

Joint Environmental Science/Geology Minor in Climate Science

Program Guide for **matriculated students** (Effective Fall 2021)
 Department of Environmental Science (environmentalscience@rowan.edu)
 Department of Geology (geology@rowan.edu)

Rowan University Minor Requirements

- Students must complete at least 18-29 credit hours of lower- and upper-level undergraduate courses in a focused area of study.
- Minors represent a coherent area of study associated with, or drawn from, a major or discipline, and may include courses from multiple programs in different departments or colleges.
- Students may not minor in a program that shares the name of the department or draws on the same course requirements required to fulfill their major

Program-Specific Requirements

- Students must complete at least six courses for a minimum total of 19 credit hours
- Students are required to take at least two of the minor-required courses with the Environmental Science Department, and at least two of the minor-required courses with the Geology Department.
- Students who are majoring in Environmental Science or Geology must choose the options not already being used to fulfill their major. Major-required courses are indicated as follows:

*Course is required for B.S. in Environmental Science and cannot double-count for minor

Course is required for B.S. in Environmental Science and cannot double-count for minor. **Note: majors may choose from a bank of options for this requirement and may opt for a different course to complete the major.

+ Course is required for B.S. in Geology and cannot double-count for minor

Course is required for B.S. in Geology and cannot double-count for minor. **Note: majors may choose from a bank of options for this requirement and may opt for a different course to complete the major.

‡ Course is restricted elective for B.S. in Environmental Science and cannot double-count for minor

† Course is restricted elective for B.S. in Geology and cannot double-count for minor

Unit A: Basic Science of Climate Change

Students must take one of the following two courses

| Course # | Course Name | Sem/Yr | Grade | Credits |
|------------------|---|--------|-------|---------------|
| EVSC 01.220* | Global Climate Crisis* | | | 3 s.h. |
| GEOL 01.131** | Earth in Transition: The Science Behind Global Climate Change** | | | 3 s.h. |
| Subtotal: | | | | 3 s.h. |

Unit B: Climate Change and the Oceans

Students must take one of the following two courses

| Course # | Course Name | Sem/Yr | Grade | Credits |
|------------------|---|--------|-------|---------------|
| EVSC 01.120** | Oceans in Crisis** | | | 3 s.h. |
| GEOL 01.136** | Water Planet: Exploring the Hydrosphere** | | | 3 s.h. |
| Subtotal: | | | | 3 s.h. |

Unit C: Climate Change and the Atmosphere

Students must take one of the following two courses

| Course # | Course Name | Sem/Yr | Grade | Credits |
|------------------|---|--------|-------|---------------|
| EVSC 01.380** | Principles of Atmospheric and Climate Science** | | | 4 s.h. |
| GEO 01.250** | Ocean-Atmosphere Interactions** | | | 4 s.h. |
| Subtotal: | | | | 4 s.h. |

Unit D: A Geological Perspective on Climate Change

Students must take 1-2 of the following courses

| Course # | Course Name | Sem/Yr | Grade | Credits |
|--------------------------|---|--------|-------|-----------------|
| GEO 01.230 ⁺ | Paleoclimatology ⁺ | | | 4 s.h. |
| GEO 01.133 ⁺⁺ | Climate, Catastrophes, Civilizations, and Collapses ⁺⁺ | | | 3 s.h. |
| GEO 01.430 [†] | Climate Variability and Diagnostics [†] | | | 4 s.h. |
| GEO 01.435 ⁺⁺ | The Ice Ages and Quaternary Geology ⁺⁺ | | | 4 s.h. |
| GEO 01.331 ⁺⁺ | Climate Change and the Cryosphere ⁺⁺ | | | 4 s.h. |
| Subtotal: | | | | 3-8 s.h. |

