

Earth & Environmental Science Professional Masters Programs

Master of Environmental Studies

Dual/Special Degree Options Handbook

University of Pennsylvania



College of Liberal and Professional Studies
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I. INTRODUCTION

The purpose of this handbook is to provide students in the Earth and Environmental Science Masters of Environmental Studies (MES) Program with information vital to the successful completion of a Dual Degree/Special Degree program. In this handbook, you will find information on academic requirements, program schedules, policies, and resources at Penn specific to your Special Degree program. Students should also consult the *MES Student Handbook* and have regular meetings with their academic advisers in all programs involved. This handbook is a supplement to and not a replacement for the *MES Student Handbook*. In addition, should you have questions that are not answered here or problems that you cannot resolve, you should consult your academic adviser or the MES Director immediately.

Dual Degree Programs with the Masters of Environmental Studies (MES) program include:

- Master of Business Administration (MES/MBA)
- Juris Doctor (MES/JD)
- Non-Profit Leadership (MES/NPL)
- Master of Law (MES/ML)
- Master of Public Health (MES/MPH)
- Master of City Planning (MES/MCP)
- Veterinarian Medicine (MES/VMD)
- Master of Public Administration (MES/MPA)

In addition, there are Special Degree programs with:

- Multi-Masters degree in Environmental Management (ENViM)
- Sub-matriculation with Penn undergraduate degree programs

Each of these programs allows the double counting of courses, which typically results in a student receiving two or more degrees in a shorter time period and for less tuition than if they completed each program separately.

Application and Admissions Procedures for Special Programs

Each Special Degree program has its own set of procedures for applications and acceptance. Students must be sure they follow all procedures in order to be properly matriculated into these programs. See specific procedures for application and admissions under each program description. Application materials, with the exception of GRE scores, cannot be shared between programs at this time, and all materials, including recommendation letters and transcripts, must be submitted separately to each program when applying.

Enrollment, Tuition and Financial Aid

Each Dual Degree/Special Degree option involves a student matriculating into more than one-degree program. Students have a primary program each semester, which has been carefully determined by the faculties of each graduate group. Thus, a specific schedule for each Special Degree program has been developed and must be followed by students participating in these programs. Deviations from these carefully designed schedules are not allowed unless the student receives written permission from the program directors of all programs involved in the Special Degree program.

Because the student will be changing primary degree programs throughout their academic career, the student is subject to the tuition and fees and any financial aid available for the program in which they are primary. Thus, when the student's primary program changes, the tuition and financial aid structure changes to that of the new program. Special degree candidates must be aware of which program is primary and the corresponding tuition and fees that are applicable. Please note that the MES program does not provide financial aid, scholarships or other financial assistance for any of its students.

Student Status

Although the Master of Environmental Studies program allows the flexibility for students to complete the program either full- or part-time, students participating in the Dual or Special Degree programs may be expected to maintain full-time status (e.g., JD, VMD, and MBA programs) as outlined in the special program schedules.

Student Advising

Because of the complex nature of the Dual and Special Degree programs, students must meet with their academic advisor in each program at least once a semester to discuss their program progress and choose courses for the following semester. It is vital that all policies and program requirements are followed for each program so that students stay on track towards receiving their degrees on schedule.

II. MES / MBA Dual Degree with the Wharton School

Overview

Currently there is a need for individuals skilled in both the fields of business and environmental sciences. The MES/MBA Dual Degree was formed by the Wharton School and the School of Arts and Sciences to meet this need. This course of study will groom students interested in environmental issues for global leadership roles in environmental management, finance, sustainability, and other business specialties.

Wharton has offered courses in topics related to environmental management for many years (in Business and Public Policy, Legal Studies and Business Ethics, and Operations and Information Management) and has a track in Business, Energy & the Environment. A dual degree program with MES expands the range of skills and knowledge that Wharton students are able to develop in the field of environmental management and sustainability. The MES program provides needed structure for study within this broad field, which ranges from biology, chemistry, earth science, sustainability, climate change, environmental regulation and policy, and serves as a valuable complement to Wharton business and leadership education.

The ubiquity of sustainability policy issues across all parts of the private sector makes this area of study relevant to students, who can then go on to careers where they may demonstrate their expertise in sustainability policy and its effects on particular industries. Additionally, the multi-disciplinary nature of the MES degree exposes Wharton students to faculty and students throughout the Penn community with similar interests in environmentally related topics. The capstone component of the MES program allows the student to participate in a research initiative related to this field of study.

When to Apply

Students may apply to both programs simultaneously or may apply **during** the first year of either the MBA or MES program. Separate applications are made, and each program's admission committee decides independently. Once the student is admitted to both programs, the Dual Degree program **can** be initiated.

Application and Admissions Procedures

Students wishing to participate in this program must apply separately to each program. When applying, the student should indicate on each separate application that they are applying to the MES/MBA dual degree program. The applications will be reviewed separately by the admissions committees for each

program. Acceptance into one program of the Dual degree does not guarantee acceptance into the other program.

Schedule and Credit Distribution

The MES/MBA dual degree program is designed to be completed in 2½ years including at least one summer semester. Over these 2½ years, students will be in residence at Wharton for three semesters and complete a minimum of 15 credit units (CUs) of Wharton courses, including the core. The MES/MBA student is in residence at SAS for three semesters, at which time they complete a minimum of 9 CUs of MES courses that qualify for the MES degree. Of the 9 CUs taken in SAS, Wharton will accept 4 at the graduate level, bringing the dual degree student to the minimum 19 CUs required for the MBA degree. Of the 15 CUs taken in Wharton, MES will accept 3 at the graduate level, bringing the dual degree student to the minimum 12 CUs required for the MES degree. This standard format reduces the typical residency for the two programs from seven to six semesters and reduces the total required CUs from 31 to 24. The timeline below has been designed by the faculties of both Wharton and SAS and should be followed unless express permission is obtained from both program directors.

Detailed Schedule

| Semester | Program | Courses | MES | MBA |
|----------|--------------|---|--------------|---------------|
| 1 | MBA (Fall) | Wharton Core Curriculum | 0 CUs | 5.5 CUs |
| 2 | MBA (Spring) | Wharton Core Curriculum | 0 CUs | 4.5 CUs |
| 3 | MES (Fall) | ENVS 601 Proseminar, 3 MES Foundation | 4 CUs | 0 CUs |
| 4 | MES (Spring) | 2 MES Concentration; 1 Foundation, ENVS 699 Capstone Course | 4 CUs | 0 CUs |
| 5 | MES (Summer) | 1 Research Methods | 1 CUs | 0 CUs |
| 6 | MBA (Fall) | Wharton Electives | 0 CUs | 5 CUs |
| | | TOTAL CUs | 9 CUs | 15 CUs |

Notes: Double counts for the MES are taken in semesters 1, 2 or 6. Double counts for MBA are taken in semesters 3, 4, or 5.

Special Rules for MES/MBA Dual Degree Students

- Of the 9 CUs taken while MES is the primary program, 8 must be taken in the School of Arts and Sciences. Only one course taken outside of SAS, while MES is the primary program, can be counted toward the 9 CU's for the MES degree.
- MES/MBA students must take all foundation courses in the sciences.
- Students may start the MES in the summer prior to their first Fall semester in MBA. Consult with the program directors for this sequencing.

The Curriculum

Wharton Core Curriculum

At least five Wharton elective courses are required, three of which will count toward the MES degree and must also satisfy a standard major. Wharton courses related to environmental studies that might be a natural fit, but would not be required, include, but are not limited to, the following:

- BEPP 761 - Risk Analysis and Environmental Management
- BEPP 763 - Energy Markets & Policy
- BEPP 777 – Cost Benefit Analysis
- BEPP 789 - Nations, Politics, and Markets
- BEPP 805 - Risk Management
- FNCE 756 - Energy Finance
- LGST 806 - Negotiations
- LGST 815 – Environmental Management: Law and Policy
- MKTG 733 - Marketing for Social Impact
- OIDD 762 – Environmental Sustainability and Value Creation

See an MBA adviser for a detailed MBA Curriculum.

