

## Requirements for the B.S. Degree in *EARTH SYSTEMS*

The Earth Systems degree provides students with a holistic understanding of the Earth's geosphere, biosphere, hydrosphere, and cryosphere, as well as the impact of human activities on these systems. The degree is suitable for students interested in the interface of Earth Science and related fields, and in issues related to the long-term sustainability of the planet.

### Requirements for the B.S. Degree

#### A. *Supporting Sciences* (8 courses listed here or their approved equivalents; 29-32 credits)

1. Two courses in Biology (at least one of these must be a laboratory course)  
Select from: BIOLOGY 100-101, 102-103, 280, PLSOILIN 105, GEO-SCI 483
2. Two courses in Mathematics: MATH (127-128) or (131-132) or (135-136)
3. Two courses in Physics plus accompanying labs: PHYSICS (131-133; 132-134) or (151-153; 152-154)
4. Two courses in Chemistry: CHEM 111-112

#### B. *Earth Systems Core Courses* (8 courses listed here or their approved equivalents; 23-26 credits)

1. Choose one of the following four introductory Geoscience courses:  
GEO-SCI 100\* Global Environmental Change  
GEO-SCI 101 The Earth (includes the lab component *Experiencing Geology*)  
GEO-SCI 103\* Introductory Oceanography  
GEO-SCI 105\* Dynamic Earth

\*students not taking GEO-SCI 101 must also enroll in GEO-SCI 131 *Experiencing Geology* (1 credit)

2. GEO-SCI 102 The Human Landscape
3. GEO-SCI 231 Introduction to Field Methods
4. GEO-SCI 201 History of the Earth
5. GEO-SCI 354 Climatology

6. Choose one of the following:
  - GEO-SCI 420 Human Impact on the Natural Environment
  - GEO-SCI 458 Climatic Change
  
7. Choose one of the following courses in Geochemistry:
  - GEO-SCI 415 Introduction to Geochemistry
  - GEO-SCI 597 Isotope Geochemistry
  - GEO-SCI 517 Sedimentary Geochemistry
  - GEO-SCI 519 Aqueous and Environmental Geochemistry
  - GEO-SCI 615 Organic and Biogeochemistry
  
8. Choose one of the following courses in climatology, oceanography, hydrology, and spatial analysis:
  - GEO-SCI 587 Hydrogeology
  - GEO-SCI 591C Climate and Environmental Modeling
  - GEO-SCI 591Q Remote Sensing of the Environment
  - GEO-SCI 594A Introduction to Geographical Information Systems
  - GEO-SCI 595D Physical Oceanography

**C. *Earth Systems Electives (12 credits)***

Students should select at least 12 credits of additional upper-division (300 and higher) courses in Geosciences (including a second course from B-6, B-7, and B-8 above), Biology, Computer Science, Environmental Sciences, Forestry, Mathematics, Microbiology, Natural Resources Conservation, Physics, Plant Soil and Insect Sciences, Political Science, Resource Economics, Resource Planning, Statistics, and Wildlife and Fisheries Conservation. Elective courses should broaden knowledge in one of more areas of Earth Systems and must be selected in consultation with an advisor.

**D. *College and University Requirements (15 credits)***

1. College Foreign Language Requirement (12 credits or High School Waiver)
  
2. Junior Year Writing Requirement (3 credits):
  - GEO-SCI 307 Geologic Writing or GEO-SCI 314 Writing in Geography

Inquiries about the *Earth Systems* program should be directed to:

Rob DeConto, *Chief Undergraduate Advisor*  
Morrill Science Center II, Rm 234  
[deconto@geo.umass.edu](mailto:deconto@geo.umass.edu)  
545-3426

David Boutt  
Morrill Science Center II, Rm 138B  
[dboutt@geo.umass.edu](mailto:dboutt@geo.umass.edu)  
545-2724