.edu/career-services/alumni/index.html>.

## Alpha Phi Sigma

Alpha Phi Sigma is the national criminal justice honor society. The society recognizes scholastic excellence by students in the field of criminal justice. It was founded in 1942 and was admitted to the Association of College Honor Societies in 1980. Membership of graduate students is limited to those who have a bachelor's degree in criminal justice or who are currently doing graduate work in this field. A minimum grade point average of 3.4 is required of graduate students seeking membership in Alpha Phi Sigma.

## Pi Alpha Alpha

Pi Alpha Alpha is the national honor society for schools of public affairs and administration. The society acknowledges outstanding scholarship and contributions to these fields. It was founded in 1972 by the Network of Schools of Public Policy, Affairs, and Administration and the National Association of Schools of Public Affairs and Administration (NASPAA) to honor those whose performance in public affairs has been distinguished. Indiana's is a charter chapter of Pi Alpha Alpha. Membership in Pi Alpha Alpha is comparable to membership in Phi Beta Kappa for liberal arts graduates. A person evaluating credentials in the various fields of

public service should recognize the professional quality such a membership represents.

O'Neill graduate students can qualify for membership by being in the top 20 percent of their M.P.A. or M.S.E.S. class, with a minimum overall grade point average of 3.5, a 3.7 in at least 50 percent of all required courses, and by having completed 50 percent of the required course work (i.e., 24 to 30 credit hours).

Any doctoral student who has successfully passed the qualifying examination is eligible. Alumni are eligible if they meet all the requirements of student membership but graduate before induction by the Indiana chapter.

Any full-time faculty member of a NASPAA-member institution that offers course work in a public affairs or administration degree program and at which a Pi Alpha Alpha chapter is located is eligible for membership. Honorary membership is available to any person who has achieved distinction in public administration and who has the qualities that Pi Alpha Alpha fosters.

## Career Education and Professional Advancement Office

O'Neill's Career Education and Professional Advancement Office delivers a wide range of career/professional development programs and services for graduate students. Experienced Career Advisors meet individually with students as they begin their respective first semesters to plot their career timelines and orient them to the multiple career resources and services available to them.

- Individual career advising
- Self-assessment tools, such as the MBTI and StrengthsQuest
- Workshops and employer information sessions
- Critiquing of resumes, cover letters, and related application materials
- Assist with the formulation of internship and job-search strategies
- Training in career/industry research and interviewing
- Networking with professionals, including O'Neill Alumni/ae and employers
- Individual strategies for making on- and off-campus recruiting opportunities work effectively
- Access to O'Neill Careers, our internship/job database specifically designed to serves O'Neill SPEA students
- Quiet interview rooms available for Skype and phone interviews with employers
- An extensive collection of web-based career/ internship resources that covers opportunities in each area of academic concentration at O'Neill

The Employer Relations team continually cultivates strong recruiting relationships with key employers representing the Public, Nonprofit, and Private sectors of the U.S. and global economies. Many of these employers include O'Neill Alumni/ae who actively participate in signature recruiting and networking events, both on- and off-campus. Our annual Career Catalysts attract alumni and employer representatives from various locations, such as Washington DC, who have a vested interest in connecting with current students. Each fall the Career Education and Professional Advancement Office stages its annual Career Expo to bring employers

and SPEA students together to share internship and job opportunities. Add to these our numerous on-campus career and internship information sessions with alumni and recruiters – the Career Education and Professional Advancement Office and O'Neill SPEA community serves as an important conduit to your post-O'Neill SPEA career direction.

### [O'Neill SPEA Career Education and Professional Advancement Office](#)

SPEA 200  
812.855.9639

[careerhb@indiana.edu](mailto:careerhb@indiana.edu)

## Business–SPEA Information Commons

The Business-SPEA Information Commons (IC) is part of the IU Libraries system in Bloomington. It provides collections, services, and facilities to support the teaching, learning, and research of the Kelley School of Business and the O'Neill School of Public and Environmental Affairs. The IC provides access to an extensive collection of print and digital resources. Detailed information about the Business-SPEA IC can be found at its [website](#).

## Academic Policies & Procedures

The following academic regulations of the O'Neill School of Public and Environmental Affairs are applicable to all graduate programs. Additional campus-specific policies may also apply.

### Confidentiality of Student Records

In accordance with Indiana University regulations, student records are confidential and are available to other persons only under specific conditions as outlined in university regulations.

### Student Rights

Rights of students are included in a handbook available on each campus. Due process is followed in the event of disciplinary or other actions.

### Student Responsibility

Students are responsible for planning their own academic programs and for meeting the requirements for their degree or certificate programs. Faculty and academic advisors may assist students in meeting their responsibilities.

### Applicability of Degree and Certificate Requirements

Students may choose to complete either the specific degree and certificate requirements published in the appropriate bulletin at the time of entry into the university or those in the bulletin current at the time of graduation.

### Residency Requirements—Master's and Certificate Programs

The campus at which a student completes the majority of required course work will certify and award the degree or certificate, provided the campus is authorized to grant that degree or certificate. The student must have been admitted by the O'Neill SPEA campus awarding the degree or certificate.

### Residency Requirements—Doctoral Programs

Students must obtain prior approval from the O'Neill SPEA director of their specific doctoral program for any courses they propose to take at another Indiana University campus. The director of the Ph.D. program follows the policies of the University Graduate School relating to work done at Indiana University campuses other than Bloomington.

### Academic Standing

Students are considered to be in good standing during any semester in which their academic grade point average is at least 3.0 (B) for both their last semester's course work and for the cumulative average of all course work completed. Only courses with grades of C (2.0) or above may be counted toward degree requirements. However, grades below C are used in computing the cumulative grade point average, even if a course is repeated and a higher grade is earned. Students must be in good academic standing in order to graduate.

### Academic Probation

Students are placed on probation following a semester in which their cumulative or semester grade point average falls below 3.0. Students on probation or admitted provisionally are required to attain an average of at least 3.0 for all work completed by the end of the next semester. Failure to do so is cause for dismissal.

### Grading System

The official grading system of the O'Neill School of Public and Environmental Affairs is as follows:

A = 4.0	D+ = 1.3
A- = 3.7	D = 1.0
B+ = 3.3	D- = 0.7
B = 3.0	I = Incomplete
B- = 2.7	F = Failed
C+ = 2.3	W = Withdrawn
C = 2.0	R = Deferred
C- = 1.7	NR = No grade reported

Only grades of C (2.0) or better can be used toward graduation requirements.

### Incomplete

A grade of Incomplete must be removed within the time specified by the instructor of the course; if not, the grade automatically changes to an F one calendar year after the Incomplete was given.

### Withdrawals

Because deadlines for withdrawal from courses may vary by campus and/or school, students should check with the current campus Schedule of Classes to verify deadlines and procedures.

### Intercampus Transfer

Students enrolled in the O'Neill School of Public and Environmental Affairs at any campus of Indiana University may transfer to O'Neill SPEA on another campus, provided they are in good standing.

### Transfer of Credit

A maximum of 9 credit hours of appropriate graduate course work with grades of B (3.0) or higher may be

transferred from degree programs of other academic units within Indiana University or other accredited colleges and universities and applied to O'Neill SPEA master's level degree programs. The transfer must be approved by the appropriate graduate program director.

### Credit Earned in IU Nondegree Status

Not more than 12 hours of graduate credit completed as a nondegree student may be credited toward a O'Neill SPEA graduate degree. Not more than 9 hours of O'Neill SPEA graduate credit earned as a nondegree student may be credited toward O'Neill SPEA certificate programs.

### Course Waivers

Requests for waiver of specific courses or requirements on the basis of previous course work are to be submitted in writing to the appropriate faculty member or program director.

### Program Deviations

Requests for deviation from O'Neill SPEA programs or school requirements are granted only by written approval from an academic advisor and a campus or program director. Disposition by the O'Neill SPEA program or campus director is final.

### Minimum Credit Hours

To qualify for the M.P.A. or M.S.E.S. degree, students must complete a minimum of 24 of the required 48-51 credit hours of graduate O'Neill SPEA courses at Indiana University. Credit granted to transfer students and those exercising the Mid-Career Option or the Prior Professional Experience does not reduce the number of courses taken in O'Neill SPEA below this 24 credit hour minimum.

### Academic Integrity

Academic integrity requires that students take credit only for their own ideas and efforts. Misconduct, including cheating, fabrication, plagiarism, interference, or facilitating academic dishonesty, is prohibited because it undermines the bonds of trust and cooperation among members of this community and between us and those who may depend on our knowledge and integrity. Complete details are contained in the Indiana University *Code of Student Rights, Responsibilities, and Conduct*.

### Academic Appeals

Students may appeal academic decisions made by O'Neill SPEA faculty members. Attempts to resolve such issues should be made first at the class/instructor level. If necessary, written appeals should be submitted to relevant program directors. Appeals must be submitted within 14 days of the final grade being posted. Please contact the Master's Program Office for additional details on the appeal process.

## Graduate Courses

- Arts Administration
- Criminal Justice - For a complete list of courses please refer to the Indianapolis O'Neill SPEA [website](#).
- Environmental Science
- Public Affairs
- O'Neill Online

## Arts Administration Courses

**AADM-Y 500 Topics in Arts Administration (1-6 cr.)**

Selected research and discussion topics organized on a semester by semester basis.

**AADM-Y 502 Introduction to Arts Administration and Organizational Behavior (3 cr.)** This course introduces graduate students to the professional world of arts administration, its many disciplines, its dramatically and rapidly changing landscape, and the nature and culture of its organizations. Major concepts of organizational behavior by employees, managers, and organizations themselves are discussed. Students practice several roles within organizations.

**AADM-Y 504 Arts Organizations in the Public and Private Sectors (3 cr.)** The internal structure and governance of arts organizations in the commercial, nonprofit and public sectors (Ministries of Culture, and arm's length arts councils), as well as hybrid organizations, and contracts between types of organizations.

**AADM-Y 505 Programming the Performing Arts (3 cr.)** This course examines how programming relates to marketing and public relations; the role of programming in the public and professional identity of artists and arts organizations; the external factors that condition program choice; and how programming affects relationships with society and the arts community on local, national, and international levels.

**AADM-Y 506 Curating in Galleries and Museums (3 cr.)** This course explores the idea and practice of curating, from displaying a single object to organizing a complex exhibition. Course provides a body of knowledge and helps students develop skills to curate and evaluate the role of curation and display of objects - all essential to museum and gallery management.

**AADM-Y 508 Performing Arts Organization Management (3 cr.)** This course explores various aspects of managing performing arts organizations. Topics covered include cultural policy; governance, capacity building and personnel management; role of development, fundraising, and grant writing; programming, audiences and marketing; strategic planning; financial management; capital planning; program evaluation; non-profit status, tax and legal issues for organizations and education.