MES Curriculum

Required Courses

- ENVS 601 – Proseminar: Contemporary Issues in Environmental Studies
- ENVS 699 – Capstone Seminar
- One research methods course (Chosen based on capstone topic)

Four Foundation courses:

Chosen from the following science courses (substitutions with permission from an MES Academic Adviser):

- ENVS 507 – Wetlands
- ENVS 609 – Creating Gateways to the Land with Smarter Conservation
- ENVS 610 – Regional Field Ecology
- ENVS 626 – History and Science of Climate Change
- GEOL 421 – Elemental Cycling in Global Systems
- GEOL 411 – Soil Science
- GEOL 528 – Aqueous Geochemistry
- GEOL 611 – Field Study of Soils
- GEOL 653 – Introduction to Hydrology

Five Concentration courses:

Three CUs double counted from the MBA will count toward the concentration. The remaining two Concentration courses are chosen from the following courses from typical concentrations (substitutions with permission from an MES Adviser):

Environmental Policy

- ENVS 616 – Risk Assessment: Science & Policy Challenges
- ENVS 620 – Developing Environmental Policy
- ENVS 644 – Energy Waste and the Environment
- ENVS 648 – Issues in Food & Agricultural Policy
- ENVS 673 – The Future of Water

Environmental Sustainability

- ENVS 665 – Industrial Ecology
- ENVS 667 - Sustainability and Anthropogenic Impacts
- ENVS 673 - The Future of Water
- ENVS 674 - Life Cycle Assessment
- ENVS 676 - Corporate Sustainability Management & Communication
- ENVS 682 – Leading Change for Sustainability
- DYNM 658 – Fundamentals of Sustainability

Capstone Requirement

The Wharton MBA program does not require a thesis/capstone, while the MES does. Topics for the MES capstone should have a business, management, or sustainability focus to highlight the knowledge obtained in each program.

Contact Info

MES Program:

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III. MES / Master of Non-Profit Leadership (NPL) with the School of Social Policy and Practice

Overview

The MES Program offers a multi-disciplinary approach to addressing the complex nature of the environment as well as the depth to provide specific expertise in fields such as resource management, sustainability, policy, and urban resilience and adaptation. While the MES offers an in-depth study of environmental problems and potential solutions, a dual degree program with Non-Profit Leadership provides an avenue to make change. A large part of environmental work is done through nonprofit and NGO groups; thus, this area of study is relevant to a wide range of students, who can then go on to careers such as nonprofit resource management, environmental justice advocacy, and urban resilience and adaptation policy development. Additionally, the multi-disciplinary nature of the MES degree exposes students to faculty and students throughout the Penn community with similar interests in environmentally related topics.

The capstone component of the MES program provides students in this dual degree with the opportunity to participate in a research initiative related to their field of study. Many graduates of the program become leaders of nonprofits, international NGOs, or advocacy organizations that work to improve the environment. A solid foundation in nonprofit leadership aids these future leaders in innovative approaches to address the challenges we face today and will face in the future.

Application and Admissions Procedures

Students wishing to participate in this program must apply separately to each program. When applying, the student should indicate on each application that they are applying to the MES/NPL dual degree program. The admissions committees for each program will review the applications separately. Acceptance into one program of the Dual degree does not guarantee acceptance into the other program.

Schedule and Credit Distribution

The MES/NPL dual degree program may be completed either full- or part-time. Part-time students will work with the directors of both programs to create a plan to complete the program in nine semesters or less. Full-time students will be in residence at the School of Social Policy and Practice for two semesters and complete a minimum of 8 credit units (CUs), including the core. The MES/NPL student is in residence in the Department of Earth and Environmental Science for three semesters, at which time he/she completes a minimum of 9 CUs of courses that qualify for the MES degree.

Of the 9 CUs taken in MES, the NPL will accept 2 at the graduate level, bringing the dual degree student to the minimum 10 CUs required for the NPL degree. Of the 8 CUs taken in the NPL, MES will accept 3 at the graduate level, bringing the dual degree student to the minimum 12 CUs required for the MES degree. This standard format reduces the typical residency for the two programs from six to five semesters and reduces the total required CUs from 21 to 17. There are two options for the timeline that have been designed by the faculties of both NPL and MES. Students must choose one option and follow that timeline unless express permission is obtained from both program directors.

| OPTION 1 | MES | NPL |
|---|--------------|--------------|
| 1. Fall Semester Year 1 (Home School: SAS) ENVS 601 Proseminar (1CU) MES Concentration Course 1 (1 CU) MES Foundation Course 1 (1 CU) MES Foundation Course 2 (1 CU) | | |
| | 4 CUs | 0 CUs |
| 2. Spring Semester Year 1 (Home School: SAS) ENVS 699 Capstone Seminar (1 CU) MES Foundation Course 3 (1 CU) MES Research Methods (1 CU) MES Concentration Course 2 (1 CU) | | |
| | 4 CUs | 0 CUs |
| 3. Summer Semester Year 1 MES Foundation Course 4 (1 CU) | | |
| | 1 CUs | 0 CU |
| 4. Fall Semester Year 2 (Home School: SP2) NPL Core Course 1 (1 CU) NPL Core Course 2 (1 CU) NPL Elective Course 1 (1 CU) NPL Elective Course 2 (1 CU) | | |
| | 0 CUs | 4 CUs |
| 5. Spring Semester Year 2 (Home School: SP2) NPL Core Course 3 (1 CU) NPL Core Course 4 (1 CU) NPL Elective Course 3 (1 CU) NPL Elective Course 4 (1 CU) | | |
| | 0 CUs | 4 CUs |
| TOTAL CUs | 9 CUs | 8 CUs |

| OPTION 2 | MES | NPL |
|---|--------------|--------------|
| 1. Fall Semester Year 1 (Home School: SP2) NPL Core Course 1 (1 CU) NPL Core Course 2 (1 CU) NPL Elective Course 1 (1 CU) NPL Elective Course 2 (1 CU) | | |
| | 0 CUs | 4 CUs |

| | | |
|--|--------------|--------------|
| 2. Spring Semester Year 1 (Home School: SAS) ENVS 601 Proseminar (1CU) ENVS 699 Capstone Seminar (1 CU) MES Foundation Course 1 (1 CU) MES Concentration Course 1 (1 CU) | | |
| | 4 CUs | 0 CUs |
| 3. Summer Semester Year 1 (Home School: SAS) MES Foundation Course 2 (1 CU) | | |
| | 1 CUs | 0 CUs |
| 4. Fall Semester Year 2 (Home School: SAS) MES Research Methods Course (1 CU) MES Foundation Course 3 (1 CU) MES Foundation Course 4 (1 CU) MES Concentration Course 2 (1 CU) | | |
| | 4 CUs | 0 CUs |
| 5. Spring Semester Year 2 (Home School: SP2) NPL Core Course 3 (1 CU) NPL Core Course 4 (1 CU) NPL Elective Course 3 (1 CU) NPL Elective Course 4 (1 CU) | | |
| | 0 CUs | 4 CUs |
| TOTAL CUs | 9 CUs | 8 CUs |

Special Rules for MES/NPL Dual Degree Students

Eight of the 9 CUs taken while MES is the primary program must be taken in SAS. Additional courses taken outside of SAS, while MES is the primary program, cannot be counted toward the 9 CUs for the MES degree.

The Curriculum

The following are requirements of the NPL degree. These hold for all dual degree students and are not different from single degree students.

- Complete 10 CUs of graduate coursework; including a minimum of 4 CUs of core NPL courses and 4 CUs of NPL elective courses. Two additional courses may be taken in NPL or another school at Penn.
- For dual degree students, the additional 2 CUs of upper-level courses come from the MES program.

