

EARTH AND ENVIRONMENTAL SCIENCE (B.S.)

120 credits of coursework is required for the baccalaureate degree with a minimum 2.0 overall GPA, and a minimum 2.0 major GPA.

Degree Requirements Overview

Code	Title	Credits
SEEDS	General Education Requirements	31-33
	New Student Seminar	1
	Major Requirements	68
	Free Electives	20-18
Total Credits		120

Major Requirements

Code	Title	Credits
Major Requirements		
EAES 101 or EAES 105 or EAES 107	Planet Earth Physical Geology Earth and the Environment	4
EAES 220	Mineralogy	4
EAES 240	Earth System History	4
EAES 302	Structural Geology	3
EAES 320	Igneous Metamorphic Petrology	4
EAES 441	Stratigraphy	4
EAES 498	Senior Seminar in Earth and Environmental Science	3

Field Experience

Select one of the following options for a total of 6 credits: 6

Option 1

EAES 404	Field Geology	
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Option 2

EAES 303	Environmental Field Methods (In addition, complete one 300-level or 400-level EAES elective.)	
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Major Electives

Complete 12-14 credits from the list below: 14-12

Math Collateral

Select two of the following courses: 7-8

AMAT 120 or MATH 122	Applied Calculus A Calculus I	
AMAT 220 or MATH 221	Applied Calculus B Calculus II	
MATH 111	Applied Precalculus	
STAT 230	Data Science and Statistics	

Physics Collateral

Select one of the following sequences: 8

Physics Sequence 1

PHYS 191 & PHYS 192	University Physics I and University Physics II	
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Physics Sequence 2

PHYS 193 & PHYS 194	College Physics I and College Physics II	
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Chemistry Collateral

Select one of the following sequences: 7-8

Chemistry Sequence 1

CHEM 106	Principles of Chemistry	
CHEM 100 or CHEM 113 or CHEM 120	Introductory Chemistry Fundamentals of Chemistry General Chemistry I	

Chemistry Sequence 2

CHEM 100	Introductory Chemistry	
EAES 322 or CHEM 120 or EAES 337	Environmental Geochemistry General Chemistry I Environmental Isotope Geochemistry	

Chemistry Sequence 3

CHEM 120	General Chemistry I	
CHEM 121 or EAES 322 or EAES 337	General Chemistry II Environmental Geochemistry Environmental Isotope Geochemistry	

Total Credits 68

Major Electives

Code	Title	Credits
EAES 200	Geomorphology	3
EAES 201	Understanding Weather and Climate	4
EAES 202	Introduction to Sustainability Science	3
EAES 204	Earth and Environmental Science Field Trip	1
EAES 210	Introduction to GIS and Remote Sensing	3
EAES 230	Hydrology	3
EAES 250	Introduction to Marine Sciences	4
EAES 260	Energy, Environment and Society	3
EAES 301	Climatology	3
EAES 303	Environmental Field Methods	3
EAES 310	Geographic Information Systems (GIS)	3
EAES 311	Fundamentals of Remote Sensing of Environment	3
EAES 322	Environmental Geochemistry	3
EAES 330	Fluvial Geography	3
EAES 331	Geohydrology	3
EAES 332	Hydroclimatology	3
EAES 337	Environmental Isotope Geochemistry	3
EAES 340	Sedimentology	4
EAES 341	Principles of Soil Science	3
EAES 343	Geoarchaeology	3
EAES 390	Research Methods	3
EAES 391	Quantitative Methods in Geography and Urban Studies	3
EAES 410	Special Topics in Advanced GIScience	3
EAES 425	X-ray Microanalysis	3
EAES 429	Industrial Hygiene	3
EAES 430	Numerical Modeling of Earth Systems	3
EAES 432	Groundwater Modeling	4
EAES 437	Paleoclimatology	3
EAES 451	Coastal Marine Geology	4
EAES 460	Environmental Law	3