**AADM-Y 511 Performing Arts Center Management (3 cr.)** This course focuses on the aspects of managing a performing arts program and facility. Indiana University Auditorium and other performing arts facilities will serve as laboratories to provide you with a balance between academic and real-world issues.

**AADM-Y 515 Financial Management for the Arts (3 cr.)** The course introduces students to the role of financial management in the modern not-for-profit organization. This course covers applications of budgeting, financial and managerial accounting principles, and procedures and financial analysis for nonprofit organizations. Materials covered should be considered required knowledge for the mid- to senior-level arts administrator.

**AADM-Y 520 Cultural Property Management (3 cr.)** The courses examines cultural property management issues such as the missions, policies, and procedures of institutions large and small, public and private. Field trips,

lectures, and discussions will provide an understanding of museums, cultural foundations, and the commercial art world.

**AADM-Y 522 IT Applications for the Arts (3 cr.)**

Teaches Arts Administration professionals how to use computer applications to create printed, web based and multimedia materials to promote effective communications. Provides instruction and practical hands-on experience in design theory, page layout, usability, accessibility, digital photo editing, graphics, and desktop and web publishing to create promotional and informational materials.

**AADM-Y 525 Museum Management (3 cr.)** General management of art and historical museums. The museum, its legal status, the building, management and staff, goals and objectives, fund raising and budgeting, collections and exhibitions, education and community outreach.

**AADM-Y 526 Art and Social Change (3 cr.)** Art & Social Change traces the development of art practices as a vehicle for social change from the Civil Rights movement to the present day and asks students to envision a community cultural development project of their own. Augusto Boal's innovative community building techniques are used throughout the class.

**AADM-Y 530 Audience Development and Marketing the Arts (3 cr.)** Course includes basic marketing principles as well as audience development and marketing strategy. In addition to introducing the fundamentals of marketing, it fosters and encourages the thought processes necessary to market the products/services that are creative arts.

**AADM-Y 535 Arts Administration and the Cultural Sector (3 cr.)** The market structure of the cultural sector, especially the implications of the differences between artistic goods and other goods and services. Topics include the process by which artistic creations pass through various "gatekeepers" en route to the customer, and the structure of contracts in creative industries.

**AADM-Y 540 Computer Applications for the Arts (1.5 cr.)** Computer Applications concentrates on acquiring usable skills with applications found in the Microsoft Office XP suite. Course offers the general management professional an overview of technology itself and the technology management issues likely to be encountered in professional practice.

**AADM-Y 550 Practicum in Arts Administration (1-3 cr.)** Managerial and administrative experience in three of six arts groups: Musical Arts Center, Department of Theatre and Drama, IU Auditorium, IU Foundation, IU Art Museum, or Mathers Museum.

**AADM-Y 551 Cultural Planning and Urban Development (3 cr.)** An introduction to research and practice concerning the intersection of the arts and urban development. Students will gain an understanding of how scholars view the arts and culture in the context of urban development and how local governments and cultural leaders currently use the arts in urban development initiatives.

**AADM-Y 558 Fund Development for Nonprofit Organizations (3 cr.)** This course will review the historic philanthropic landscape for/examine the different sources

of donations needed to complete the contributed revenue picture for nonprofit organizations, concentrating on those operating in the arts and culture sector. We will explore strategies for building and increasing contributed revenue inside organizations, concentrating on practical solutions.

**AADM-Y 559 Public Policy and the Arts (3 cr.)** This course considers cultural policy in the U.S. and elsewhere. Topics include the ends and means of government funding for the arts, multiculturalism, freedom of expression, copyright, other legal rights of artists, international trade in cultural goods, and international treaties on cultural diversity.

**AADM-Y 562 Legal Issues in the Arts (3 cr.)** This course surveys key practical and substantive legal concepts - contracts, artists' rights, copyright, licensing, trademarks, censorship, types of business organizations - to provide aspiring arts professionals with a basic understanding of current substance and future trends of art law. Related ethical, social policy, and political concerns will be examined.

**AADM-Y 564 Economics and Administration of Artistic Organizations (3 cr.)** In this course students analyze the unique challenges facing arts organizations in the public, nonprofit, and for-profit sectors. Among other topics, the course deals with the multiple and often-conflicting goals faced by arts organizations, consumer demand and price setting, experimentation and innovation, and setting the rules for decision-making and oversight.

**AADM-Y 650 Seminar in Arts Administration (3 cr.)** Seminar involving the promotion of the arts: planning, management, labor relations, fundraising, funding sources, communications, and similar topics in relation to arts centers, museums, and performing organizations. Course includes guest speakers.

**AADM-Y 680 Readings in Arts Administration (1-3 cr.)** P: consent of instructor and departmental chairperson. Supervised readings in arts administration.

**AADM-Y 690 Independent Study in Arts Administration (1-3 cr.)** P: consent of instructor and department chairperson.

**AADM-Y 750 Internship in Arts Administration (1.5-3 cr.)** The internship shall consist of at least 280 hours in an arts related organization. Students may take the internship during the summer following the second semester of course work or in the spring following the third semester of course work.

## Environmental Science Courses

**SPEA-E 410 Introduction to Environmental Toxicology (3 cr.)**

**SPEA-E 431 Water Supply and Wastewater Treatment (3 cr.)**

**SPEA-E 451 Air Pollution and Control (3 cr.)**

**SPEA-E 460 Fisheries and Wildlife Management (3 cr.)**

**SPEA-E 461 Fisheries and Wildlife Management Laboratory (3 cr.)**

**SPEA-E 501 Human Behavior and Energy Consumption (3 cr.)** We face many barriers that prevent us from conserving energy and other natural resources. This course is aimed at decreasing energy

use independent of top down regulations. Students will understand the nature of energy, the importance of human behavior, and how to create, and evaluate behavioral change.

**SPEA-E 502 Water Quality Modeling (3 cr.)** R: College level chemistry, college level physics or calculus, or permission of instructor. This course teaches students to construct and apply water-quality models of aquatic systems, with primary focus on streams, lakes, and estuaries. Students learn to combine physical, chemical, and biological processes into models, and use their models to forecast water quality as a function of changing pollutant loading and management goals.

**SPEA-E 503 Natural Gas: Technical and Policy Challenges (3 cr.)** The principal goal of this course is to convey to students the multiple factors that are associated with the formational processes, physical and chemical characteristics, exploration and development dynamics, transportation and energy conversion technologies, along with some of the environmental policy implications associated with this energy resource; natural gas.

**SPEA-E 510 Environmental Regulations and Compliance (3 cr.)** This course provides an overview of the principles and practice of environmental law, regulation, and compliance. Topics include introduction to the U.S. regulatory framework, survey of regulations and statutes, and problems/case studies for applying legal and regulatory concepts.

**SPEA-E 511 Sustainability Assessment (3 cr.)** There has been a proliferation of various metrics that measure the sustainability of products, services, buildings, and institutions. Three are developed: life cycle analysis (ISO14040), the USGBC's LEED certification, and the AASHE's STARS metric. Various uses of these metrics to design products, certify performances, and improve outcomes will be evaluated.

**SPEA-E 512 Risk Communication (3 cr.)** Risk communication is the means by which technical information is communicated to others (the public included), especially in the context of making decisions about environmental-related policy, such as siting of a landfill. The course emphasizes both theory (in lectures) and practical experience through developing and acting in role-play scenarios.

**SPEA-E 513 Environmental Project Management (3 cr.)** This course covers foundational to advanced concepts and specific skills development in critical project management areas, including supervising project scope, time, cost, human resources, and communication. This team-based course will focus on environmental sustainability case studies and include an academic foundation with an emphasis on the use of real-world skills.

**SPEA-E 514 The Changing Landscape of Toxic Chemical Regulations (3 cr.)** This class reviews current toxicological practices and chemical safety policies, and regulations. It discusses these current practices in light of proposed changes in regulatory toxicology that incorporate 21st century innovations, which are covered in context of their scientific underpinnings, and the promises and challenges they offer to regulatory toxicology.

**SPEA-E 515 Fundamentals of Air Pollution (3 cr.)**

The purpose of the course is to provide the student with an understanding of the field of air pollution, including the behavior of the atmosphere and pollutants in the atmosphere, effects of air pollution, regulatory programs, engineering controls, and air quality management programs.

**SPEA-E 516 Fisheries Management (2 cr.)** Teaches the processes for managing fisheries in a variety of environments. Covers basics of fish biology, ecology and management, with an emphasis on public involvement. Students will explore quantitative fisheries methods, including population dynamics and management strategy evaluation, and presentation of scientific information in written and spoken form.

**SPEA-E 517 BMP Design for Healthy Urban Watersheds (3 cr.)** Students will acquire the skillset to implement Best Management Practices within watersheds. Students will explore the innovative BMPs and respective ecological analysis and impacts. Improving on water quality and quantity, BMPs also improve municipality resilience for sustainability and future development. This course will work with clients to address these demands.

**SPEA-E 518 Vector-based Geographic Information Systems (3 cr.)** Geographic information systems using vector data structure. Vector GIS capabilities and uses. Data structure and file management of spatial data. Laboratory exercises using ARC/INFO software.

**SPEA-E 519 Applied Remote Sensing of the Environment (3 cr.)** Applications of remotely sensed data and raster geographic information systems in environmental research. Concepts of remote sensing. Image acquisition from different sensors ranging from aerial photography to various types of satellite imagery. Image processing and analysis. Raster geographic information systems. Raster-vector integration. Concepts of spatial analysis.

**SPEA-E 520 Environmental Toxicology (3 cr.)** An examination of the principles of toxicology and the toxicity resulting from environmental exposure to chemical substances.

**SPEA-E 521 PCBs, Dioxins and Flame Retardants (2 cr.)** History of toxic chemical environmental disasters: mercury & lead; Love Canal & hazardous waste; polychlorinated biphenyls in Bloomington & New York; dioxins (in Agent Orange, Missouri, & Italy); toxic torts; flame retardants (in Michigan & in babies, cats, dogs, & eagles); persistent pesticides (environmental trends & in farm-raised salmon); Deepwater Horizon oil spill.

**SPEA-E 522 Urban Forest Management (3 cr.)** Originally an outgrowth of arboriculture, urban forestry now encompasses the broader concepts of managing the trees, forests, and other natural resources of cities for ecological, economic, and social benefits. Lectures, discussion, and field projects will be supplemented by outside speakers. (IUB and Bloomington will be the field laboratory.)

**SPEA-E 523 Habitat Analysis - Aquatic (3 cr.)** This is a hands-on field course that combines the disciplines of ecology, natural history, and environmental policy to understand the habitat requirements of a variety of

aquatic species. We will evaluate and measure various characteristics of the aquatic environment and determine the suitability of these characteristics or a variety of aquatic species.