Choose four NPL core courses from the options below:

- NPLD 587: Building Nonprofits that Thrive
- NPLD 589: Ethics and the Pursuit of Social Impact
- NPLD 720: Data Analysis for Social Impact
- NPLD 784: The Nonprofit Sector: Concepts and Theories
- NPLD 786: Strategic Management and Leadership of Nonprofits
- NPLD 790: Social Finance
- NPLD 791: Leadership: Designing the Future

- NPLD 792: Social Entrepreneurship
- NPLD 796: Philanthropy and Fundraising

Choose four elective courses from the list online:

<https://www.sp2.upenn.edu/academics/ms-in-nonprofit-leadership/curriculum/course-descriptions/>

Two upper-level courses selected from the MES program roster in consultation with the NPL Director will double-count towards the degree.

Expanded Sample MES Curriculum (12 CUs)

Required courses (3 CUs)

- ENVS 601 Proseminar: Contemporary Issues in Environmental Studies
- ENVS 699 Capstone Seminar
- Research methods course (Chosen based on capstone topic)

Four foundation courses (4 CUs)

- Selected in consultation with an academic adviser

Five concentration courses (5 CUs)

Each student in the MES program chooses a professional concentration. All concentrations in MES are appropriate for this Dual Degree.

Five graduate courses are selected in consultation with the student's academic advisers to complete this professional concentration. Those courses enable the student to develop the professional capacity identified initially as the objective of his or her course of study, and to acquire the skills and the critical perspective necessary to pursue the capstone exercise. For this dual degree, two courses will be chosen from the MES program, and three will be selected from the following list:

- NPLD 561 Nonprofit Branding
- NPLD 582 NGOs and International Development
- NPLD 587 Building Nonprofits that Thrive
- NPLD 720 Data Analysis for Social Impact
- NPLD 783 Field Exercise in Social Impact Measurement
- NPLD 786 Strategic Management and Leadership of Nonprofits

Other courses require permission from the MES Program Director.

Capstone Requirement

The capstone component of the MES program provides students in this dual degree with the opportunity to participate in a research initiative related to their field of study. In addition to the capstone, the student will complete the Nonprofit

Leadership Practicum. The Leadership Practicum consists of: a supervised mentoring and leadership development experience with either an executive director or senior-level leader at a Philly-area nonprofit organization or foundation; a partnership with the goal of learning about the organization and providing the student support on various levels that can include strategic planning, succession planning, branding or marketing, development and philanthropy, or other targeted projects; and a commitment of 180-225 hours of practicum time with the sponsoring organization during the academic year beginning in early October and ending in mid-April.

Contact Info

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NPL Website: <https://www.sp2.upenn.edu/academics/dual-degree-programs/npl-dual-degree-programs/master-of-environmental-studies/>

IV. MES/Master of Law Dual Degree with the Law School

Overview

While the Master of Law (ML) offers a focus in the Law, a dual degree program with MES provides needed structure for study within the broad field of environmental law, which ranges from resource use, to air and water pollution regulation, or addressing complex and ever-changing energy policy. The exposure to earth sciences, policy, and other relevant disciplines serves as a valuable complement to the ML education. The ubiquity of environmental law across all parts of the private and public sectors makes this area of study relevant to a wide range of students, who then go on to careers such as government and nonprofit policy development, private consulting for resource management, and business sustainability reporting across entire supply chains. The capstone component of the MES program provides students with the opportunity to participate in a research initiative related to an aspect of environmental law.

When to Apply

Students may apply to both programs simultaneously or may apply in the first year of either the ML or MES program. Separate applications are made and each program's admission committee makes decisions independently. Once the student is admitted to both programs, the Dual Degree program can be initiated.

Application and Admissions Procedures

Students wishing to participate in this program must apply separately to each program. When applying, the student should indicate on each separate application that they are applying to the MES/ML dual degree program. The applications will be reviewed separately by the admissions committees for each program. Acceptance into one program of the Dual degree does not guarantee acceptance into the other program.

Schedule and Credit Distribution

The MES/ML dual degree program may be completed either full- or part-time. Part-time students will work with the directors of both programs to create a plan to complete the program in 5 years or less. Full-time students will be in residence in the Department of Earth and Environmental Science for the duration of the Dual degree program.

Of the 9 CUs taken in MES, the ML will accept 2 at the graduate level, bringing the dual degree student to the minimum 8 CUs required for the ML degree. Of the 6 CUs taken in the ML, MES will accept 3 at the graduate level, bringing the dual

degree student to the minimum 12 CUs required for the MES degree. This standard format reduces the typical residency for the two programs from six to five semesters and reduces the total required CUs from 20 to 15. The timeline below has been designed by the faculties of both Law and MES. Students must follow that timeline unless express permission is obtained from both program directors.

| Semester/Courses | Course Load |
|---|---------------|
| 1. Fall Semester Year 1 ENV5 601 Proseminar LAWM 511 Intro to US Law MES Foundation Course 1 | 3 CUs |
| 2. Spring Semester Year 1 ENV5 699 Capstone Seminar LAWM 529 Navigating the Regulatory State MES Concentration Course 1 | 3 CUs |
| 3. Fall Semester Year 2 MES Research Methods course LAWM 528 Intro to General Business Law MES Foundation Course 2 | 3 CUs |
| 4. Spring Semester Year 2 MES Foundation Course 3 ML Foundation Course 4 ML Upper Level Course 1 | 3 CUs |
| 5. Fall Semester Year 3 MES Foundation 4 ML Upper Level 2 MES Concentration 2 | 3 CUs |
| TOTAL CUs | 15 CUs |

Special Rules for MES/ML Dual Degree Students

Of the 9 CUs taken for the MES, 8 must be taken in SAS. Only one course may be taken outside of SAS in addition to the three ML courses that are double counted.

The Curriculum

The following are requirements of the ML degree. These hold for all dual degree students and are not different from single degree students.

- Complete 8 CUs of graduate coursework; including a minimum of 4 CUs of foundation ML courses and 4 CUs of upper-level courses.
- For dual degree students, 2 CUs of upper-level courses may come from outside of Law and must be approved either by agreement in advance or by the Academic Director of the ML program.

ML Curriculum (8 CUs)

Four ML foundation courses:

Required

- LAWM 511 Introduction to U.S. Law and Legal Methods
- LAWM 528 Introduction to General Business Law
- LAWM 529 Navigating the Regulatory State

Elective (choose one)

- LAWM 505 An Introduction to American Constitutional Law
- LAWM 506 Introduction to Technology and Ethics
- LAWM 522 Corporate Compliance: Policy and Practice
- LAWM 530 Introduction to Health Law & Policy
- LAWM 536 Fundamentals of US Legal Research
- LAWM 576 Introduction to Patent Law

Four upper-level law courses (select 2 for the Dual Degree)

Courses selected from the JD program should be chosen in consultation with academic advisers from each program. Possible courses include the following, availability for which may vary depending on the semester:

- LAW 634 Environmental Law
- LAW 695 Land Use Law
- LAW 777 Environmental Lawyering
- LAW 790 International Environmental Law
- LAW 910 Animal Law and Ethics
- LAW 919 Energy Law and Climate Change
- LAW 931 Regulatory Law and Policy
- LAW 985 Oil and Gas Law

Upper-level double count courses selected from MES (select two for the Dual Degree)

- ENVS 616 Risk Assessment: Science & Policy
- ENVS 620 Developing Environmental Policy
- ENVS 648 Issues in Food and Agriculture Policy
- GEOL 650 Environmental Due Diligence

MES Curriculum (12 CUs)

Required courses (3 CUs)

- ENVS 601 Proseminar: Contemporary Issues in Environmental Studies
- ENVS 699 Capstone Seminar
- One research methods course (Chosen based on capstone topic)

Four foundation courses (4 CUs)

- Selected from EES courses in consultation with an academic adviser

Five concentration courses (5 CUs)

Each student in the MES program chooses a professional concentration. The following are the most appropriate concentrations for this Dual Degree:

- Environmental Policy
- Environmental Sustainability
- Resource Management
- Urban Environment
- Environmental Resilience and Adaptation

Five graduate courses are selected in consultation with the student's academic advisers to complete this professional concentration. Those courses enable the student to develop the professional capacity identified initially as the objective of his or her course of study, and to acquire the skills and the critical perspective necessary to pursue the capstone exercise. For this dual degree, two courses will be chosen from the MES program, and three will be selected from the following list:

- LAW 634 Environmental Law
- LAW 695 Land Use Law
- LAW 777 Environmental Lawyering
- LAW 790 International Environmental Law
- LAW 910 Animal Law and Ethics
- LAW 919 Energy Law and Climate Change
- LAW 931 Regulatory Law and Policy
- LAW 985 Oil and Gas Law

Other courses require permission from the MES Program Director.

