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>Total Credit Hours Required for the MSEA Degree</td>
<td>39</td>
<td></td>
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</tbody>
</table>

Degree Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Microcredit</td>
<td>Drafted version of a scientific research plan. Each student must complete an internship, which requires a minimum of 24 credit hours.</td>
<td></td>
</tr>
</tbody>
</table>

Core Requirements

<table>
<thead>
<tr>
<th>Core Science Courses</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CEVE 501</td>
<td>CHEMISTRY FOR ENVIRONMENTAL ENGINEERING AND SCIENCE</td>
</tr>
<tr>
<td>or CEVE 510</td>
<td>PRINCIPLES OF ENVIRONMENTAL ENGINEERING</td>
</tr>
<tr>
<td>EBIO 570</td>
<td>ECOSYSTEM MANAGEMENT</td>
</tr>
<tr>
<td>STAT 685</td>
<td>ENVIRONMENTAL STATISTICS AND DECISION MAKING</td>
</tr>
</tbody>
</table>

Cohort Courses

| NSCI 501 | PROFESSIONAL MASTER’S SEMINAR (2 semesters required, 1st semester) | 1 |
| NSCI 501 | PROFESSIONAL MASTER’S SEMINAR (2 semesters required, 2nd semester) | 1 |
| NSCI 511 | SCIENCE POLICY, AND ETHICS | 3 |
| NSCI 512 | PROFESSIONAL MASTER’S PROJECT | 1 |
| NSCI 610 / ENGI 610 | MANAGEMENT FOR SCIENCE AND ENGINEERING | 3 |

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.
- A minimum of 24 credit hours must be taken at Rice University.
- A minimum of 28 credit hours must be taken in residence at Rice University.
- 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 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.

Environmental Sustainability

| 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 PROCESSES |
| CEVE 512 | ADVANCED HYDROLOGY AND HYDRAULICS |
| CEVE 520 | ENVIRONMENTAL REMEDIATION RESTORATION |
| CEVE 534 | FATE AND TRANSPORT OF CONTAMINANTS IN THE ENVIRONMENT |
| CEVE 536 | ENVIRONMENTAL BIOTECHNOLOGY AND BIOREMEDIATION |
| CEVE 550 | ENVIRONMENTAL ORGANIC CHEMISTRY |
| EBI 523 | CONSERVATION BIOLOGY |
| EBI 524 | CONSERVATION BIOLOGY LAB |
| EBI 525 | ECOLOGY |
| EBI 529 | ANIMAL BIOLOGY AND PHYSIOLOGY |
| EBI 540 | GLOBAL BIOGEOCHEMICAL CYCLES |
| EBI 560 | SUSTAINABILITY IMPACT ASSESSMENTS |
### Master of Science in Environmental Analysis (MSEA) Degree

#### Opportunities for the MSEA Degree

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.

#### 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/

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### 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: Civil and Environmental Engineering (CEVE), Ecology and Evolutionary Biology (EBIO), 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.

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#### Management and Policy

- 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

- CEVE 528 / ENGI 528: Engineering Economics
- ESCI 650: Remote Sensing
- ESCI 654: Geographic Information Science
- STAT 553: Biostatistics
- STAT 605: R for Data Science or STAT 606: SAS Statistical Programming
- STAT 615: Regression and Linear Models
- STAT 684 / CEVE 684: Environmental Risk Assessment & Human Health

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### Total Credit Hours

- 39

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### Notes

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### 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/2019_20/Professional_Science_Masters_Handbook.pdf

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###机会

- 必须完成对学士学位的要求和专业学位的独立要求（即，可以计算出达到学位要求的学分）。
- 应该了解可能对学士学位课程有影响的财务援助。如果学士学位课程质量降低，则学士学位课程的学分转换可能不适用于学士学位。
• 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/