**SPEA-E 524 Habitat Analysis - Terrestrial (3 cr.)** This is a hands-on field course that combines the disciplines of ecology, natural history, and environmental policy to understand the habitat requirements of a variety of terrestrial species. We will evaluate and measure various characteristics of the terrestrial environment and determine the suitability of these characteristics for a variety of terrestrial species.

**SPEA-E 526 Applied Mathematics for Environmental Science (2-3 cr.)** P: differential and integral calculus. Applications of mathematics to modeling environmental processes. Applied calculus, numerical analysis, differential equations.

**SPEA-E 527 Applied Ecology (3 cr.)** Ecosystem concepts in natural resource management. Techniques of ecosystem analysis. Principles and practices of ecological natural resource management.

**SPEA-E 528 Forest Ecology and Management (3 cr.)** P: SPEA-E 538 or V 506. C: SPEA-E 538 or V 506. Field and laboratory exercises in quantitative analysis of forest ecosystems. Sampling and data collection methodologies. Data analysis and interpretation. Concepts in forest ecology and forest management.

**SPEA-E 529 Application of Geographic Information Systems (3 cr.)** Conceptual and technical overview of geographic information systems (GIS). Applications in various fields of public affairs and environmental science.

**SPEA-E 530 Fundamentals of Sustainable Agriculture (3 cr.)** This course will present the fundamentals of specialty crop and animal sustainable agriculture based on an ecological agriculture framework. Students will learn about and apply ecological, social, and economic concepts in evaluating farm sustainability. The course includes both in-class and field lab experiences.

**SPEA-E 532 Introduction to Applied Ecology (3 cr.)** This course provides an introduction to applied ecology for non-science majors.

**SPEA-E 533 Environmental Management Systems: ISO 14001 Based (3 cr.)** This course provides students with the knowledge and skills to establish or improve an environmental management system that is compatible with ISO (International Organizations for Standardization) 14001, an international, voluntary standard that is emerging as a best-management practice for environment.

**SPEA-E 534 Restoration Ecology (3 cr.)** P: SPEA-E 440 or SPEA-E 527 or permission of instructor. The development and application of ecological principles to restore or re-create ecological structure and function of terrestrial and aquatic ecosystems. This course covers basic concepts of ecosystem restoration, including development of energy flow and nutrient cycles, soil formation, mechanisms of species dispersal and colonization, and mutualistic relationships.

**SPEA-E 535 International Environmental Policy (3 cr.)** This course examines the forces in society alternately promoting and impeding cooperation in the environmental

realm. Our inquiry is guided by four, interrelated course units: (1) international environmental law; (2) international political order; (3) the environment and global markets; and (4) sustainable development.

**SPEA-E 536 Environmental Chemistry (3 cr.)** P: one course in chemistry with lab. Gas law calculations, stoichiometry, steady and nonsteady state box models, stratospheric ozone, chemical kinetics, photochemical smog, greenhouse effect, CO<sub>2</sub> equilibria, chemodynamics, pesticides, and toxic metals.

**SPEA-E 537 Environmental Chemistry Laboratory (3 cr.)** P: SPEA-E 536 or consent of instructor. C: SPEA-E 536 or consent of instructor. Experimental work in environmental chemical analysis to demonstrate analytical methods and instrumentation used in environmental laboratories, having reference to air, water, and soil quality.

**SPEA-E 538 Statistics for Environmental Science (3 cr.)** P: calculus and introductory statistics. Data analysis and statistics for environmental research and policy-making. Logic and illogic hypothesis testing with emphasis on power. Sampling and design of experiments. Group comparisons, analysis of variance, regression.

**SPEA-E 539 Aquatic Chemistry (3 cr.)** The distribution and cycling of chemical components in natural and engineered systems. Emphasis is on practical aspects of aquatic chemistry. Graphical and computational methods, as well as chemical equilibrium modeling, will be used to solve applied problems in water chemistry.

**SPEA-E 540 Wetlands Ecology and Management (4 cr.)** P: SPEA-E 272. This course focuses on structural and functional characteristics of wetlands and their importance as a natural resource to society. Topics include characteristics to identify and classify wetlands, adaptations for living in wetlands, community structure, ecosystem processes, functions and values. Management of wetlands includes jurisdictional delineation, wetland assessment, and hydrogeomorphic assessment.

**SPEA-E 541 Controversies in Environmental Health (3 cr.)** Research, presentation, writing, and argumentation skills will be developed using a debate format. The course focuses on topics related to environmental health and the health of the environment.

**SPEA-E 542 Hazardous Materials (3 cr.)** Provides a technical basis for managing hazardous materials. Topics of discussion include properties and chemistry of hazardous materials; recognition of potential hazards associated with the use, storage, and transport of these materials; emergency and spill response; health effects; and transportation regulations.

**SPEA-E 543 Environmental Management (3 cr.)** Introduces advanced management concepts needed for environmental professionals by increasing their understanding regarding: 1) How implementing program, resource and political management relates to environmental issues; 2) the organizational and legal structure/function of environmental management in the United States; and 3) how professionals develop a strategic implementation approach toward successfully managing the environment.

**SPEA-E 544 Subsurface Microbiology and Bioremediation (3 cr.)** P: BIOL-M 310 or BIOLM 350; CHEM-C 126. This course explores how microorganisms and microbial processes affect the degradation of organic and inorganic pollutants in the subsurface. Topics include measurements of subsurface microbial activity, thermodynamics and biochemistry of degradation processes, degradation kinetics, and the control and enhancement of these processes in environmental matrices.

**SPEA-E 545 Lake and Watershed Management (3 cr.)** Students will learn to apply basic limnological principles to diagnose lake and watershed problems, to understand lake response to pollution, to identify appropriate management solutions, and to predict lake response to management.

**SPEA-E 546 Stream Ecology (3 cr.)** P: SPEA-E 556. Advanced limnology course that explores patterns and processes characterizing stream ecosystems. Takes a holistic approach that includes: physical, chemical and biological stream characteristics; watershed patterns; and stream processes (trophic dynamics, colonization and dispersal, community dynamics, and responses to change). A four-hour weekly lab and group project develop necessary analytical skills.

**SPEA-E 547 Applied Earth Science (3 cr.)** Principles of the earth sciences and their applications to environmental analysis and management. Identification, quantification, and analysis of critical components of watershed systems. Interaction of human activities with the physical environment.

**SPEA-E 548 Applied Earth Science Laboratory (3 cr.)** Principles and methods of sampling, collection, measurement, analysis, and interpretation of data concerning processes and features of the physical environment. Students will become familiar with field and laboratory equipment within the context of research projects. Emphasis is placed on practical application of basic techniques to real problems.

**SPEA-E 549 Environmental Planning (3 cr.)** Concepts and methodologies in environmental planning. The planning process. Topics may include environmental impact assessment, economic approaches to environmental decision making, use of computer models in environmental planning, geographic information systems in environmental planning, environmental perception, and construction of environmental indices. Team projects with planning agencies.

**SPEA-E 550 Soil Science and Management (3 cr.)** Students will gain a general background in traditional topics in soil science, such as soil formation, classification, nutrient cycling, and soil ecology. They will then apply this foundation to critical management problems and concepts, such as agricultural production, soil erosion, nutrient pollution, and soil health.

**SPEA-E 552 Environmental Engineering (3 cr.)** Concerned with biological, chemical, physical, and engineering knowledge essential to the achievement of environmental quality objectives. Theory and design of unit operations and processes for air, water, and land pollution abatement. Emphasis on water quality

control, industrial wastewater treatment, and solid waste management.

**SPEA-E 553 Creation and Solution of Environmental Models (3 cr.)** Description of the environmental system in terms of steady-state and nonsteady-state material and energy balances. Formulation of the balances as differential equations with appropriate boundary conditions, solution techniques.

**SPEA-E 554 Groundwater Flow Modeling (3 cr.)** Fundamentals of groundwater flow modeling demonstrated through exercises in one-dimensional and radial flow. Two-dimensional flow is treated by use of a semianalytic approach. Alternative modeling techniques, such as finite elements and finite differences, are discussed. Streamline tracing is discussed to study spreading of contaminants.

**SPEA-E 555 Topics in Environmental Science (1-3 cr.)** Selected research and discussion topics in environmental science. Usually organized in a seminar format.

**SPEA-E 556 Limnology (4 cr.)** P: a undergraduate course in biology Study of inland waters, including lakes, reservoirs, and rivers. Course covers physical, chemical, and biological aspects of aquatic ecology, including the impacts of human activities on inland waters. We have two 75-minute lectures per week, along with one 4-hour lab each week.

**SPEA-E 557 Conservation Biology (3 cr.)** P: a 300 level ecology course. Ecological principles associated with rare species and with biodiversity, laws and statutes used to conserve biodiversity, and land and species management practices. Our aim is to understand scientific and political complexities of conservation biology, and to study different methods used to conserve living resources and resolve conflicts associated with conservation.

**SPEA-E 559 Field Techniques in Ecology (3 cr.)** P: one semester of statistics. Course provides an introduction to field research on ecology. Field labs teach techniques associated with geographic and map work, population estimation, habitat measurement in a variety of settings, and soil sampling. Indoor work covers descriptive univariate and bivariate statistical techniques, data display, and report writing.

**SPEA-E 560 Environmental Risk Analysis (3 cr.)** P: SPEA-E 538 or V 506, or consent of instructor. Methods of probabilistic risk analysis applied to environmental situations. Event trees, fault trees, toxicological estimation, ecological risk analysis. Social and psychological aspects of risk. Individual and group projects assessing some real environmental risk are an important part.

**SPEA-E 562 Solid and Hazardous Waste Management (3 cr.)** The purpose is to provide students with a technical foundation in areas of solid and hazardous waste management which can be applied to the examination of policy options. Topics include characterization of the waste stream, regulations, health and environmental risks, liability issues, management technologies, and treatment and disposal options.

**SPEA-E 564 Organic Pollutants: Environmental Chemistry and Fate (3 cr.)** P: SPEA-E 536 or permission of instructor. This course provides students with both a

quantitative and intuitive understanding of the relationship between chemical structure, environmental properties, and the behavior of organic contaminants in the environment, particularly aquatic environments. Physical/chemical properties of organic chemicals, fate determining processes, and modeling concepts will be examined in detail.

**SPEA-E 570 Environmental Soil Science (3 cr.)** Soil chemistry can affect forest and crop productivity, pollutant degradation, surface and groundwater quality, and other environmental processes. This course emphasizes chemistry of soil minerals and organic matter, mineral solubility, the soil biota, redox transformations and reaction kinetics, soil colloid and surface chemistry, and biogeochemical cycling of metals.

**SPEA-E 574 Energy Systems (3 cr.)** Graduate level course that introduces the basic technical and regulatory elements of energy systems including characteristics of primary sources, conversion technologies, environmental impacts and commercial/regulatory constraints.

**SPEA-E 579 Readings in Environmental Science (1-6 cr.)** Readings on selected topics in environmental science to be arranged with the individual instructor.