The Capstone Requirement

The capstone component of the MES program provides students with the opportunity to participate in a research initiative related to an aspect of environmental law.

Contact Info

MES Program:

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ML Program:

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ML Website: <https://www.law.upenn.edu/admissions/master-in-law/master-in-law.php#DualDegrees>

V. MES/JD Dual Degree with the Law School

Overview

Students in this dual degree will have the opportunity to earn both the MES and JD degrees in three years. Students in this program will be prepared to assume positions of leadership in environmental law and policy making in both the public and private sector.

When to Apply

Students may apply to both programs simultaneously or may apply during the first year of either the JD or MES program. Separate applications are made and each program's admission committee makes decisions independently. Once the student is admitted to both programs, the Dual Degree program can be initiated. Students applying simultaneously to both programs may submit LSAT scores in lieu of the GRE for MES.

Application and Admissions Procedures

Students will apply independently to each degree through each school's specified admission process. The Law School and the School of Arts & Sciences (SAS) will make independent judgments about each candidate. Students may use LSAT scores in lieu of the MES GRE requirement.

Applicants will have two options to apply for the Dual degree program:

1. They may make contemporaneous applications to both programs prior to being accepted to either, or
2. They may apply to the MES program during the first semester of the Law program for Spring admission.

Schedule and Credit Distribution

In order for a student to receive both degrees, he or she must complete the independent degree requirements of each program.

For Law

Law students must complete a minimum of 89 semester hours (sh), 55 sh of which must be advanced credit completed in the second and third years of Law study. Students in the dual program may apply 12 sh of coursework (equal to four 1 CU courses) from the MES program toward that requirement, reducing their credit requirement to 43 sh. These four courses are the total number of non-Law courses that a Law student can take in other departments of the University. Law students

enrolled in the dual program are not eligible to participate in Study Abroad Programs.

Students must also satisfy the *pro bono* requirement of the Public Service Program and fulfill their senior writing and professional responsibility requirements (more on these requirements can be found in the Law Student Guide to Policy and Procedures).

For the Masters of Environmental Studies program

MES students must complete a minimum of 12 course units (CUs). Students in the dual program may apply 3 CU's (9 sh) from the JD program toward that requirement, reducing their remaining credit requirement to 9 CU's. These three courses must be pre-approved in the concentration requirement by the MES Faculty Curriculum Committee.

Detailed Schedule

The dual degree may be earned in one of the following two sequences:

Sample Curriculum for students accepted into both programs simultaneously:

NOTE: Number of sh for Law courses will vary each semester based on student's focus, available courses, etc.

| Year | Summer | Fall | Spring | JD | MES |
|------|-----------|-----------------------|---------------------------|--------------|-------------|
| 1 | 2 CUs MES | 16 sh Law | 13 sh Law ENVS 601* | 29 sh | 4 CU |
| 2 | 2 CUs MES | 12 sh Law 1 CU MES | 10 sh Law ENVS 699 | 22 sh | 4 CU |
| 3 | | 12 sh Law 1 CU MES | 14 sh Law | 26 sh | 1 CU |
| | | | Total sh & CUs | 77 sh | 9 CU |

*ENVS 601 substitutes for non-regulatory general elective

For students accepted to MES after first semester of Law:

NOTE: Number of sh for Law courses will vary each semester based on student's focus, available courses, etc.

| Year | Summer | Fall | Spring | JD Credits | MES Credits |
|------|--------------|-----------------------|---------------------------|--------------|--------------|
| 1 | | 16 sh Law | 13 sh Law ENVS 601* | 29 sh | 1 CUs |
| 2 | 4 CUs MES | 12 sh Law 1 CU MES | 10 sh ENVS 699 | 22 sh | 6 CUs |
| 3 | | 12 sh Law 1 CU MES | 14 sh Law 1 CU MES | 26 sh | 2 CUs |
| | | | Total sh & CUs | 77 sh | 9 CUs |

*ENVS 601 substitutes for non-regulatory general elective

Special Rules for MES/JD Dual Degree Students

- Law School tuition is paid when the student is taking only Law courses, and MES tuition is paid in the summer sessions when the student is taking only MES courses. In other years, while the student is in residence at the Law School and taking MES courses, students pay Law School tuition plus a program fee to MES (fee to be determined by SAS annually).
- Penn Law students will be charged for any courses taken in MES during the academic year (that is, not in the summer sessions) over and above the four courses that count toward the JD degree.
- Students register for courses in one program during that program's registration period and according to that program's registration rules and procedures. Students must be aware of the differences in these procedures:
 - Students register for Law courses through the Law School's standard registration system.
 - Students register for MES courses in PennInTouch during the University's registration period.

These registration periods are typically held at the same time for the spring semester (in the fall) but will require student action in the two systems.

- Law registration for the fall semester takes place during the summer, after fall semester registration in SAS, requiring the student to carefully consult with

both schools about scheduling. Usually students are able to resolve any issues that arise due to registration differences during the drop/add period. The timing and location of course scheduling must also be considered so that students are able to attend all classes.

The Capstone Requirement

The Law JD program does not require a thesis/capstone, but they must satisfy the *pro bono* requirement of the Public Service Program and fulfill their senior writing and professional responsibility requirements (more on these requirements can be found in the Law Student Guide to Policy and Procedures). The MES requires completion of a capstone project and the topic should have a regulatory, law, or policy focus to highlight the knowledge obtained in each program.

Contact Info

MES Program:

Yvette Bordeaux, PhD

bordeaux@sas.upenn.edu

JD Program:

Amanda S. Aronoff, L'95, Associate Director of Cross-Disciplinary Programs

aramanda@law.upenn.edu

Law Website: <https://www.law.upenn.edu/crossdisciplinary/jointdegree/jd-mes-environmental-studies.php>

VI. MES/Master of Public Health Dual Degree with the Perelman School of Medicine

Overview

Students in this dual degree will have the opportunity to earn both the MES and Master of Public Health (MPH) degrees in 3 years. This multi-disciplinary approach, which ranges from air pollution and geographic mapping to addressing complex and ever-changing legal regulation, expands the range of skills and knowledge that students are able to develop in the field of environmental health.

When to Apply

Students may apply to both programs simultaneously or may apply during the first year of either the MPH or MES program. Separate applications are required, and each program's admission committee makes decisions independently. Once the student is admitted to both programs, the Dual Degree program can be initiated.

Application and Admissions Procedures

Students wishing to participate in this program must apply separately to each program. When applying, the student should indicate on each separate application that they are applying to the MES/MPH dual degree program. The applications will be reviewed separately by the admissions committees for each program. Acceptance into one program of the Dual Degree does not guarantee acceptance into the other program.