Unit E: An Environmental Science Perspective on Climate Change

Students must take 1-2 of the following courses

| Course # | Course Name | Sem/Yr | Grade | Credits |
|--------------------------|---|--------|-------|-----------------|
| EVSC 01.122** | Future of Food** | | | 3 s.h. |
| EVSC 01.382 [‡] | Understanding and Analyzing Climate Change Impacts [‡] | | | 4 s.h. |
| EVSC 01.381 [‡] | Sea Level Change: Past, Present, and Future [‡] | | | 3 s.h. |
| EVSC 01.385** | Oceans** | | | 4 s.h. |
| Subtotal: | | | | 3-8 s.h. |

Total Program Credits: 19 – 22 Semester Hours

Pre-requisites for Program-Specific Requirements

Unit A: Basic Science of Climate Change

Pre-requisites for EVSC 01.220: Global Climate Crisis

#Indicates required for courses in multiple Units

| Course # | Course Name | Sem/Yr | Grade | Credits |
|--------------------------|---------------------------|--------|-------|------------------|
| STAT 02.260 [#] | Statistics I [#] | | | 3 s.h. |
| | | | | Subtotal: 3 s.h. |

Pre-requisites for GEOL 01.131: Earth in Transition: The Science Behind Global Climate Change

| Course # | Course Name | Sem/Yr | Grade | Credits |
|----------|-------------|--------|-------|------------------|
| | None | | | 0 s.h. |
| | | | | Subtotal: 0 s.h. |

Unit B: Climate Change and the Oceans

Pre-requisites for EVSC 01.120: Oceans in Crisis

| Course # | Course Name | Sem/Yr | Grade | Credits |
|----------|-------------|--------|-------|------------------|
| | None | | | 0 s.h. |
| | | | | Subtotal: 0 s.h. |

Pre-requisites for GEOL 01.136: Water Planet: Exploring the Hydrosphere

| Course # | Course Name | Sem/Yr | Grade | Credits |
|----------|-------------|--------|-------|------------------|
| | None | | | 0 s.h. |
| | | | | Subtotal: 0 s.h. |

Unit C: Climate Change and the Atmosphere

Pre-requisites for EVSC 01.380: Principles of Atmospheric and Climate Science

#Indicates required for courses in multiple Units

| Course # | Course Name | Sem/Yr | Grade | Credits |
|--|--|--------|-------|-------------------|
| PHYS 00.210 [#] or PHYS 00.220 [#] | Physics I without Calculus [#] or Introductory Mechanics [#] | | | 4 s.h. |
| CHEM 06.100 | Chemistry I | | | 4 s.h. |
| STAT 02.260 [#] | Statistics I [#] | | | 3 s.h. |
| | | | | Subtotal: 11 s.h. |

Pre-requisites for GEOL 01.250: Ocean-Atmosphere Interactions

#Indicates required for courses in multiple Units

| Course # | Course Name | Sem/Yr | Grade | Credits |
|---|---|--------|-------|-------------------|
| PHYS 00.210 [#] or PHYS 00.150 | Physics I without Calculus [#] or Physics of Everyday Life | | | 4 s.h. |
| GEOL 01.101 [#] | Physical Geology [#] | | | 4 s.h. |
| GEOL 01.102 [#] | Earth Through Time [#] | | | 4 s.h. |
| | | | | Subtotal: 12 s.h. |

Unit D: A Geological Perspective on Climate Change

Pre-requisites for GEOL 01.230: Paleoclimatology

#Indicates required for course(s) in multiple Units

| Course # | Course Name | Sem/Yr | Grade | Credits |
|--------------------------|---------------------------------|--------|-------|---------------|
| GEOL 01.101 [#] | Physical Geology [#] | | | 4 s.h. |
| GEOL 01.102 [#] | Earth Through Time [#] | | | 4 s.h. |
| Subtotal: | | | | 8 s.h. |

Pre-requisites for GEOL 01.133: Climate, Catastrophes, Civilizations, and Collapses

| Course # | Course Name | Sem/Yr | Grade | Credits |
|------------------|-------------|--------|-------|---------------|
| | None | | | 0 s.h. |
| Subtotal: | | | | 0 s.h. |