**SPEA-E 582 Overseas Topics in Environmental Science (0-15 cr.)** SPEA Abroad Graduate Program: study of selected topics in environmental science. Topics vary from semester to semester. May be repeated for credit.

**SPEA-E 589 Practicum in Environmental Science (0-6 cr.)** Professional experience in environmental science with public agencies or private sector firms or organizations. Usually arranged through the Placement and Internship Office.

**SPEA-E 590 Energy Policy from a Nation-State Perspective (3 cr.)** This course will examine national energy policies through the lens of basic theories of international relations. Case studies will examine specific countries in detail, as well as efforts at regional and international cooperation. Students will work in pairs preparing recommendations for the energy ministries of specific countries.

**SPEA-E 591 Climate Change Impacts on Natural Resources (3 cr.)** Climate change impacts to species, ecosystems, and natural processes, including impacts that result from human responses to climate change. Includes science and policy aspects. Requires previous coursework in supporting science or policy.

**SPEA-E 620 Environmental Analysis Workshop (3 cr.)** Projects in environmental analysis.

**SPEA-E 625 Research in Environmental Science (1-12 cr.)** Research on selected topics in environmental science to be arranged with the individual instructor.

**SPEA-E 680 Seminar in Environmental Science and Policy (1-2 cr.)** P: doctoral student status or consent of the instructor. A seminar series on current topics in environmental science and policy. This course can be repeated for credit for a maximum of 8 credit hours. This course can be repeated for credit for a maximum of 8 credit hours.

**SPEA-E 710 Advanced Topics in Environmental Science (1-3 cr.)** P: consent of instructor. For advanced students. Topics will vary and will cover subjects not available in other courses. May be repeated with different topics for a maximum of 12 credit hours. May be repeated with different topics for a maximum of 12 credit hours.

**SPEA-E 725 Research in Environmental Science (1-12 cr.)** Research on selected topics in environmental science to be arranged with the individual instructor.

**SPEA-E 782 Overseas (PH.D.) Topics in Environmental Science (0-15 cr.)** P: consent of instructor. For advanced students. Doctoral Abroad Program; study of selected topics in environmental science. Topics vary from semester to semester. May be repeated for credit. May be repeated with different topics for a maximum of 12 credit hours.

**SPEA-E 890 Ph.D. Thesis: Environmental Science (1-12 cr.)** (S/F option available)

## Public Affairs Courses

**SPEA-D 548 US Foreign Policy and Third World Regimes (3 cr.)** This course is designed to familiarize students with institutional actors, interest groups and issues that dominate American foreign policy toward Third World countries in the post-Cold War era.

**SPEA-D 573 Development Economics (3 cr.)** This course will give students a firm understanding about developing economics and some of their pressing issues. It will provide conceptual, theoretical and empirical exposure on key topics, problems, policies and actors.

**SPEA-D 576 Approaches to Development (3 cr.)** Examination of the application of development theory to the public sector. Topics include modernization theory, urbanization, development administration, community development, ethnicity, ideology, and national planning. Area case study project to include problems of policy implementation in developing areas.

**SPEA-D 577 International Economic Strategies and Trade Policy (3 cr.)** Examination of topics in international economics as related to problems of economic development policy. Topics include international trade, comparative economic policy, economic integration, foreign aid investment, exchange rates, and international economic organizations.

**SPEA-D 578 Introduction to Comparative and International Affairs (3 cr.)** The purposes of this course are to enlighten future public professionals about the promises and challenges posed by globalization, and to introduce and examine major concepts and case material from the world of comparative and international affairs.

**SPEA-D 583 Conflict and Development (3 cr.)** This course will introduce students to the relationship between economic systems and political stability, with a focus on understanding why so many developing countries are also weak, fragile, or in conflict.

**SPEA-D 598 Governing and Leading in a Global Society (3 cr.)** This gateway course will increase student appreciation of the role of public affairs professionals in governance across multiple sectors of society within the global context. Students will learn norms associated with

effective practice in public affairs and frame a professional development plan to acquire leadership skills to support these norms.

**SPEA-D 669 Economic Development, Globalization, and Entrepreneurship (3 cr.)** This seminar examines the link between globalization, entrepreneurship, and regional economic development. It utilizes state-of-the-art methodologies and theories to focus advanced graduate students on research topics in economic development policies.

**SPEA-D 681 Seminar in Development Policy and Management (3 cr.)** P: SPEA-V 575 and V 576, or consent of instructor. To explore linkages among policy analysis, management models, programs, and outcomes in a variety of development efforts in the less-developed countries. The primary focus is on empirical analysis of developing countries, with some attention to U.S. domestic ventures.

**SPEA-F 510 Government Regulation in Market Economies (3 cr.)** P: SPEA-V 517 or consent of instructor. An overview of government regulation and involvement in the private sector and of public policy consequences of government action in market economies. Analysis of case studies in business-government relations.

**SPEA-F 526 Financial Management for Nonprofit Organizations (3 cr.)** This course emphasizes a thorough understanding of the language and key concepts of nonprofit financial management. A working knowledge of the basic analytical tools used in financial decision making for nonprofit organizations will be examined through the use of computer software.

**SPEA-F 542 Governmental Financial Accounting and Reporting (3 cr.)** P: SPEA-V 560. C: SPEA-V 560. An introduction to the fundamentals of accounting in business, nonprofit, and public sectors. Intended only for students without previous accounting courses. Primary emphasis is on municipal entity fund accounting, including the development and use of financial statements.

**SPEA-F 560 Public Finance and Budgeting (3 cr.)** The fiscal role of government in a mixed economy; sources of public revenue and credit; administrative, political, and institutional aspects of the budget and the budgetary process; problems and trends in intergovernmental fiscal relations.

**SPEA-F 567 Public Financial Administration (3 cr.)** Problems of financial management in governmental units; alternative revenue sources, financial planning, and control; cash debt management; and survey of modern expenditure management, control, and planning.

**SPEA-F 584 Tax Policy in Developing Countries (3 cr.)** This course will introduce students to the challenges afflicting developing countries as they seek to administer their tax systems and some of the policies that have been used to mitigate these problems.

**SPEA-F 591 Investments and Portfolio Management (3 cr.)** For M.P.A. students with interests in investment management and design of investment portfolios in the public and nonprofit sectors. Surveys the basic theory and practice of investment valuation; stocks, bonds, and hybrid

securities; risk management; diversification; asset pricing models; and theory of tests of market efficiency.

**SPEA-F 609 Seminar in Revenue Theory and Administration (3 cr.)** P: SPEA-V 560. C: SPEA-V 560.

This seminar examines the basic objectives and the political and economic aspects of tax administration. In the course of an examination of the interrelationships of tax policy, tax laws, and tax administration, the course reviews the major economic issues raised by types of taxes and user charges. The seminar also examines the fundamentals of tax legislation. Major emphasis is on state and local administration, although some federal problems will be covered.

**SPEA-F 610 Government Budget and Program Analysis (3 cr.)** P: SPEA-V 560. C: SPEA-V 560.

Advanced study of management aspects of budgetary process. Special cases are analyzed and budget problem-solving exercises are utilized.

**SPEA-F 666 Public Revenue (3 cr.)** This course is designed to provide a foundation for policy-directed research into government revenue systems and the individual revenue sources entering into those systems. It includes both the nature of those sources and their administration.

**SPEA-F 667 Seminar in Public Capital and Debt Theory (3 cr.)** P: SPEA-F 560. C: SPEA-F 560.

This seminar examines the options open to governments, especially state and local, and why they resort to debt finance. The issues raised by the alternatives are examined in detail. Among the topics are public authority debt, revenue bonds, methods of placement, lease-purchase finance, and maturity choice. In addition, management of idle cash balances will be considered.

**SPEA-F 668 Seminar in Public Budgeting (3 cr.)** This seminar will examine a body of literature dealing with public-sector resource allocation in the United States. Primary emphasis will be on the budgetary process, the emergence of competing theories of budgeting, and contemporary budgeting research. Budgetary systems will be explored at the national, state, and local levels.

**SPEA-H 509 Financial Management Principles of Health Care (3 cr.)** Provides knowledge of corporate finance practice in health care organizations. Establishes and understanding of the basic elements of financial theory used to address service expansion or contraction, capital investment issues, developing business plans and working capital management.

**SPEA-H 524 Health Industry Regulation (3 cr.)** This course provides an overview of the management, economic and policy issues facing the pharmaceutical, biotechnology, and medical device industries. It also covers legal issues in hospital and other provider sectors as a secondary focus. Topics include R+D regulations, FDA approval, biotechnology, mergers and acquisitions, manufacturing and liability.

**SPEA-H 525 Health Economics for Policy and Management (3 cr.)** Economic principles play a key role in understanding/improving health policy and management. Health economics applies the tools of the discipline to questions in organization, delivery, and financing to understand health, the health care and health

insurance systems, and to critically evaluate current policy debates in the US and globally.

**SPEA-H 526 Healthcare Finance (3 cr.)** The course focuses on important accounting and financial management principles and concepts relevant to health services and organizations. Through this class, you will learn to: (a) Apply basic financial management and accounting principles in healthcare and public health; (b) use statistical and analytical tools to measure and improve organizational performance.

**SPEA-H 527 International Healthcare Systems (3 cr.)** The course provides the student with an overview of basic healthcare systems currently employed around the world.

The first half of the course will explore the basic types of healthcare systems/structures. The second half of the course will employ a country by country evaluation of world healthcare systems. The course will end with a look at applying an understanding of world healthcare systems to industry.

**SPEA-H 533 Industrial Hygiene (3 cr.)** Survey of technical and regulatory aspects of protecting the health and safety of workers. Topics include basic toxicology; skin, eye, and respiratory hazards; measuring hazardous atmospheres; ventilation systems; fire and explosion hazards; emergency responses; occupational hearing loss; radiation; prevention of accidents; cumulative trauma; and personal protective equipment.

**SPEA-H 549 Health Policy (3 cr.)** Comprising an astounding one fifth of the economy and growing, the health sector provides a fascinating setting to study policy making in action. The class confronts major current US and international topic areas such as preventive behavior; medical technology; the health care delivery and payment systems; and health insurance reforms.

**SPEA-H 592 Global Health Issues and Management (3 cr.)** An overview of the theoretical underpinnings of, and current issues within, global health management. Topics include the impact of globalization on disease, health organization, program management, management of humanitarian events, and health system planning. The necessity of collective obligation and action for global health will be a recurring theme.

**SPEA-I 516 Public Management Information Systems (3 cr.)** This course focuses on the application of information systems concepts and tools to challenges and opportunities in the public sector. Topics covered will include current trends in information systems; managerial use of information systems; hardware, software, and telecommunications; systems development processes and practices; and strategic and policy issues in IS.