Schedule and Credit Distribution

The MES/MPH student will be in residence at the Perelman School of Medicine for three semesters at which time they complete the minimum 10 CUs of PUBH pre-fix courses, including the core. The MES/MPH student is then in residence at SAS for three semesters, at which time they take 9 CUs of courses that qualify for the MES degree. Of the 9 CUs taken at SAS, the Medical School will accept 4 at the graduate level, bringing the dual degree student to the minimum 14 CUs required for the MPH degree. MES will accept 3 PUBH CUs, to bring the student to the minimum 12 CUs required for the MES degree. This standard format reduces the typical residency for the two programs from seven semesters to six semesters and the total CUs from 26 to 19 CUs.

Schedule and Credit Distribution

Proposed Time Line

Students may start in either program; thus, two different suggested timelines

are detailed below.

MES Fall Start

| Semester | Program | Courses | MES | MPH |
|------------------|---------|--|--------------|---------------|
| 1 | MES | ENVS 601, ENVS 622, ENVS 624 | 3 CUs | 0 CUs |
| 2 | MPH | PUBH 501, PUBH 502, PUBH 503, Elective 1 | 0 CUs | 4 CUs |
| 3 | MES | ENVS 541, ENVS 631, ENVS 616 | 3 CUs | 0 CUs |
| 4 | MPH | PUBH 504, PUBH 506, Elective 2 | 0 CUs | 3 CUs |
| 5 | MPH | PUBH 505, PUBH 508-1, Elective 3 | 0 CUs | 3 CUs |
| 6 | MES | GEOL 618, ENVS 632, ENVS 644 | 3 CUs | 0 CUs |
| TOTAL CUs | | | 9 CUs | 10 CUs |

MPH Fall Start

| Semester | Program | Recommended Courses | MES | MPH |
|------------------|---------|--|--------------|---------------|
| 1 | MPH | PUBH 501, PUBH 502, PUBH 503, Elective 1 | 0 CUs | 4 CUs |
| 2 | MES | ENVS 601, GEOL 618, ENVS 699 | 3 CUs | 0 CUs |
| 3 | MES | ENVS 541, ENVS 631, ENVS 624 | 3 CUs | 0 CUs |
| 4 | MPH | PUBH 504, PUBH 506, Elective 2 | 0 CUs | 3 CUs |
| 5 | MPH | PUBH 505, PUBH 508-2, Elective 3 | 0 CUs | 3 CUs |
| 6 | MES | ENVS 616, ENVS 622, ENVS 644 | 3 CUs | 0 CUs |
| TOTAL CUs | | | 9 CUs | 10 CUs |

Special Rules for MES/MPH Dual Degree Students

- Eight of the 9 CUs taken while MES is the primary program must be taken in SAS. Additional courses taken outside of SAS, while MES is the primary program, will not be counted toward the 9 CUs for the MES degree.
- Both programs require a Capstone project, but students may combine the expertise gained in both programs to write a single capstone.

The Curriculum

MPH Core Curriculum

Required Courses

- PUBH 501 – Intro to Biostatistics
- PUBH 502 – Intro to Principles and Methods of Epidemiology
- PUBH 503 – Environmental & Occupational Health
- PUBH 504 – Behavioral & Social Sciences in Public Health
- PUBH 505 – Health Policy & Administration
- PUBH 506 – Methods for Public Health Practice
- PUBH 507 – Public Health Law & Ethics
- PUBH 508 – Capstone Seminar (2 CUs)

MES Core Curriculum

Required Courses

- ENVS 601 – Proseminar: Contemporary Issues in Environmental Studies
- ENVS 541 – Modeling Geographic Objects
- ENVS 699 – Capstone Seminar

Four (4) foundation courses

- Courses selected in consultation with MES Academic Adviser

Five (5) Concentration Courses in *Environmental Health*

- PUBH 501 - Biostatistics
- PUBH 502 – Intro to Principles and Methods of Epidemiology
- PUBH 503 – Environmental & Occupational Health
- ENVS 616 - Risk Assessment

Substitutions with permission

The Capstone Requirement

At the beginning of the second year of the program, each student undertakes a capstone project, which is an independent research exercise required for both programs. Students are not required to write two separate capstones, but instead may do research on the same topic and write a capstone on that topic with a health emphasis for the MPH program and an environmental emphasis for the MES program.

Contact Information

MES Program:

Yvette Bordeaux, PhD

lps@sas.upenn.edu

MPH Program:

Moriah Hall, MPH, **Associate Director**, *Master of Public Health Program*
moriahh@pennterms.edu

MPH Website: <http://publichealth.med.upenn.edu/>

VII MES/ Veterinariae Medicinae Doctoris Dual Degree with Penn Veterinarian School

Overview

Veterinarians are poised to influence policies and practices that have direct impact on the environment. Trained to recognize the interdependency of animal, human and environmental health (i.e., One Health), they are acutely aware of the effect environments have on animal health, as well as the effect animals, particularly livestock, have on the environment. Formal training in environmental studies will allow them to lead and contribute to interprofessional teams that can advance innovative approaches to enhance environmental and agricultural sustainability, as well as global biodiversity – key challenges in our present and future.

The MES offers an in-depth study of environmental problems and potential solutions that will expose veterinary students to faculty and students throughout the Penn community with similar interests in environmentally related topics and provide them with the skills to approach and resolve challenges as part of interprofessional teams. The capstone component of the MES program will provide veterinary students with the opportunity to participate in a research initiative related to their field of study .

When to Apply

Dual degree applicants must apply for and are accepted independently into each program. Applications for both VMD and MES will specifically request if the applicant intends to apply to the VMD/MES dual degree. However, Penn Vet students may apply to the MES degree and the Dual Degree program as late as the end of their second year.

Application and Admissions Procedures

Students wishing to participate in this program must apply separately to each program. When applying, the student should indicate on each separate application that they are applying to the MES/VMD dual degree program. The applications will be reviewed separately by the admissions committees for each program. Acceptance into one program of the Dual Degree does not guarantee acceptance into the other program.

Schedule and Credit Distribution

Independently, the MES is a 12 CU degree and the VMD is a 4-year degree program, consisting of a 2-year core curriculum followed by 1.5-2 year clinical curriculum – equivalent to approximately 64 CUs. In this combined degree format,

the student would complete nine courses in SAS (9 CUs) and three courses that fulfill MES requirements during their VMD education. The VMD/MES student will be in residence in SAS for up to three summer semesters of the Dual Degree program and in Penn Vet for eight semesters. Of the 9 CUs completed for the MES, Penn Vet will accept 3 CUs at the graduate level toward their elective credits required for the VMD degree. Of the credits completed in the VMD program, MES will accept 3 CUs at the graduate level toward the 12 CUs required for the MES degree. For a typical student, the dual degree residency for the two programs will include ten semesters, although some students may be able to complete the two degrees in nine semesters.

Full time Dual Degree Proposed Time Line/Sample Curricula

| YEAR 1 | | |
|--|--|--|
| FALL | SPRING | SUMMER |
| Vet first year curriculum | Vet first year curriculum | 1 or 2 MES Course(s)* |
| YEAR 2 | | |
| FALL | SPRING | SUMMER |
| Vet second year curriculum | Vet second year curriculum | 1 or 2 MES course(s)* |
| YEAR 3 | | |
| FALL | SPRING | SUMMER |
| ENVS 601 3 MES Foundation courses | 2 MES courses ENVS 699 Capstone Seminar | 1 or 2 MES course(s)* Capstone Research |
| YEAR 4 | | |
| FALL | SPRING | SUMMER |
| Vet 3rd year Clinic/ Electives Capstone Research | Vet 3 rd year Clinics/Electives Capstone Research | Vet 4 th year Clinics/Electives |
| YEAR 5 | | |
| FALL | SPRING | |
| Vet 4th year Clinics and Electives | Vet 4 th year Clinics and Electives | |

Special Rules for MES/VMD Dual Degree Students

The MES/VMD dual degree program is a full-time program. Students will be in residence at the Penn Veterinarian School for nine semesters (4 years) and complete a minimum of 64 CUs, including clinics. The MES/VMD student is

in residence in the Department of Earth and Environmental Science for three semesters, at which time they complete a minimum of 9 CUs of courses that qualify for the MES degree.