EAES 475	Environmental Economics	3
EAES 491	Internship	3-12
EAES 492	Honors Research	3
EAES 494	Independent Study in Geoscience	1-4
EAES 499	Special Topics in Earth and Environmental Studies	1-4
PHYS 180	Astronomy for Everyone	4
PHYS 280	Astronomy for Physicists	4

New Student Seminar

Code	Title	Credits
Students in the Adult Learner program must take GNED 100.		
Complete one course from the following. Some courses may be restricted by major. Consult with an academic advisor.		
ADVS 198	Pathways to Success	1
CHEM 190	Freshman Seminar in Chemistry	
FYS 100	First Year Seminar	
GNED 100	Adult Academic Success Seminar	
GNED 199	New Student Seminar	
HPEM 199	Freshman Seminar in Health and Physical Education	
IDS 155	Pathways to Adult Learning	
JUST 199	New Student Seminar	
MATH 102	New Student Experience for Mathematical Sciences	
MUGN 199	Freshman Seminar for Music Majors	
NURS 199	Introduction to Nursing	
POLS 199	Freshman Seminar in Political Science and Law	

SEEDS General Education Requirements

Click here for a listing of courses that fulfill the SEEDS requirements. (<http://catalog.montclair.edu/programs/seeds-general-education-requirements/>)

Code	Title	Credits
Foundations		
<i>Effective Writing I</i>		
Complete one Effective Writing I course.		3
<i>Effective Writing II</i>		
Complete one Effective Writing II course.		3
<i>Interactive Communication</i>		
Complete one Interactive Communication course.		3
<i>Quantitative Reasoning</i>		
Complete one Quantitative Reasoning course.		3
<i>Political and Civic Life</i>		
Complete one Political and Civic Life course.		3
<i>World Languages</i>		
Complete two sequential classes in one World Language when starting at the Beginner I or Beginner II level. Complete one class when starting at the Intermediate/Advanced Level.		3-6
Exploration		
Complete one course from four different Exploration categories.		12
<i>Analyzing Cultures and Societies</i>		
<i>Creative Expression</i>		
<i>Ethical Inquiry</i>		

Historical Thinking

Literary and Artistic Analysis

Scientific Reasoning

Total Credits

30-33

Recommended Roadmap to Degree Completion

This recommended degree plan is provided as an outline for students to follow in order to complete their degree requirements within four years and 120 credits. This plan is a recommendation and **MUST** be used in consultation with their academic advisor. Important note: Students should be aware this plan assumes no pre-requisite coursework is required. If pre-requisite coursework is needed, students may have additional requirements to fulfill which do not appear on the plan.

First Year

Fall	Credits	Spring	Credits
New Student Seminar		1 EAES 240	4
SEEDS: Effective Writing I	3	SEEDS: Effective Writing II	3
SEEDS: Quantitative Reasoning	4	Collateral Mathematics course	3
EAES 101, 105, or 107 (Fulfills SEEDS: Exploration 1 - Scientific Reasoning)	4	SEEDS: Interactive Communication	3
SEEDS: Exploration 2	3		
15		13	

Second Year

Fall	Credits	Spring	Credits
EAES 220	4	EAES 320	4
Major Elective	3	Collateral Chemistry course	4
SEEDS: Political and Civic Life	3	Major Elective	3
Collateral Chemistry course	4	SEEDS: World Language 2 or Free Elective	3
SEEDS: World Language 1	3		
17		14	

Third Year

Fall	Credits	Spring	Credits	Summer	Credits
EAES 302		3 EAES 441		4 EAES 303 or EAES 404	3-6
SEEDS: Exploration 3		3 SEEDS: Exploration 4		3	
PHYS 191 or 193		4 PHYS 192 or 193		4	
Major Elective		4 Major Elective		4	
		14			15
					3-6

Fourth Year

Fall	Credits	Spring	Credits
Major Elective		3 EAES 498	3
Free Elective		3 Free Elective	3
Free Elective		3 Free Elective	3
Free Elective		3 Free Elective	3
Free Elective		3-2 Free Elective	2-0
		15-14	14-12

Total Credits 120