**SPEA-I 519 Database Management Systems (3 cr.)** This course provides students an in-depth knowledge of database design and management in public organizations. The students create a conceptual, logical, and physical design of databases; build models of data required by users with modeling formalisms and computer-aided software engineering tools; and design queries using leading database software packages.

**SPEA-I 611 Design of Information Systems (3 cr.)** P: SPEA-V 516 and V 519. C: SPEA-V 516 and V 519. Students in this course will learn the concepts, skills,

methodologies, techniques, tools, and perspectives essential to successfully develop information systems for the public sector. To achieve this, students will learn how to conduct systems requirements analysis, translate them to process and logical models, and design the systems.

**SPEA-I 613 Implementation of Information Systems (3 cr.)** P: SPEA-V 516, V 519, and V 611. C: SPEA-V 516, V 519, and V 611. This course is intended to build on prior courses in information systems management. The course covers advanced topics in systems implementation and evaluation. Special emphasis is placed on evaluation of alternative systems designs and their implementation in operational settings of public agencies.

**SPEA-L 563 Planning and Community Development (1-3 cr.)**

Course designed to familiarize students with planning and community development ramifications at local governments. The emphasis of course is to use critical thinking and problems solving techniques in a project management type setting. Local government topics such as, housing, redevelopment, public finance and others will vary by semester.

**SPEA-L 564 Local Government Management (3 cr.)**

This course deals with the professional management of local communities, with special attention to the forms, processes and policies of cities, towns and counties. Readings and case studies will focus on local government management relating to leadership, planning and operations.

**SPEA-L 568 Management of Local Government Services (3 cr.)** This course is intended to familiarize students with the basic practices, vocabulary and values of professional municipal service delivery through readings, cases, field visits, guest speakers, discussions, and written and oral exercises.

**SPEA-L 597 Land Use Planning (3 cr.)** The course examines the theoretical basis and practical need for land use planning. Emphasis is placed on the institutional context in which land use planning occurs. The course provides an in-depth analysis and exercise in plan preparations.

**SPEA-L 622 Local Economic Development (3 cr.)** This course presents concepts, theories and practices of sustainable local economic development. Lectures, guest speakers, readings and a final applied project will prepare students to provide professional recommendations and analysis of economic development policies and implementation strategies.

**SPEA-L 623 Seminar in Urban Management (3 cr.)** P: SPEA-V 561, V 564, V 567. This course is the required capstone course for all graduate students with a concentration in urban management. Course is combined with student's required internship. Students are assigned selected reading in current urban management issues as well as research projects and case studies on/in the communities they are serving.

**SPEA-M 504 Public Organizations (1-3 cr.)** This course focuses on the behavior and theory of public organizations in four areas: (1) individuals and groups in public organizations, (2) the design of public

organizations, (3) organization-environment relations, and (4) interorganizational relations.

**SPEA-M 518 Intergovernmental Systems Management (1-3 cr.)** Discussion of theories and approaches to systems management, including responsibilities and tasks of public systems. Examination of intergovernmental relationships and intralocal governmental relationships, treatment of organizational and systems design, as well as planning, decision making, and control of public systems. Discussion of applications to services such as environment, health, and human services.

**SPEA-M 547 Negotiation and Dispute Resolution for Public Affairs (3 cr.)** Students will learn the skill of interest-based negotiation through role play and simulation. Students will learn about dispute resolution techniques such as mediation, arbitration, fact finding, early neutral evaluation, ombudsmanship, and facilitation. The course covers dispute resolution in federal government and in the context of public, environmental, labor, and business disputes.

**SPEA-M 561 Public Human Resources Management (1-3 cr.)** Analysis of the structure, operations, and design of public personnel systems, including government agencies and public enterprise. Relationships between public policy and personnel concepts, values, and operations considered.

**SPEA-M 569 Managing Interpersonal Relations (3 cr.)** P: SPEA-V 502. This course will teach students the theory and application of individual and group human behavior. Key interpersonal skills will be modeled expertly on videotape. Students will be expected to practice these key skills and receive feedback on their performance.

**SPEA-M 570 Public Sector Labor Relations (1-3 cr.)** An introductory overview of labor relations concepts within the framework of the public sector. The development, practice, and extent of the collective bargaining process, as well as the administration of the labor agreement, will be examined for state agencies, local municipalities, and school districts.

**SPEA-M 575 Comparative Public Management and Administration (3 cr.)** Reading and discussion of case studies and comparative analyses of formal organizations, with emphasis on governmental bureaucracies, public corporations, and international organizations. Topics include bureaucratic environment and culture, technology and organizations, program evaluation, communication and decision making, and administrative structure and process.

**SPEA-M 602 Strategic Management of Public and Nonprofit Organizations (3 cr.)** P: SPEA-V502. Concepts, cases, and problem solving associated with the structure and process of strategic management in the public sector, broadly defined to include governmental and nongovernmental organizations. Concepts, cases, and problem solving associated with the structure and process of strategic management in the public sector, broadly defined to include governmental and nongovernmental organizations.

**SPEA-M 621 Seminar in Teaching Public and Environmental Affairs (2 cr.)** This course is designed for Ph.D. students in SPEA's public policy, public affairs,

and environmental science programs. Course will focus on a number of topics equally relevant to those students currently teaching and to students who expect future teaching assignments. Emphasis on student/teacher interaction, interest, and ethics.

**SPEA-M 639 Managing Government Operations (3 cr.)** P: SPEA-V 502. This is an introductory survey of operations management. Emphasis is placed on the analysis, design, and management of operation systems using models from operations management. Readings, lectures, and structured exercises are used to present the models and demonstrate their application.

**SPEA-M 652 Managing Work Force Diversity in Public Organizations (3 cr.)** Explores and applies theoretical and empirical research from a management perspective on workforce diversity. Topics include theories and constructs pertaining to diversity, the work organizations, organizational postures toward workplace diversity, the interface between heterogeneity, work processes, and management practices; and the effects of heterogeneity on work-related outcomes

**SPEA-M 654 Public Program Management and Contracting (3 cr.)** An examination of theories, concepts, and processes concerning multi-actor program implementation and alternative forms of service delivery. Focus will be on the problems and challenges public managers face in designing and managing contractual relationships, networks, and other complex implementation structures.

**SPEA-M 662 Seminar in Accountability and Performance (3 cr.)** Examines the problems of measuring performance and establishing accountability in publicly sponsored institutions and organizations. Concepts are given concrete application through careful investigation of attempts to measure performance and productivity in activities that cross public, private, and nonprofit sectors.

**SPEA-M 671 Public Organization and Management I (3 cr.)** This seminar focuses on management theory in the public sector. Subjects include historical development, major questions in theory and practice, managerial decision making, and managerial effectiveness.

**SPEA-M 672 Public Organization and Management II (3 cr.)** This seminar focuses on public organization theory. Subjects include organizational theory, design, and change.

**SPEA-N 521 The Nonprofit and Voluntary Sector (3 cr.)** Same as PHST-P 521. The theory, size, scope, and functions of the nonprofit and voluntary sector are covered from multiple disciplinary perspectives including historical, political, economic, and social.

**SPEA-N 522 Human Resource Management in Nonprofit Organizations (3 cr.)** This course provides an overview of the human resource management areas necessary for the productive functioning of nonprofit organizations. Theories of motivation applicable to the management of staff and volunteers, and personnel topics of recruitment, selection, board-staff relations, compensation, training, and development are covered.

**SPEA-N 523 Civil Society and Public Policy (1-3 cr.)** Exploration of interaction of public policy and nonprofit organizations, drawing on history, political theory, and

social science. Includes examination of regulations and taxation. Depending on instructor's interests, course covers nonprofit role in selected policy arenas (such as environment and poverty) and industries (such as international development and health care).

**SPEA-N 524 Civil Society in Comparative Perspective (3 cr.)** An exploration of state-society relationship in a variety of regimes and time periods. Focus on ways regimes' policies affect the existence and contribution of those nongovernmental and nonprofit organizations that stand between the individual and the state; how nonprofit organizations shape the policy agenda of a regime.

**SPEA-N 525 Management in the Nonprofit Sector (3 cr.)** P: SPEA-V 521 or PHST-P 521. An examination of nonprofit organizations and their role in society. Management issues and public policy affecting these organizations are discussed. Primary emphasis is upon U.S. organizations, but attention is given to the global nature of the sector.

**SPEA-N 534 NGO Management for International Development (3 cr.)** Coursework prepares students for employment in international development. It covers a range of theoretical material and practical skills, answering questions like: What role do NGOs play in developing countries? How do we define and measure NGO success or failure? How do NGOs fundraise, plan, evaluate and collaborate on programs?

**SPEA-N 544 Marketing for Nonprofit Organizations (3 cr.)** This course examines the concepts of marketing and the extent to which they apply to the nonprofit sector, as well as how marketing can assist organizations both in resource acquisition and program development/implementation. Contexts such as social marketing, arts marketing, fundraising, education, and healthcare marketing will be considered.

**SPEA-N 557 Proposal Development and Grant Administration (3 cr.)** This course provides the opportunity for each student to develop a complete proposal through participation in the entire grant application process. The integration of case studies, visual media, printed materials, and class discussions provides students with practical knowledge for writing successful proposals.

**SPEA-N 558 Fund Development for Nonprofits (3 cr.)** Important aspects of the fund raising process in nonprofit organizations are covered, including techniques and strategies for assessing potential sources of support; effective use of human resources; process management; theory to underlay practice; analysis of current practice; practice standards; and discussion of ethical problems.

**SPEA-N 720 Research and Theory of Nonprofit Management (3 cr.)** Doctoral Seminar covering nonprofit management research, applying a broad, interdisciplinary lens and addressing the methodological and theoretical state of the field. Required for both SPEA and non-SPEA doctoral students who are minoring in nonprofit management.

**SPEA-P 507 Data Analysis and Modeling for Public Affairs (3 cr.)** P: SPEA-E 538 or V 506. Focus on analytical models and their use in solving problems and making decisions in the public sector. Discussion

of standard approaches to modeling and estimation of parameters.

**SPEA-P 539 Management Science for Public Affairs (3 cr.)** P: SPEA-V 506. Focuses on management science methods as applied to public affairs. Includes treatment of decision theory, constrained optimization, and probability simulation.

**SPEA-P 541 Benefit Cost Analysis (3 cr.)** P: SPEA-V 517 or consent of instructor. A course applying benefit-cost analysis to public and environmental policies. The first part of the course develops the foundation of benefit-cost analysis. The second part of the course consists of case studies applying benefit-cost analysis to actual policy decisions.

**SPEA-P 562 Public Program Evaluation (1-3 cr.)** Examination of how the programs of public agencies are proposed, established, operated, and evaluated. Discussion of the role and conduct of research in the program evaluation process. In addition, techniques of effective evaluation and analysis are discussed.

**SPEA-P 664 Seminar in Policy Analysis (3 cr.)** This course focuses on applications of such policy tools as the general linear model (GLM), optimization techniques, probability models, and management science techniques. Students complete a policy analysis project using one of these approaches.