Capstone Requirement

The MES program requires a capstone while the VMD requires clinical work. For the dual degree, the capstone project will be related to veterinarian medicine and the environment and can be related to the student's clinical work. This research should provide Dual Degree students with the opportunity to work in local, national or international regions that grapple directly with challenges that influence the future of our planet.

Contact Information

MES Program:

Yvette Bordeaux, PhD

lps@sas.upenn.edu

VMD Program:

Chipo Siantumbu

onehealth@vet.upenn.edu

VMD Website: <https://www.vet.upenn.edu/education/dual-degree-programs/vmd-mes-program>

VIII MES and Master of Public Administration

Overview

This dual degree program combines a practical approach to the study of public management with a better understanding of environmental problems and potential solutions. Courses are designed to deliver specialized knowledge, practical experience, and valuable connections. The program develops core concepts and analytical tools, which provide students with the necessary skills needed for effective public administration in the face of ever-changing environmental conditions. This multi-disciplinary approach provides graduates with the breadth necessary to address the complexities of public administration as governments are faced with climate resilience and adaptation concerns. This dual degree program enables students to meet complex challenges of the public sector through critical analysis and an understanding of context. This combination gives graduates a competitive advantage in careers focused on leadership and policy in the environmental science field, locally and nationally.

When to Apply

Dual Degree applicants must apply for and be accepted independently into each program. Applicants must declare on each application their intention to become a Dual Degree student at the time of application according to the directions on the application. Students should apply to the MES and MPA programs concurrently. Students who desire to apply to the second program while already enrolled in the other will be evaluated on a case-by-case basis, and all requirements still apply.

Application and Admissions Procedures

Students wishing to participate in this program must apply separately to each program. When applying, the student should indicate on each separate application that they are applying to the MES/MPA Dual Degree program. The applications will be reviewed separately by the admissions committees for each program. Acceptance into one program of the Dual Degree does not guarantee acceptance into the other program.

Schedule and Credit Distribution

Of the 9 CUs taken in MES, the MPA will accept 2 at the graduate level (one MES foundation course in place of one elective and the MES Capstone (ENVS 699) in place of GAFL 799 *MPA Capstone*, provided that Capstone is focused on public policy and is shared with GAFL faculty for review and file), bringing the dual degree student to the minimum 9 CUs required for the MPA degree. Of the 7 CUs taken in the MPA, MES will accept 3 CUs at the graduate level (GAFL 611

Statistics for Public Policy in place of the Research Methods course and two core GAFL courses as two of the professional concentration courses), bringing the dual degree student to the minimum 12 CUs required for the MES degree. This format reduces the typical residency for the two programs from six to four semesters and reduces the total required CUs from 21 to 16.

| Semester | Recommended Courses | Course Load |
|-------------------|--|---------------|
| 1 (Fall) | ENVS 601 Proseminar GAFL 611 Statistics for Public Policy GAFL 631 Public Law and Public Process MES Foundation Course 1 | 4 CUs |
| 2 (Spring) | ENVS 699 Capstone Seminar MES Foundation Course 2 GAFL 640 Program Evaluation and Data Analysis GAFL 732 Public Management and Leadership | 4 CUs |
| 3 (Fall) | MES Foundation Course 3 MES Foundation Course 4 MES Concentration Course 1 GAFL 621 Public Economics | 4 CUs |
| 4 (Spring) | GAFL 651 Public Financial Management GAFL Elective MES Concentration Course 4 MES Concentration Course 5 | 4 CUs |
| TOTAL CUs | | 16 CUs |

Special Rules for MES/MPA Dual Degree Students

The MES/MPA Dual Degree is designed as a full-time program. Students wishing to complete the program on a part-time basis should contact the directors of both programs to create a plan for program completion. Students will complete a minimum of 7 CUs in the MPA program and 9 CUs in the MES program.

Capstone Requirement

Both the MES and MPA programs require a capstone: an independent research exercise. However, students are not required to write two separate capstones, but instead may do research on the same topic and write a capstone on that topic with a government/policy emphasis for the MPA program and an environmental emphasis for the MES program.

Contact Information

MES Program:

Yvette Bordeaux, PhD

lps@sas.upenn.edu

MPA Program:

Mindy Zacharjasz, *Director, Master of Public Administration*

felsinstitute@sas.upenn.edu

MPA Website: <https://www.fels.upenn.edu/academics/mpa>

IX MES and Master of City & Regional Planning Dual Degree with the Weitzman School of Design

Overview

Students who are interested in obtaining planning skills and knowledge combined with a solid foundation in environmental science and policy should consider a Dual Degree with the Master of City and Regional Planning (MCP) and the Masters of Environmental Studies (MES), which offers a focus in urban and regional planning with an eye toward environmental impact, resilience and climate adaptation. This Dual Degree program exposes students to air, water and soil concerns as well as environmental sustainability, law, and policy while giving them a strong foundation in urban planning.

Application and Admissions Procedures

Students wishing to participate in this program must apply separately to each program. When applying, the student should indicate on each separate application that they are applying to the MES/MCP Dual Degree program. The applications will be reviewed separately by the admissions committees for each program. Acceptance into one program of the Dual Degree does not guarantee acceptance into the other program.

Schedule and Credit Distribution

The MES/MCP Dual Degree program is a full-time program. Students will be in residence at the Weitzman School of Design for four semesters and complete a minimum of 15 CUs, including the core. The MES/MCP student is in residence in the Department of Earth and Environmental Science for three semesters, at which time they complete a minimum of 9 CUs of courses that qualify for the MES degree.

Of the 9 CUs taken in MES, MCP will accept 3 CUs at the graduate level, bringing the dual degree student to the minimum 18 CUs required for the MCP degree. Of the 15 CUs taken in the MCP, MES will accept 3 CUs at the graduate level, bringing the dual degree student to the minimum 12 CUs required for the MES degree. This format reduces the typical residency for the two programs from 4 to 3 years and reduces the total required CUs from 30 to 24.

MCP Start

| Fall Year 1 (Home School: Design) | CUs SAS | CUs Design |
|--|----------------|-------------------|
| CPLN 500 Planning History and Theory | | 1 |
| CPLN 501 Quantitative Methods | | 1 |
| CPLN 503 GIS – Modeling Geographic Objects | | 1 |
| CPLN – Concentration Foundation Course e.g 530 | | 1 |
| | 0 | 4 |
| Spring Year 1 (Home School: Design) | | |
| CPLN 600 Workshop | | 2 |
| CPLN Concentration Foundation or Elective Course | | 1 |
| CPLN Concentration Elective Course | | 1 |
| CPLN Free Elective Course | | 1 |
| | 0 | 5 |
| Summer Year 1 or 2 (Home School: SAS or Design) | | |
| MES Concentration Course 1 | 1 | |
| MCP Summer Internship (No CUs) | | 0 |
| | 1 | 0 |
| Fall Year 2 (Home School: Design) | | |
| CPLN 700 Studio | | 2 |
| CPLN 509 Law and Urban Development OR CPLN 502 Urban and Infrastructure Finance | | 1 |
| CPLN Breadth Methods Course | | 1 |
| CPLN Concentration Foundation or Elective Course | | 1 |
| | 0 | 5 |
| Spring Year 2 (Home School: SAS) | | |
| ENVS 699 Capstone Seminar | 1 | |
| MES Foundation 1 | 1 | |
| MES Foundation 2 | 1 | |
| MES Research Methods Course | 1 | |
| | 4 | 0 |
| Fall Year 3 (Home School: SAS) | | |
| ENVS 601 Proseminar: Contemporary Issues in Env Stud | 1 | |
| MES Concentration Course 2 | 1 | |
| MES Foundation Course 3 | 1 | |
| MES Foundation Course 4 | 1 | |
| | 4 | 0 |
| Spring Year 3 (Home School: Design) | | |
| CPLN Free Elective | | 1 |
| MES Capstone | 0 | |
| | | 1 |
| TOTAL CUs | 9 | 15 |

