

# 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/) (<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/) (<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 (graduate semester credit hours, coursework at the 500-level or above).
- A minimum of 24 graduate semester credit hours must be taken at Rice University.
- A minimum of 24 graduate semester credit hours must be taken in standard or traditional courses (with a course type of lecture, seminar, laboratory, lecture/laboratory, etc.).
- A minimum residency enrollment of one fall or spring semester of part-time graduate study at Rice University.
- A maximum of 2 courses (6 graduate semester credit hours) from transfer credit. For additional departmental guidelines regarding transfer credit, see the [Policies](#) (p. 2) tab.
- 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 program 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/degreeworks/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

Code	Title	Credit Hours
Total Credit Hours Required for the MSEA Degree		39

## Degree Requirements

Code	Title	Credit Hours
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### Core Requirements

Core Science Courses		
BIOS 571	ECOSYSTEM MANAGEMENT	3
CEVE 501	CHEMISTRY FOR ENVIRONMENTAL ENGINEERING AND SCIENCE	3
or CEVE 510	PRINCIPLES OF ENVIRONMENTAL ENGINEERING	
STAT 685	ENVIRONMENTAL STATISTICS AND DECISION MAKING	3

### 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 <sup>1</sup>

### Elective Requirements

Select a minimum of 7 courses (minimum of 21 credit hours) as electives from courses listed below: <sup>2,3</sup> 21

Environmental Sustainability		
BIOS 523	CONSERVATION BIOLOGY	
BIOS 563	TOPICS IN ECOLOGY (FALL)	
BIOS 568	TOPICS IN ECOLOGY (SPRING)	
BIOS 569	CORE COURSE IN ECOLOGY AND EVOLUTIONARY BIOLOGY	
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 526	SMART MATERIALS FOR THE ENVIRONMENT
CEVE 534	FATE AND TRANSPORT OF CONTAMINANTS IN THE ENVIRONMENT
CEVE 535	PHYSICAL CHEMICAL PROCESSES FOR WATER QUALITY CONTROL
CEVE 536	ENVIRONMENTAL BIOTECHNOLOGY AND BIOREMEDIATION
CEVE 544	ENVIRONMENTAL MICROBIOLOGY AND MICROBIAL ECOLOGY
CEVE 550	ENVIRONMENTAL ORGANIC CHEMISTRY
DSCI 535 / COMP 549	APPLIED MACHINE LEARNING AND DATA SCIENCE PROJECTS
EEPS 592	SPECIAL TOPICS IN EARTH, ENVIRONMENTAL & PLANETARY SCIENCES
EEPS 632	QUANTITATIVE HYDROGEOLOGY
EEPS 635	REMOTE SENSING
EEPS 645	EARTH AND PLANETARY INTERIORS
EEPS 699	GRAPHIC AND VISUAL DESIGN FOR SCIENTISTS
MGMT 658	APPLIED RISK MANAGEMENT
MGMT 758	ENVIRONMENTAL, SOCIAL, AND GOVERNANCE (ESG) ISSUES IN STRATEGY
Management and Policy	
CEVE 506	INTRODUCTION TO ENVIRONMENTAL LAW
CEVE 528 / ENGI 528	ENGINEERING ECONOMICS
CEVE 529 / ENGI 529	ETHICS AND ENGINEERING LEADERSHIP
ECON 611 or MGMT 61	GEOPOLITICS OF ENERGY
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
MGMT 747	REGULATORY ENVIRONMENT OF BUSINESS
MGMT 758	ENVIRONMENTAL, SOCIAL, AND GOVERNANCE (ESG) ISSUES IN STRATEGY
NSCI 515	FOUNDATIONS OF PROJECT AND PROGRAM MANAGEMENT
Quantitative Decision-Making	
BIOS 538	ANALYSIS AND VISUALIZATION OF BIOLOGICAL DATA

CEVE 528 / ENGI 528	ENGINEERING ECONOMICS
DSCI 535 / COMP 549	APPLIED MACHINE LEARNING AND DATA SCIENCE PROJECTS
EEPS 635	REMOTE SENSING
EEPS 645	EARTH AND PLANETARY INTERIORS
EEPS 699	GRAPHIC AND VISUAL DESIGN FOR SCIENTISTS
NSCI 515	FOUNDATIONS OF PROJECT AND PROGRAM MANAGEMENT
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**

- 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.
- 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).
- 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/2021\\_22/Professional\\_Science\\_Masters\\_Handbook.pdf](https://gradhandbooks.rice.edu/2021_22/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 \(https://ga.rice.edu/graduate-students/academic-policies-procedures/regulations-procedures-all-degrees/#transfer\)](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.

### Program Transfer Credit Guidelines

Students pursuing the MSEA degree should be aware of the following program-specific transfer credit guidelines:

- No more than 2 courses (6 credit hours) of transfer credit from U.S. or international universities of similar standing as Rice may apply towards the degree.
- Requests for transfer credit will be considered by the program director on an individual case-by-case basis.

### 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

In certain situations and with some terminal master's degree programs, Rice students have an option to pursue a master's degree by adding an additional fifth year to their four years of undergraduate studies.

Advanced Rice undergraduate students in good academic standing typically apply to the master's 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 major advisor and the master's degree 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).
- 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 \(https://ga.rice.edu/undergraduate-students/academic-opportunities/undergraduate-graduate-concurrent-enrollment/\)](https://ga.rice.edu/undergraduate-students/academic-opportunities/undergraduate-graduate-concurrent-enrollment/).

Rice undergraduate students completing studies in science may have the option to pursue the Master of Science in Environmental Analysis (MSEA) degree. For additional information, students should contact their undergraduate major advisor, the faculty MSEA program director, and the Professional Science Master's (PSM) program director.

### Additional Information

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