**SPEA-P 673 Public Policy Analysis and Management Science/Operations Research (3 cr.)** P: SPEA-V 539 or consent of instructor. Applications of management science and operations research (MS/OR) techniques such as linear programming, goal programming, data envelopment analysis, stochastic processes, networks, decision analysis, and nonlinear programming to public policy problems analysis.

**SPEA-P 690 Seminar in the Public Policy Process (3 cr.)** An evaluation of the theoretical and empirical literature on public policy processes. The findings of policy research are evaluated. An integrative paper is required.

**SPEA-P 691 Workshop in Public Policy (0-1 cr.)** This workshop focuses on theory and research about public policy. Students are given opportunities to present and critique public policy research and to lead and participate in discussions of selected books and articles.

**SPEA-P 710 Topics in Public Policy (3 cr.)** Doctoral seminar focusing upon various topics in public policy. Illustrative topics include public management, environmental policy, public finance, and urban affairs.

**SPEA-P 723 Public Programs - Theory and Evidence (3 cr.)** Public Programs - Theory and Evidence will examine theoretical and empirical research related to large public expenditure programs in the US and similar programs in other countries. Specific topics may include: Poverty (TANF, SNAP, EITC), Social Insurance (Social Security, Unemployment Insurance, Workers Compensations Insurance), Health Care (Medicare, Medicaid), and Education.

**SPEA-R 512 Climate Law and Policy (3 cr.)** The goal of the course is to prepare students to engage effectively as lawyers and policy makers in the developing field of climate law and policy at all governance levels.

That includes some instruction in the science and socio-economic consequences of climate change.

**SPEA-R 513 Wildlife Law (3 cr.)** Topics include the relationship between real property and wildlife, sovereignty and federalism issues, the Endangered Species Act, and other federal programs. The class also discusses the public policy, ethical, scientific, and economic issues associated with environmental decision-making. Focus is on U.S. law/policy.

**SPEA-R 515 Renewable and Nuclear Energy (3 cr.)** Graduate course on the technologies and policies associated with renewable and nuclear energy sources.

**SPEA-R 520 Environmental Policy Analysis (3 cr.)** The interrelationships among social, technical, and natural systems. Theories of growth. Causes and implications of environmental problems. Alternative policies and mechanisms for environmental control and bases for choice.

**SPEA-R 521 Domesetic Environmental Policy (3 cr.)** This course focuses on the actions taken by the national and state governments to protect and improve environmental quality in the United States, emphasizing the role of political actors and institutions. The course provides a survey of the primary laws, regulations, and policies with an emphasis on pollution control.

**SPEA-R 531 Water Law (3 cr.)** P: SPEA-V 540 or SPEA-V 645 Water Law explores how the U.S. addresses water use conflicts. Topics include riparian water rights (eastern U.S. water law), prior appropriation water rights (western U.S. water law), federal water rights, the public trust doctrine, recreational uses, and groundwater use. The class focuses on access and allocation policy, not pollution control.

**SPEA-R 532 Water Policy and Economics (3 cr.)** The course provides a throughout review into the current status quo of water quality and water availability policy related issues through the prism of the economics literature. Applications and case studies focus mainly in the US but also expand internationally.

**SPEA-R 533 Public Natural Resources Law (3 cr.)** This course examines the tension between public control of and private interests in U.S. public lands. Coverage includes: federalism; proprietary management models; role of science; separation of powers; and judicial review in the context of the laws/policies governing mineral, energy, timber, recreation, wildlife, and preservation resources.

**SPEA-R 563 Sustainability in a Tri-sectoral World (3 cr.)** Focus on environmental and social sustainability through the lens of the private sector and how it serves public interests. Course takes a broad disciplinary and analytical perspective, exploring the interactions of the private, government and non-profit sectors and how the latter two, along with markets, influence the sustainability of businesses.

**SPEA-R 564 Environmental and Natural Resources Policy Design and Implementation (3 cr.)**

Focus on how governments implement environmental and natural resources policy. Course covers the range of available policy instruments, evaluative criteria, and relative implications of choice such as cost-effectiveness, financing, legal and political issues, and transaction costs. Examples are drawn from different nations and offer the opportunity for comparative analysis.

**SPEA-R 571 State and Local Environmental Management (3 cr.)** This course examines a mix of management and policy issues. Included are civic environmentalism, alternatives to environmental regulation, unfunded mandates, environmental justice, public relations, outsourcing, ethical challenges, and managing scientific and technical personnel.

**SPEA-R 590 Energy Policy from a Nation-State Perspective (3 cr.)** This course will examine national energy policies through the lens of basic theories of international relations. Case studies will examine specific countries in detail, as well as efforts at regional and international cooperation. Students will work in pairs preparing recommendations for the energy ministries of specific countries.

**SPEA-R 591 Climate Change Impacts on Natural Resources (3 cr.)** P: A graduate class (or waiver) in applied ecology, natural resource management, energy policy, environmental policy, or other relevant supporting course with permission of the instructor. Climate change impacts to species, ecosystems, and natural processes, including impacts that result from human responses to climate change. Includes science and policy aspects. Requires previous coursework in supporting science or policy.

**SPEA-R 625 Environmental Economics and Policy (3 cr.)** P: SPEA-V 517. The course develops the microeconomics-based environmental policy paradigm and uses the paradigm to evaluate the efficiency of current environmental regulations. The course also explores the incentive issues associated with the design of international environmental agreements and develops techniques (contingent valuation, hedonic pricing, travel cost method) for valuing environmental resources.

**SPEA-R 626 Energy Policy Seminar (3 cr.)** This seminar focuses on energy policies have been adopted across the world and to what degree they serve their objectives. It also considers the political environment in which policies are designed and implemented, and the manner in which governments can redesign their energy approaches.

**SPEA-R 643 Natural Resource Management and Policy (3 cr.)** P: SPEA-V 517 or consent of the instructor. This course evaluates a broad range of contemporary resource policies, cases, and controversies, using bioeconomic resource management models as an intuitive aid, wherever possible. Topics include fishery management, forestry policy, tropical deforestation, water management policy, nature preservation/endangered species, sustainable development, and national income accounting.

**SPEA-R 645 Environmental Law (3 cr.)** An overview of U.S. environmental law. Key environmental statutes are examined, as are court decisions interpreting those

statutes. Topics include water and air pollution, hazardous waste, toxins, pesticides, and environmental impact statements.

**SPEA-R 674 Energy Economics and Policy (3 cr.)** This course will introduce students to the fundamentals of energy economics including the concepts and tools related to analysis of international fuel markets, technology choice, exhaustible and renewable energy models, consumption and efficiency choices, and environmental protection options.

**SPEA-S 515 Sustainable Communities (3 cr.)** Course explores proactive strategies for moving communities toward economics, social and environmental sustainability. Through case studies, projects, tours, and visiting professionals the new thinking in community design, from individual green buildings to regional scales of transportation, land use, commerce, natural systems restoration, waste, food, water and energy are developed.

**SPEA-S 596 Sustainable Development (3 cr.)** Focuses on theories and policies of sustainable development. Course employs an interdisciplinary approach by combining approaches and models with neoclassical economics, ecological economics, political science, and ecology to study dynamical interrelationships between the macro-economy at the national and international levels of analyses, markets, political institutions, and the ecosystem.

**SPEA-V 500 Quantitative Tools for Public Affairs (1-3 cr.)** A modular presentation of mathematical and statistical concepts designed to prepare students for V 506 Statistical Analysis for Effective Decision Making. Representative module topics include basic algebraic concepts, probability, computer use, and matrix algebra.

**SPEA-V 502 Public Management (1-3 cr.)** Analysis of concepts, methods, and procedures involved in managing public organizations. Problems of organization, planning, decision making, performance evaluation, and management of human resources are considered. Cases are drawn from a variety of public services found at federal, state, and local levels of government.

**SPEA-V 506 Statistical Analysis for Effective Decision Making (3 cr.)** Noncalculus survey of concepts in probability, estimation, and hypothesis testing. Applications of contingency table analysis and analysis of variance, regression, and other statistical techniques. Computer processing of data emphasized.

**SPEA-V 508 Topics in Quantitative Analysis (1-3 cr.)** P: consent of instructor. Study and application of selected quantitative methods of analysis. Additional topics that are not included in V 506 and V 507 may be presented, or more advanced examination of topics that are introduced in V 506 or V 507 may be presented.

**SPEA-V 512 Public Policy Process (1-3 cr.)** An examination of the role of public affairs professionals in policy processes. Focuses on relationships with political actors in various policy areas.

**SPEA-V 517 Public Management Economics (3 cr.)** This course focuses on applications of the principles and concepts of intermediate microeconomic theory and managerial economics to public-sector management decisions and policy analysis. The course utilizes case

studies with the goal of giving students opportunities to recognize the economic dimensions inherent in the public policy problems and to develop an analytical problem-solving orientation.

**SPEA-V 529 Seminar in Career and Professional Development (1 cr.)** Introduction to career development in public and environmental affairs. Orientation to career development approaches and resources. Discussion and practice of professional skills and techniques. Orientation to career development opportunities. Grading is on an S/F basis.

**SPEA-V 530 Communications for Public and Nonprofit Affairs (3 cr.)** Using perspectives from the social sciences and case studies of successful (and unsuccessful) efforts, this course examines what "public opinion" is, how it is formed, and what leaders of government and nonprofit agencies do to communicate with the public, especially in an era of great change in the mass media.

**SPEA-V 540 Law and Public Affairs (3 cr.)** Explanation of law in society and its influence on public-sector operations. Examination of some of the central substantive areas of the study of law, including regulatory processes, administrative adjudication, the Administrative Procedures Act, ombudsmen, and citizen rights, among others.

**SPEA-V 543 Health Services Management (3 cr.)** A course that integrates theory and application with respect to management of health service organizations. Emphasis on the role of managers and management within formal health service organizations. Current management and organization theories are applied to an understanding of health care delivery settings.

**SPEA-V 545 The U.S. Health Care System (3 cr.)** An analysis of the delivery of health care in the United States from 1900 to the present. Major system components are defined and studied with emphasis on current health care policy. Topics include the organization of health care delivery on federal, state, and local levels, in both public and private sectors.

**SPEA-V 550 Topics in Public Affairs (1-4 cr.)** Selected research and discussion topics organized on a semester-by-semester basis, usually with significant student input in the course design.

**SPEA-V 551 Topics in Comparative Public Policy (3 cr.)** The role of administrative and political systems in an international setting that focuses on industrial policy as developed between collaborative governments and their links to the key countries of Asia, Europe, the Americas, and Africa will be examined in topic settings. Related readings and published research will also be used.

**SPEA-V 554 Human Services Administration (3 cr.)** Focus is on policy, management, and organization relating to a variety of human service systems. Special attention is given to the management of social programs in the environmental system.