MES Start

| Fall Year 1 (Home School: SAS) | CU's SAS | CU's Design |
|--|-----------------|--------------------|
| ENVS 601 Proseminar: Contemporary Issues in Env Stud | 1 | |
| MES Concentration Course 1 | 1 | |
| MES Foundation 1 | 1 | |
| MES Foundation 2 | 1 | |
| | 4 | 0 |
| Spring Year 1 (Home School: SAS) | | |
| MES Foundation Course 3 | 1 | |
| MES Foundation Course 4 | 1 | |
| MES Concentration Course 2 | 1 | |
| ENVS 699 Capstone Seminar | 1 | |
| | 4 | 0 |
| Summer Year 1 or 2 (Home School: SAS) | | |
| MES Research Methods | 1 | |
| MCP Summer Internship (No CUs) | | 0 |
| | 1 | 0 |
| Fall Year 2 (Home School: Design) | | |
| CPLN 500 Planning History and Theory | | 1 |
| CPLN 501 Quantitative Methods | | 1 |
| CPLN 503 GIS – Modeling Geographic Objects | | 1 |
| CPLN – Concentration Foundation Course (e.g., 530) | | 1 |
| | 0 | 4 |
| Spring Year 2 (Home School: Design) | | |
| CPLN 600 Workshop | | 2 |
| CPLN Concentration Foundation or Elective Course | | 1 |
| CPLN Concentration Elective Course | | 1 |
| CPLN Free Elective Course | | 1 |
| | 0 | 5 |
| Fall Year 3 (Home School: Design) | | |
| CPLN 700 Studio | | 2 |
| CPLN 509 Law and Urban Development OR CPLN 502 Urban and Infrastructure Finance | | 1 |
| CPLN Breadth Methods Course | | 1 |
| CPLN Concentration Foundation or Elective Course | | 1 |
| | | 5 |
| Spring Year 3 (Home School: Design) | | |
| CPLN Free Elective | | 1 |
| MES Capstone | 0 | |
| | | 1 |
| TOTAL CUs | 9 | 15 |

The Curriculum

List of CPLN Breadth Methods Courses

- CPLN 504 Site Planning (Fall)

- CPLN 505 Planning by Numbers (Spring)*** OR CPLN 671 Spatial Statistics and Data Analysis (Fall)
- CPLN 506 Negotiation and Civic Engagement (Spring)
- CPLN 508 Urban Research Methods (Fall)
- CPLN 530 Land Use Planning
- CPLN 560 Introduction to Graphics for Urban Design (Spring)

Special Rules for MES/MCP Dual Degree Students

- Students in the Land Use-Environmental Planning or the Public Private Development concentrations choosing to use CPLN 504 as their Breadth Methods course must choose another elective to complete their concentration requirement.
- Students in the Urban Design concentration CANNOT take CPLN 504 as their Breadth Methods course.
- Students in the Sustainable Infrastructure and Transportation Planning concentration CANNOT take CPLN 505 as their Breadth Methods course.
- Students in the Thesis Studio CANNOT take CPLN 508 as their Breadth Methods course.
- Students in the Smart Cities concentration requirement CANNOT take CPLN 671 OR CPLN 505 as their Breadth Methods course.

Capstone Requirement

The MES program requires a capstone, while the MCP requires a summer internship. In most cases, these requirements can be combined to produce a report on the internship work as the capstone.

Contact Information

MES Program:
Yvette Bordeaux, PhD
lbs@sas.upenn.edu

MCP Program:
Tom Daniels, Crossways Professor
thomasld@design.upenn.edu

MCP Website: <https://www.design.upenn.edu/city-regional-planning/graduate/graduate-city-and-regional-planning-programs>

X Multi-Master's Degree in International Environmental Management

Overview

The central purpose of this program is to bring together highly qualified individuals from France, China, and the United States with a variety of master's degrees in a unique and rigorous program that will prepare them to manage complex international environmental challenges.

Advanced students in the MES program can apply for admission to this multi-master's degree program in International Environmental Management. Upon completion of their studies, students will receive a Mastère Spécialisé degree in Environmental Management from Mines Paris Tech (formerly Ecole des Mines de Paris) in France and a Master of Engineering degree from Tsinghua University in China, in addition to the Master of Environmental Studies degree from the University of Pennsylvania.

Application and Admissions Procedures

Students wishing to participate in this program must first apply and be accepted into the MES program. The student must then complete 8 CUs of MES courses. In the spring of the year the student wishes to participate in the Mines Paris Tech program, the student must apply to that program through Mines Paris Tech. Each application is reviewed separately by the admissions committees for each program. Acceptance into the MES program does not guarantee acceptance into the Multi Masters program, but it is a prerequisite for acceptance in the Multi Masters Program.

Schedule and Credit Distribution

The Multi Masters degree in Environmental Management is designed to be completed in 2½ years including one summer semester (six semesters total). Over the 2½ years, students will be in residence at the University of Pennsylvania for the first two semesters and complete a minimum of 8 credit units CUs. The student then travels to Mines Paris Tech for one semester (September to December), at which time they complete all requirements for a Post Masters Degree in International Environmental Management (IEM). The student then travels to Beijing, China and is in residence at the Franco-Chinese Center of Environment and Energy at Tsinghua University for one semester (January-April), at which time they complete all requirements for either a Masters Degree or a certificate in Environmental Engineering (MEE) (depending on student's academic background). Then, the student will participate in a 4 to 6-month internship, which will be completed by December of that year. The student will write a report on the results of this internship, and

this report will serve as the Capstone for the MES program and complete the requirements for the Mines Paris Tech and Tsinghua degrees. Two CUs of credit will be transferred from Mines Paris Tech to the MES program and 2 CUs of credit will be transferred from Tsinghua University to the MES program, thereby completing the 12 CU requirement for the MES program.

Students who prefer a shorter time commitment may choose to complete the dual degree MES/IEM. For this option, students must complete 10 CUs in the MES program before travelling to Mines Paris Tech for one semester. The student will complete a 4-6-month internship and write a report on the results of this internship. This report will serve as the Capstone for the MES program and complete the requirements for the Mines Paris Tech IEM degree.

Unlike the other programs described in this handbook, students participating in this program must apply to and be accepted to another University (Mines Paris Tech). Once accepted, the student is subject to the rules and regulations of Mines Paris Tech as well as tuition and fees there. Penn will maintain the student's status as full-time for purposes of loan deferment and health insurance, but the student is responsible for all issues related to tuition, housing, transportation, visas in the other portions of the program, and obtaining the internship.

