MASTER OF SCIENCE IN ENVIRONMENTAL ANALYSIS (MSEA) DEGREE

Program Learning Outcomes for the MSEA Degree

Upon completing the MSEA Degree, students will be able to:

1. Apply technical and analytical skills and scientific evaluation methods to help solve problems affecting the environment.
2. Demonstrate written, oral, and visual communication strategies required to work effectively across science, business, and government.
3. Possess business and management skills and professional ethics to be effective in a business environment.

Requirements for the MSEA Degree

The MSEA degree is a non-thesis master’s degree. For general university requirements, please see Non-Thesis Master’s Degrees (https://ga.rice.edu/graduate-students/academic-policies-procedures/regulations-procedures-non-thesis-masters-degrees/). For additional requirements, regulations, and procedures for all graduate programs, please see All Graduate Students (https://ga.rice.edu/graduate-students/academic-policies-procedures/regulations-procedures-all-degrees/). Students pursuing the MSEA degree must complete:

- A minimum of 14 courses (minimum of 39 credit hours) to satisfy degree requirements.
- A minimum of 30 credit hours of graduate-level study (coursework at the 500-level or above).
- A minimum of 24 credit hours must be taken at Rice University.
- A minimum residency enrollment of one fall or spring semester of part-time graduate study at Rice University.
- A 3-6 month internship. Instead of a thesis, at the conclusion of their internship, students must present their internship project in both oral and written form as part of the Professional Master’s Project (NSCI 512). Part-time students who already work in their area of study may request approval to fulfill the internship requirement by working on a specific, pre-approved project with their current employer.
- A minimum overall GPA of 2.67 or higher in all Rice coursework.
- A minimum GPA of 2.67 or higher in all Rice coursework that satisfies requirements for the non-thesis master’s degree.

Note: Some of the listed courses are not offered every year, and some may also have prerequisites or require instructor permission.

The courses listed below satisfy the requirements for this degree program. In certain instances, courses not on this official list may be substituted upon approval of the program’s academic advisor, or where applicable, the department or program’s Director of Graduate Studies. Course substitutions must be formally applied and entered into Degree Works by the department or program’s Official Certifier (https://registrar.rice.edu/facstaff/degeworks/officialcertifier/). Additionally, these must be approved by the Office of Graduate and Postdoctoral Studies. Students and their academic advisors should identify and clearly document the courses to be taken.

Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Credit Hours Required for the MSEA Degree</td>
<td>39</td>
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Degree Requirements

Core Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>BIOS 571</td>
<td>ECOSYSTEM MANAGEMENT</td>
<td>3</td>
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<tr>
<td>CEVE 501</td>
<td>CHEMISTRY FOR ENVIRONMENTAL ENGINEERING AND SCIENCE</td>
<td>3</td>
</tr>
<tr>
<td>or CEVE 510</td>
<td>PRINCIPLES OF ENVIRONMENTAL ENGINEERING</td>
<td>3</td>
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<tr>
<td>STAT 685</td>
<td>ENVIRONMENTAL STATISTICS AND DECISION MAKING</td>
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Cohort Courses

<table>
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<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>NSCI 501</td>
<td>PROFESSIONAL MASTER’S SEMINAR (2 semesters required, 1st semester)</td>
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<tr>
<td>NSCI 501</td>
<td>PROFESSIONAL MASTER’S SEMINAR (2 semesters required, 2nd semester)</td>
<td>1</td>
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<tr>
<td>NSCI 511</td>
<td>SCIENCE POLICY, AND ETHICS</td>
<td>3</td>
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<tr>
<td>NSCI 512</td>
<td>PROFESSIONAL MASTER’S PROJECT</td>
<td>1</td>
</tr>
<tr>
<td>NSCI 610 / ENGI 610</td>
<td>MANAGEMENT FOR SCIENCE AND ENGINEERING</td>
<td>3</td>
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</tbody>
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Three to Six Month Internship

A three to six month internship is required.

Elective Requirements

Select a minimum of 7 courses (minimum of 21 credit hours) as electives from courses listed below:

- BIOS 523 CONSERVATION BIOLOGY
- BIOS 563 TOPICS IN ECOLOGY
- BIOS 568 TOPICS IN ECOLOGY (SPRING)
- BIOS 569 CORE COURSE IN ECOLOGY (SPRING)
- BIOS 573 CORAL REEF ECOSYSTEMS
- BIOS 580 SUSTAINABLE DEVELOPMENT AND REPORTING
- CEVE 501 CHEMISTRY FOR ENVIRONMENTAL ENGINEERING AND SCIENCE
- CEVE 502 SUSTAINABLE DESIGN
- CEVE 507 ENERGY AND THE ENVIRONMENT
- CEVE 508 INTRODUCTION TO AIR POLLUTION CONTROL
- CEVE 509 HYDROLOGY AND WATER RESOURCES ENGINEERING
- CEVE 511 ATMOSPHERIC CHEMISTRY AND CLIMATE
- CEVE 518 ENVIRONMENTAL HYDROGEOLOGY
- CEVE 520 ENVIRONMENTAL REMEDIATION RESTORATION
- CEVE 523 APPLIED SUSTAINABLE PLANNING AND DESIGN
- CEVE 534 FATE AND TRANSPORT OF CONTAMINANTS IN THE ENVIRONMENT
CEVE 535  PHYSICAL CHEMICAL PROCESSES FOR WATER QUALITY CONTROL
CEVE 536  ENVIRONMENTAL BIOTECNOLOGY AND BIOREMEDIATION
CEVE 550  ENVIRONMENTAL ORGANIC CHEMISTRY
DSCI 535 / COMP 549  APPLIED MACHINE LEARNING AND DATA SCIENCE PROJECTS
ESCI 618  QUANTITATIVE HYDROGEOLOGY
ESCI 650  REMOTE SENSING
ESCI 654  EARTH AND PLANETARY INTERIORS
ESCI 699  GRAPHIC AND VISUAL DESIGN FOR SCIENTISTS
Management and Policy
CEVE 506  INTRODUCTION TO ENVIRONMENTAL LAW
CEVE 528 / ENGI 528  ENGINEERING ECONOMICS
CEVE 529 / ENGI 529  ETHICS AND ENGINEERING LEADERSHIP
ESCI 617  PETROLEUM INDUSTRY ECONOMICS AND MANAGEMENT
GLBL 543  ENERGY POLICY
MGMT 609  MANAGING ENERGY TRANSITIONS
MGMT 610  FUNDAMENTALS OF THE ENERGY INDUSTRY
MGMT 661  INTERNATIONAL BUSINESS LAW
MGMT 670  OPERATIONS STRATEGY
MGMT 676  SOCIAL ENTERPRISE
MGMT 721  BUSINESS LAW
Quantitative Decision-Making
BIOS 538  ANALYSIS AND VISUALIZATION OF BIOLOGICAL DATA
CEVE 528 / ENGI 528  ENGINEERING ECONOMICS
DSCI 535 / COMP 549  SCIENCE PROJECTS
ESCI 650  REMOTE SENSING
ESCI 654  EARTH AND PLANETARY INTERIORS
ESCI 699  GRAPHIC AND VISUAL DESIGN FOR SCIENTISTS
STAT 553  BIOSTATISTICS
STAT 605  R FOR DATA SCIENCE
or STAT 606 SAS STATISTICAL PROGRAMMING
STAT 615  REGRESSION AND LINEAR MODELS

Total Credit Hours 39

Footnotes and Additional Information
1 Practical experience is offered via a three to six month immersion. The internship will be under the guidance of a host company, government agency or non-profit organization. At the conclusion of the internship, students must present a summary of their internship project in both oral and written form as part of the cohort course Professional Master’s Project (NSCI 512). Part-time students who already work in their area of study may fulfill the internship requirements by working on an approved project with their current employer.

2 The 21 credit hours of electives must include at least 3 credit hours from Management and Policy, 9 credit hours from one focus area, and one course each from the following subject codes: Biosciences (BIOS), Civil and Environmental Engineering (CEVE), and Statistics (STAT).

3 Note: Some of the listed courses are not offered every year, and other coursework may be offered that satisfies the stated requirements upon approval. Depending on the student's background or interest, course substitutions for any required or elective course may be approved by the program's academic advisor. Students should consult with their academic advisors before enrolling.

Policies for the MSEA Degree
Professional Science Master’s Graduate Program Handbook
The General Announcements (GA) is the official Rice curriculum. As an additional resource for students, the Professional Science Master’s Program publishes a graduate program handbook, which can be found here: https://gradhandbooks.rice.edu/2020_21/Professional_Science_Masters_Handbook.pdf

Admission
Admission to graduate study in Environmental Analysis is open to qualified students holding a bachelor’s degree in a related field that includes general biology, chemistry, calculus, differential equations, and linear algebra. Department faculty evaluate the previous academic record and credentials of each applicant individually.

Transfer Credit
For Rice University’s policy regarding transfer credit, see Transfer Credit (https://ga.rice.edu/graduate-students/academic-policies-procedures/regulations-procedures-all-degrees/#transfer). Some departments and programs have additional restrictions on transfer credit. Students are encouraged to meet with their academic program's advisor when considering transfer credit possibilities.

Additional Information
For additional information, please see the Environmental Analysis website: https://profms.rice.edu/

Opportunities for the MSEA Degree
Fifth-Year Master’s Degree Option for Rice Undergraduate Students
Rice students have an option to pursue the Master of Science in Environmental Analysis (MSEA) degree by adding an additional fifth year to their four undergraduate years of science studies.

Advanced Rice undergraduate students in good academic standing may apply to the MSEA degree program during their junior or senior year. Upon acceptance, depending on course load, financial aid status, and other variables, they may then start taking some required courses of the master’s degree program. A plan of study will need to be approved by the student’s undergraduate advisor, the Professional Science Master’s (PSM) program director, and the MSEA program director.

As part of this option and opportunity, Rice undergraduate students:
• must complete the requirements for a bachelor’s degree and the master’s degree independently of each other (i.e., no course may be counted toward the fulfillment of both degrees).

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• should be aware there could be financial aid implications if the conversion of undergraduate coursework to that of graduate level reduces their earned undergraduate credit for any semester below that of full-time status (12 credit hours).

• more information on this Undergraduate - Graduate Concurrent Enrollment opportunity, including specific information on the registration process can be found here (https://ga.rice.edu/undergraduate-students/academic-opportunities/undergraduate-graduate-concurrent-enrollment/).

Additional Information

For additional information, please see the Environmental Analysis website: https://profms.rice.edu/