**SPEA-V 556 Topics in Human Services Administration (3 cr.)** Readings and research on selected topics in the field of the management of human services. Topics selected for study will vary.

**SPEA-V 559 Principles and Practices of Social Entrepreneurship (3 cr.)** This course will survey issues

in social entrepreneurship and engage students in completing class projects applying principles and practices of social entrepreneurship to problems of nonprofit organizations, government agencies, and social-purpose business.

**SPEA-V 565 Environmental Conflict Resolution: Theory and Practice (3 cr.)** Theories of environmental conflict resolution are examined. Students will "practice by doing" through participation in a series of environmental conflict resolution simulations.

**SPEA-V 566 Executive Leadership (3 cr.)** The course offers an in-depth examination of factors that contribute to successful executive leadership practice in a wide variety of organizational settings. Topics include what leadership is, what impact leadership has, and how leaders use various approaches and powers to achieve their goals.

**SPEA-V 572 Urban Topics (3 cr.)** Selected topics in urban policy and administration. The course is sometimes restricted to a special group of students focusing on a particular research interest.

**SPEA-V 574 Environmental Management in the Tropics (3 cr.)** This course provides an interface between ecology, economics, and policy in the context of non-Western cultures and environments. Students will explore resource use in unfamiliar physical and cultural settings. This examination will highlight common processes that in turn will help the student to understand better the cultural/social underpinnings necessary for analysis.

**SPEA-V 579 Master's International (0-6 cr.)** Master's International (MI), V579, represents the field experience component for MI candidates. This course will consist of a field, research or self-reflection project approved and directed by a faculty advisor or relevant staffer. Registration is by permission only. The final registration for V579 will be upon the return semester to SPEA.

**SPEA-V 580 Readings in Public Affairs (1-6 cr.)** P: written consent of instructor. Readings on selected topics in public affairs.

**SPEA-V 581 Public Safety Law (1-3 cr.)** Survey of historical development of Anglo-American law of public safety, including criminal law, civil remedies, administrative regulation of risk, and recent developments in employee and consumer safety. Emphasis on understanding legal theory and practice as basis for management decisions. Comparison of jurisprudential viewpoints and other disciplinary approaches to causation, prevention, and correction of public safety problems.

**SPEA-V 582 Overseas Topics in Public Affairs (0-15 cr.)** SPEA Abroad Graduate Program: study of selected topics in public affairs. Topics vary from semester to semester. May be repeated for credit.

**SPEA-V 585 Practicum in Public Affairs (0-6 cr.)** Students hold work assignments with public agencies. Grading is on an S/F basis.

**SPEA-V 589 Democratization and Transition in Eastern Europe and the Newly Independent States (3 cr.)** This seminar focuses on how the governments of Eastern Europe and the Newly Independent States have responded to changes in their political, economic and social environments. Discussion of constitutional

development, legislative-executive relations, the development of intergovernmental relations, bureaucratic development, economic reform, budgetary systems, legislatures, and executive branches is included.

**SPEA-V 590 Research in Public Affairs (1-6 cr.)**

P: written consent of instructor. Research on selected topics in public affairs.

**SPEA-V 593 Analytical Methods in Planning and Policy Analysis (3 cr.)**

P: SPEA-V 507. C: SPEA-V 507. Topics relate to goal setting and forecasting. Analytical methods include time series analysis, demographic projections, economic development and employment forecasting, and land use and transportation planning analysis. Optimization methods are applied to transportation and project management.

**SPEA-V 594 Principles of Urban and Regional Science (3 cr.)**

Discussion of the basic processes of change and development in regional systems, with emphasis on metropolitan regions. Includes economic, demographic, and environmental aspects of their interactions.

**SPEA-V 595 Managerial Decision Making (1-3 cr.)**

P: SPEA-V 504 and V 539. Applications of decision-making tools to substantive public management problems. A variety of managerial cases and issues are selected for intensive discussion and analysis.

**SPEA-V 600 Capstone in Public and Environmental Affairs (3 cr.)**

Interdisciplinary course organized as faculty-coached class project on a management/policy topic determined by an external client. Course goals are professional preparation and integration of degree program knowledge.

**SPEA-V 601 Workshop in Public Affairs (1-6 cr.)**

Projects in public affairs. The students work on a research and resource team to complete a project for a public-sector client. Faculty act as project managers and resource personnel.

**SPEA-V 606 Statistics for Research in Public Affairs I (3 cr.)**

P: Graduate-level introductory statistics. Focus is on estimation of model parameters using least square methods. Topics include properties of estimators, ordinary least square, instrumental variables, two- and three-stage least squares, assumptions, consequences when assumptions are false, and alternate methods when assumptions are false. Emphasis on matrix representations and simulation methods.

**SPEA-V 607 Statistics for Research in Public Affairs II (3 cr.)**

P: SPEA-V 606. The second part of a sequence introducing statistical techniques used in modern public policy research. It extends the single and multiple equation least squares models to include non-linear moments, bayesian, maximum likelihood, and simulation-based techniques. Applications to a number of situations that cannot be estimated using standard regression methods.

**SPEA-V 620 Seminar in Professional Ethics (3 cr.)** This seminar explores issues of personal and official ethics in public affairs. Various frameworks for professional ethics will be covered.

**SPEA-V 630 Advanced Management Topics (3 cr.)**

P: SPEA-V 502 or permission of instructor. Selected readings, research, and problems covering advanced

public management applications and practices. Topics will vary. Course will not cover topics available in other courses. Course may be repeated. Course may be repeated.

**SPEA-V 640 Law, Public Management, and Public Policy (3 cr.)**

A seminar that examines how courts and public actors interact to produce public policy. The nature of public policy and the capacity of judicial decisions to effect public policy will be examined and analyzed.

**SPEA-V 650 Topics in Public Personnel Management (1-3 cr.)**

P: SPEA-V 561. Readings and research on selected topics in the public personnel field. Topics may include such subjects as affirmative action, occupational health and safety, workforce forecasting and planning, and personnel approaches to position classification.

**SPEA-V 651 Introduction to Public Affairs (3 cr.)**

Covers the central organizing concepts in public affairs study, specialized areas of research in the field, and problems of knowledge and method in public affairs.

**SPEA-V 660 Cases and Problems in Fiscal Administration (3 cr.)**

P: SPEA-V 560 or consent of instructor. C: SPEA-V 560 or consent of instructor. An advanced seminar in the management aspects of public finance. Focuses on the budgetary process. Special cases are analyzed and budget problem-solving exercises are utilized.

**SPEA-V 663 Policy Analysis (3 cr.)**

An introduction to the field of policy analysis. Includes discussion of different models, approaches, conceptual foundations of the field, and the basic issues surrounding application. Students without appropriate previous course work are expected to do extra reading under the guidance of their instructor or to audit existing master courses.

**SPEA-V 665 Seminar in Policy and Administration (3 cr.)**

Politics of program development and management. Translation of plans into viable, administrable programs. Marshaling support, political processes, strategies, constraints, tradeoffs, etc.

**SPEA-V 670 Topics in Public-Sector Labor Relations (1-3 cr.)**

P: SPEA-V 570 or consent of instructor. Selected research and discussion topics in the field of public-sector labor relations arranged on a semester-by-semester basis. Possible topics are collective bargaining in the public sector and dispute settlement in public-sector labor relations.

**SPEA-V 675 Issues and Problems in Public-Sector Personnel and Labor Relations (3 cr.)**

P: SPEA-V 561 and V 570. A capstone seminar providing a practical and integrated examination of significant current cases and problems confronting public-sector employees and employers.

**SPEA-V 680 Research Design and Methods in Public Affairs (3 cr.)**

Three major areas will be covered: philosophy of science, theory and design of research, and applied research methodologies. Topics play a major role in providing insights into how usable knowledge is created, defended, and replaced.

**SPEA-V 685 Research Seminar in Public Affairs (3 cr.)**

P: SPEA-V 680. Course will focus upon completion, revision, and presentation of completed original research.

Class meetings will focus on progress reports by each participant and the critique and revision of draft papers. Students will present revised research papers to the faculty and students of the school in a series of research colloquia.

**SPEA-V 782 Overseas (Ph.D.) Topics in Public Affairs (0-15 cr.)** Doctoral Abroad Program: study of selected topics in public affairs. Topics vary from semester to semester.

**SPEA-V 800 Public Affairs Tutorial (3 cr.)** Readings in a substantive area of public affairs (e.g., health, criminal justice, human services, transportation) in preparation for development of a dissertation proposal.

**SPEA-V 890 Thesis (Ph.D.) (1-12 cr.)** (S/F only)

**SPEA-X 511 Human Behavior and Energy Consumption (3 cr.)** We face many barriers that prevent us from conserving energy and other natural resources. This course is aimed at decreasing energy use independent of top down regulations. Students will understand the nature of energy, the importance of human behavior, and how to create, and evaluate behavioral change.

## O'Neill Online Courses

**SPCN-F 526 Financial Management for Nonprofit Organizations (3 cr.)** This course emphasizes a thorough understanding of the language and key concepts of nonprofit financial management. A working knowledge of the basic analytical tools used in financial decision making for nonprofit organizations will be examined through the use of computer software.

**SPCN-F 542 Governmental Financial Accounting and Reporting (3 cr.)** An introduction to the fundamentals of accounting in business, nonprofit, and public sectors. Intended only for students without previous accounting courses. Primary emphasis is on municipal entity fund accounting, including the development and use of financial statements.

**SPCN-F 560 Public Finance and Budgeting (3 cr.)** The fiscal role of government in a mixed economy, sources of public revenue and credit; administrative, political, and institutional aspects of the budget and the budgetary process; problems and trends in inter-governmental fiscal relations.

**SPCN-F 609 Seminar in Revenue Theory and Administration (3 cr.)** Examines basic objectives and political and economic aspects of tax administration. Examination of the interrelationships of tax policy, tax laws, and tax administration. Reviews major economic issues raised by types of taxes and user charges. Also examines the fundamentals of tax legislation with emphasis on state and local administration.

**SPCN-F 610 Government Budget and Program Analysis (3 cr.)** Advanced study of management aspects of budgetary process. Special cases are analyzed and budget problem-solving exercises are utilized.

**SPCN-F 667 Seminar in Public Capital and Debt Theory (3 cr.)** This seminar examines options open to governments, especially state and local, and why they resort to debt finance. Issues raised by the alternatives are

examined in detail. Topics include public authority debt, revenue bonds, methods of placement, lease-purchase finance, and maturity choice. Management of idle cash balances also considered.

**SPCN-I 516 Public Management Information Systems (3 cr.)** This course focuses on the application of information systems concepts and tools to challenges and opportunities in the public sector. Topics covered will include current trends in information systems; managerial use of information systems; hardware, software, and telecommunications; systems development processes and practices; and strategic and policy issues in IS.