Detailed Schedule (Full Program 3 Degrees--MES/IEM/MEE)

| Semester | Program | Recommended Courses | MES | IEM |
|-------------------|-------------|--|--------------|--------------|
| 1 (Fall) | MES | ENVS 601: Proseminar, 3 Foundation | 4 CUs | |
| 2 (Spring) | MES | 1 Foundation, 1 Methods, 2 Concentration | 4 CUs | |
| 3 (Fall) | Mines Paris | Full Course Load | | 2 CUs |
| 4 (Spring) | Tsinghua | Full Course Load | | 2 CUs |
| 5 Summer | | Internship (4-6 months) | 0 CUs | |
| 6 (Fall) | MES | ENVS 990 | 0 CUs | |
| | | TOTAL CUs | 8 CUs | 4 CUs |

Note: Students may take courses in the summer between Penn and Mines Paris

Detailed Schedule for Two Degrees (MES/IEM)

| Semester | Program | Recommended Courses | MES | IEM |
|-----------------|---------|------------------------------------|-------|-------|
| 1 (Fall) | MES | ENVS 601: Proseminar, 3 Foundation | 4 CUs | 0 CUs |

| | | | | |
|-------------------|-------------|--|---------------|--------------|
| 2 (Spring) | MES | 1 Foundation, 1 Methods, 2 Concentration | 4CUs | 0 CUs |
| 3 (Summer) | MES | 2 Concentration Courses | 2CUs | 0 CUs |
| 4 (Fall) | Mines Paris | Full Course Load | 0 CUs | 2CUs |
| 5 (Summer) | | Internship (4-6 months) | 0 CUs | 0 CUs |
| 6 (Fall) | MES | ENVS 990 | 0 CU's | 0 CUs |
| | | TOTAL CUs | 10 CUs | 2 CUs |

Special Rules for Multi Masters Degree Students

- Eight CUs must be completed in the MES program before a student may participate in the Three Degree Program. No Incomplete grades or F's may appear on the student's transcript when they enter the Mines Paris portion of the program, and they must have a greater than 3.0 GPA to apply.
- Students must take all foundation courses in the sciences.
- Students must take all courses in SAS.
- At the end of each semester in the second year of the program, it is the student's responsibility to request transcripts from both Tsinghua University and Mines Paris Tech be sent to the MES Director for proper transfer of credit.
- Two CUs from each program will be transferred to the Penn MES program.

MES Curriculum

Required Courses

ENVS 601 – Proseminar: Contemporary Issues in Environmental Studies Research
Methods course

Four Foundation courses:

Chosen from the following science courses (substitutions with permission from an MES Academic Adviser):

- ENVS 507 – Wetlands
- ENVS 609 – Creating Gateways to the Land with Smarter Conservation ENVS 610 – Regional Field Ecology
- ENVS 626 – History and Science of Climate Change
- GEOL 411 – Soil Science
- GEOL 528 – Aqueous Geochemistry
- GEOL 611 – Field Study of Soils
- GEOL 653 – Introduction to Hydrology

Five Concentration courses:

One CU will be taken at Penn in the MES program, 2 CUs will be transferred from Mines Paris Tech, and 2 CUs will be transferred from Tsinghua University.

One additional course

The eighth course taken at Penn through the MES program will be a substitute for the Capstone course and will be chosen within the student's concentration.

Extended time

If a student fails to submit a completed capstone by August of the second summer of the program, they will be automatically enrolled in Masters Thesis at Penn for the Fall semester. Tuition and fees for the Masters Thesis course will apply in the Fall, and the student's full-time status, access to Penn facilities, and Health Insurance Coverage will be maintained.

Capstone Requirement

All three schools require a thesis/capstone but the topic (the student's internship) will be the same for all three programs. There are slightly different thesis formatting requirements for each program, and Tsinghua requires a thesis defense.

Contact Information

MES Program:
Yvette Bordeaux, PhD
bordeaux@sas.upenn.edu

IEM Website: <http://www.mines-paristech.eu/Prospective-student/Post-Master-Degree/Advanced-Master/Advanced-master-details/&?catalogid=590>

XI Sub-matriculation

Overview

Penn undergraduates may sub-matriculate into the MES program. Penn undergraduate students interested in a career in fields related to environmental issues begin their graduate career while finishing their undergraduate program. In many cases, sub-matriculation allows a student to finish both the undergraduate and graduate program in 5 years. Four courses may be double counted toward both the undergraduate and graduate programs. Interested Penn undergraduates should meet with both their undergraduate Academic Advisor and the MES Director as early as possible to determine if sub-matriculation is right for them and to confirm eligibility.

Application and Admissions Procedures

Students wishing to participate in the MES sub-matriculation program must be enrolled in one of the undergraduate programs at Penn and may not be in their second semester of senior year. Sub-matriculation applicants must receive permission from their home school before applying to the sub-matriculation program. Students may apply for the MES program between second semester sophomore year and second semester junior year for acceptance no later than first semester senior year. The MES application will be reviewed by the MES admissions committee. Students applying to the sub-matriculation program are not required to submit GRE scores or official transcripts from Penn, but must submit official transcripts from any other college or university the student attended and proof of their undergraduate school's permission to participate in sub-matriculation.

Schedule and Credit Distribution

The sub-matriculation program is designed so that both a Penn BA/BS and an MES can be completed in 5 years. Over the 5 years, students will be an undergraduate at Penn for 4 years and complete the minimum credit units (CUs) for their undergraduate degree, typically 32-38 CUs for SAS undergraduates depending on the student's major (non-SAS undergraduates should consult with their undergraduate advisor for eligibility and CU requirements). Of the 32-38 CUs taken as SAS undergraduates, MES will accept 4 graduate level CUs as double counts. The sub-matriculated student will be in residence as a graduate student in the MES for two semesters (one year), at which time s/he completes a minimum of 8 CUs that qualify for the MES degree.

This standard format reduces the typical residency for the two programs from

twelve to ten semesters and reduces the total required CUs from 44-50 to 40-46, depending on the student's major. The timeline below has been designed by the faculty of SAS and should be followed unless express written exemption is obtained from the Program Director and the Undergraduate Dean prior to the start of the 2nd semester in the MES program.

Detailed Schedule

| Semester | Program | Recommended Courses | Undergrad | MES |
|----------|-----------|---|--------------|--------------|
| 1-8 | Undergrad | 2 Foundation, 1 Concentration, ENVS 699 | 4 CUs | 0 CUs |
| 9 | MES | 2 Foundation, 1 Methods, ENVS 601 Proseminar | 0 CUs | 4 CUs |
| 10 | MES | | 0 CUs | 4 CUs |
| | | TOTAL CUs | 4 CUs | 8 CUs |

Special Rules for Sub-matriculated Students

- Students may enter the MES program as sub-matriculantes between their first semester junior year and first semester senior year. Thus, students may apply as early as second semester sophomore year and as late as second semester junior year.
- Students about to enter their last semester of their undergraduate career at Penn are not eligible for sub-matriculation, but may apply for regular admission to the MES. No double counting of courses will be allowed in these cases.
- Students applying to the program must have a cumulative minimum GPA of 3.2, but higher GPA's are strongly recommended.
- Students are strongly encouraged (but not required) to take ENVS 100 Introduction to Environmental Science before sub-matriculation.
- All 8 CUs taken while MES is the primary program must be taken in SAS, and graduate level tuition will apply. Courses taken outside of SAS, while MES is the primary program, cannot be counted toward the 8 CUs for the MES degree.
- Only four graduate level courses from the student's undergraduate transcript may be used for the MES degree. The other eight courses required for the MES degree must be taken after the student has received their undergraduate degree.
- A sub-matriculation application must be submitted and approved by the student's undergraduate school office and the MES Director prior to enrollment in the MES program.
- Students in schools other than SAS (College or LPS) should talk to their

academic advisers to determine if additional forms need to be completed.

Details about Course Double Counts

- Double counted courses must be graduate level (typically numbered 400 or above) and must be approved by both the undergraduate and graduate academic advisers for their respective programs.
- Up to four (4) courses taken prior to sub matriculation may be double counted with the approval of both the undergraduate and graduate academic advisers.
- Double counted courses may be from any school at Penn. However, they must be graduate level, appropriate for the MES curriculum, and approved by both the undergraduate and MES academic advisers.

The Curriculum

Sub-matriculated students follow the standard curriculum as outlined in the MES Student Handbook, but must follow the guidelines detailed above. Sub-matriculantes may choose any concentration. Refer to the special section on sub-matriculation in the MES Student Handbook for information on how to designate double counted courses and other information pertinent to undergraduate students.