Pre-requisites for GEOL 01.430: Climate Variability and Diagnostics

^ indicates option to fulfill other Unit requirements

#Indicates required for course(s) in multiple Units

| Course # | Course Name | Sem/Yr | Grade | Credits |
|--------------------------|--|--------|-------|---------------|
| GEOL 01.131 [^] | Earth in Transition: The Science of Global Climate Change [^] | | | 3 s.h. |
| CS 01.104 | Introduction to Scientific Programming | | | 3 s.h. |
| MATH 01.130 [#] | Calculus I [#] | | | 4 s.h. |
| GEOL 01.250 [^] | Ocean-Atmosphere Interactions [^] | | | 4 s.h. |
| Subtotal: | | | | 0 s.h. |

Pre-requisites for GEOL 01.435: The Ice Ages and Quaternary Geology

#Indicates required for course(s) in multiple Units

| Course # | Course Name | Sem/Yr | Grade | Credits |
|--------------------------|---------------------------------|--------|-------|---------------|
| GEOL 01.101 [#] | Physical Geology [#] | | | 4 s.h. |
| GEOL 01.102 [#] | Earth Through Time [#] | | | 4 s.h. |
| Subtotal: | | | | 8 s.h. |

Pre-requisites for GEOL 01.331: Climate Change and the Cryosphere

#Indicates required for courses in multiple Units

^ indicates option to fulfill other Unit requirements

| Course # | Course Name | Sem/Yr | Grade | Credits |
|--------------------------|--|--------|-------|-----------------|
| GEOL 01.101 [#] | Physical Geology [#] | | | 4 s.h. |
| or | or | | | or |
| GEOL 01.131 [^] | Earth in Transition: The Science of Global Climate Change [^] | | | 3 s.h. |
| Subtotal: | | | | 3-4 s.h. |

Unit E: An Environmental Science Perspective on Climate Change

Pre-requisites for EVSC 01.122: Future of Food

| Course # | Course Name | Sem/Yr | Grade | Credits |
|------------------|-------------|--------|-------|---------------|
| | None | | | 0 s.h. |
| Subtotal: | | | | 0 s.h. |

Pre-requisites for EVSC 01.382: Understanding and Analyzing Climate Change Impacts

#Indicates required for course(s) in multiple Units

^ indicates option to fulfill other Unit requirements

| Course # | Course Name | Sem/Yr | Grade | Credits |
|--|--|--------|-------|------------------------|
| STAT 02.260 [#] or STAT 02.280 | Statistics I [#] or Biometry | | | 3 s.h. or 4 s.h. |
| MATH 01.130 [#] | Calculus I [#] | | | 4 s.h. |
| EVSC 01.220 [^] or GEOL 01.131 [^] | Global Climate Crisis [^] or Earth in Transition: The Science Behind Global Climate Change [^] | | | 3 s.h. |
| Subtotal: | | | | 10-11 s.h. |

Pre-requisites for EVSC 01.381: Sea Level Change: Past, Present, and Future

^ indicates option to fulfill other Unit requirements

| Course # | Course Name | Sem/Yr | Grade | Credits |
|------------------|-----------------------|--------|-------|---------------|
| EVSC 01.220 | Global Climate Crisis | | | 3 s.h. |
| Subtotal: | | | | 3 s.h. |

Pre-requisites for EVSC 01.385: Oceans

#Indicates required for course(s) in multiple Units

| Course # | Course Name | Sem/Yr | Grade | Credits |
|--|--|--------|-------|----------------|
| PHYS 00.210 [#] or PHYS 00.220 [#] | Physics I without Calculus [#] or Introductory Mechanics [#] | | | 4 s.h. |
| CHEM 06.101 | Chemistry II | | | 4 s.h. |
| GEOL 01.101 [#] | Physical Geology [#] | | | 4 s.h. |
| BIOL 01.204 | Introduction to Ecology | | | 4 s.h. |
| Subtotal: | | | | 16 s.h. |