**SPCN-L 563 Planning and Community Development (3 cr.)** Seminar designed to familiarize students with planning ramifications of policy issues faced by governments. The focal topics selected for study will vary. Emphasis placed on identification and analysis of substantive issues, methods employed for resolution, and application of planning techniques for achieving goals

**SPCN-M 561 Strategic Management of Public and Nonprofit Organizations (3 cr.)** Analysis of the structure, operations, and design of public personnel systems, including government agencies and public enterprise. Relationships between public policy and personnel concepts, values, and operations considered.

**SPCN-M 602 Strategic Management of Public and Nonprofit Organizations (3 cr.)** Concepts, cases and problem-solving associated with the structure and process of strategic management in the public sector, broadly defined to include governmental and nongovernmental organizations.

**SPCN-M 654 Public Program Management and Contracting (3 cr.)** An examination of theories, concepts, and processes concerning multi-actor program implementation and alternative forms of service delivery. Focus will be on the problems and challenges public managers face in designing and managing contractual relationships, networks, and other complex implementation structures.

**SPCN-N 521 The Nonprofit and Voluntary Sector (3 cr.)** The theory, size, scope, and functions of the nonprofit and voluntary sector are covered from multiple disciplinary perspectives including historical, political, economic, and social.

**SPCN-N 522 Human Resource Management in Nonprofit Organizations (3 cr.)** This course provides an overview of the human resource management areas necessary for the productive functioning of nonprofit organizations theories of motivation applicable to the management of staff and volunteers, and personnel topics of recruitment, selection, board-staff relations, compensation, training, and development are covered.

**SPCN-N 525 Management in the Nonprofit Sector (3 cr.)** An examination of nonprofit organizations and their role in society. Management issues and public policy affecting these organizations are discussed. Primary emphasis is upon U.S. organizations, but attention is given to the global nature of the sector.

**SPCN-N 534 NGO Management for International Development (3 cr.)** Coursework prepares students for employment in international development. It covers a

range of theoretical material and practical skills, answering questions like: What role do NGOs play in developing countries? How do we define and measure NGO success or failure? How do NGOs fundraise, plan, evaluate and collaborate on programs?

**SPCN-N 557 Proposal Development and Grant Administration (3 cr.)** This course provides the opportunity for each student to develop a complete proposal--through participation in the entire grant application process. The integration of case studies, visual media, printed materials, and class discussions provide students with practical knowledge for writing successful proposals.

**SPCN-N 558 Fund Development for Nonprofits (3 cr.)** Important aspects of the fund raising process in nonprofit organizations are covered, including: techniques and strategies for assessing potential sources of support; effective use of human resources; process management; theory to underlay practice; analysis of current practice; practice standards; and discussion of ethical problems.

**SPCN-P 507 Data Analysis and Modeling for Public Affairs (3 cr.)** Focus on analytical models and their use in solving problems and making decisions in the public sector. Discussion of standard approaches to modeling and estimation of parameters.

**SPCN-P 541 Benefit Cost Analysis (3 cr.)** A course applying benefit-cost analysis to public and environmental policies. The first part of the course develops the foundation of benefit-cost analysis. The second part of the course consists of case studies applying benefit-cost analysis to actual policy decisions.

**SPCN-P 562 Public Program Evaluation (3 cr.)** Examination of how the programs of public agencies are proposed, established, operated, and evaluated. Discussion of the role and conduct of research in the program evaluation process. In addition, techniques of effective evaluation and analysis are discussed.

**SPCN-V 502 Public Management (3 cr.)** Analysis of concepts, methods and procedures involved in managing public organizations. Problems of organization, planning, decision-making, performance evaluation, and the management of human resources are considered. Cases are drawn from a variety of public services found at federal, state and local levels of government.

**SPCN-V 506 Statistical Analysis for Effective Decision Making (3 cr.)** Noncalculus survey of concepts in probability, estimation, and hypothesis testing. Applications of contingency table analysis and analysis of variance, regression, and other statistical techniques. Computer processing of data emphasized.

**SPCN-V 512 Public Policy Process (3 cr.)** An examination of the role of public affairs professionals in policy processes. Focuses on relationships with political actors in various policy areas.

**SPCN-V 517 Public Management Economics (3 cr.)** This course focuses on applications of the principles and concepts of intermediate microeconomic theory and managerial economics to public-sector management decisions and policy analysis. The course utilizes case studies with the goal of giving students opportunities to recognize the economic dimensions inherent in the public

policy problems and to develop an analytical problem-solving orientation.

**SPCN-V 540 Law and Public Affairs (3 cr.)** Explanation of law in society and its influence on public-sector operations. Examination of some of the central substantive areas of the study of law, including regulatory processes, administrative adjudication, the Administrative Procedures Act, ombudsmen, and citizen rights, among others.

**SPCN-V 551 SPEA Connect Week (3 cr.)** SPEA Connect Week is a voluntary, on-campus course that allows you to meet and build lasting relationships with your fellow online classmates and professors. All students formally admitted to the MPA program are eligible to enroll.

**SPCN-V 600 Capstone in Public and Environmental Affairs (3 cr.)**

Interdisciplinary course designed to give students exposure to the realities of the policy process through detailed analyses of case studies and projects. Course integrates science, technology, policy, and management. Topic may vary from semester to semester.

## Faculty

- AFOAKU, OSITA, Ph.D. (Washington State University, 1991), Clinical Professor of Public and Environmental Affairs (IUB)
- ALEXEEV, ALEXANDER, Ph.D. (Indiana University, 2010), Lecturer of Public and Environmental Affairs (IUB)
- AMSLER, LISA, J.D. (University of Connecticut, 1979), Keller-Runden Professor of Public Service; Professor of Public and Environmental Affairs (Graduate School) (IUB)
- ANDERSSON, O. FREDRIK, Ph.D. (University of Missouri-Kansas City, 2017) Assistant Professor of Public and Environmental Affairs (IUPUI)
- ATTARI, SHAHZEEN, Ph.D. (Carnegie Mellon University, 2009), Associate Professor of Public and Environmental Affairs (IUB)
- AUDRETSCH, DAVID, Ph.D. (University of Wisconsin, 1980), Ameritech Chair of Economic Development; Director, Institute for Development Strategies; Director, Institute for European Studies; Distinguished Professor of Public and Environmental Affairs; Adjunct Professor of Geography (Graduate School) (IUB)
- AVELLANEDA, CLAUDIA N., Ph.D. (Texas A&M University, 2007), Associate Professor of Public and Environmental Affairs (IUB)
- BAGGETTA, MATTHEW, Ph.D. (Harvard University, 2009), Associate Professor of Public and Environmental Affairs (IUB)
- BARNES, A. JAMES, J.D. (Harvard University, 1967), Dean, O'Neill School of Public and Environmental Affairs, 1988-2000; Professor of Public and Environmental Affairs; Adjunct Professor of School of Law (Graduate School) (IUB)
- BARNES, MALLORY, Ph.D. (University of Arizona, 2018), Assistant Professor of Public and Environmental Affairs (IUB)
- BELL, DAVID, Ph.D. (University of Pittsburgh), Clinical Associate Professor of Public and Environmental Affairs (IUB)

- BENJAMIN, LEHN, Ph.D. (Cornell University, 2004), Associate Professor of Public and Environmental Affairs; Director, Doctoral Program, IU School of Philanthropy (Graduate School) (IUPUI)
- BLOCK, MOLLY, Ph.D. (University of Louisville, 2016), Visiting Assistant Professor of Public and Environmental Affairs (IUPUI)
- BRASS, JENNIFER, Ph.D. (University of California-Berkeley, 2010), Associate Professor of Public and Environmental Affairs (IUB)
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- RUSHTON, MICHAEL, Ph.D. (University of British Columbia, 1990), Professor of Public and Environmental Affairs (Graduate School) (IUB)
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- STEVENS, PHILLIP, Ph.D. (Harvard University, 1990), Associate Dean for Faculty Affairs, Bloomington; Rudy Professor of Public and Environmental Affairs; Adjunct Associate Professor of Geography (Graduate School) (IUB)
- STUCKY, THOMAS D., Ph.D. (University of Iowa, 2001), Executive Associate Dean; Professor of Public and Environmental Affairs (Graduate School) (IUPUI)
- SUNDT, JODY, Ph.D. (University of Cincinnati, 1998), Associate Dean of Graduate and Executive Education, Associate Professor of Public and Environmental Affairs (Graduate School) (IUPUI)
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- WAKHUNGU, HENRY, Ph.D. (Indiana University, 2004), Senior Lecturer of Public and Environmental Affairs (IUB)
- WALK, MARLENE, Ph.D. (University of Pennsylvania, 2015), Assistant Professor of Public and Environmental Affairs (Graduate School) (IUPUI)
- WARD, ADAM, Ph.D. (Penn State University, 2011), Associate Professor of Public and Environmental Affairs (IUB)
- WHITE, JAMES R., M.S. (Butler University, 1982), Clinical Lecturer of Public and Environmental Affairs (IUPUI)
- WHITE, JEFFREY R., Ph.D. (Syracuse University, 1984), Professor of Public and Environmental Affairs; Professor of Geological Sciences (part time) (Graduate School) (IUB)
- WILKERSON, MICHAEL, M.F.A. (Johns Hopkins University, 1980), Senior Lecturer of Public and Environmental Affairs (IUB)

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## Faculty Emeriti

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- BIELEFELD, WOLFGANG, Ph.D. (University of Minnesota, 1990), Director Emeritus, SPEA-IUPUI Overseas Education and Programs; Professor Emeritus of Public and Environmental Affairs (Graduate School) (IUPUI)
- BONSER, CHARLES F., D.B.A. (Indiana University, 1965), Dean Emeritus and Professor Emeritus of Public and Environmental Affairs; Professor Emeritus of Business Administration (IUB)
- BUHNER, JOHN C., Ph.D. (Indiana University, 1963), Professor Emeritus of Public and Environmental Affairs; Professor Emeritus of Political Science (IUPUI)
- DECOSTER, THOMAS A., Ph.D. (University of Notre Dame, 1968), Professor Emeritus of Public and Environmental Affairs (IUPUI)
- FISCHER, BURNELL C., Ph.D. (Purdue University, 1974), Clinical Professor Emeritus of Public and Environmental Affairs (IUB)
- GLEESON, MICHAEL E., Ph.D. (Syracuse University, 1973), Associate Professor Emeritus of Public and Environmental Affairs (IUPUI)
- HAITJEMA, HENK M., Ph.D. (University of Minnesota, 1982), Director Emeritus Ph.D. Program in Environmental Science; Director Emeritus Master of Science in Environmental Science Program; Professor Emeritus of Public and Environmental Affairs; Professor Emeritus of Geological Sciences (part-time); Adjunct Associate Professor Emeritus of Geology (Graduate School) (IUB/IUPUI)
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