

# B.S. in Environmental Science

Revised: 4/24/2009

Name \_\_\_\_\_ Advisor \_\_\_\_\_

E-Mail \_\_\_\_\_ Telephone \_\_\_\_\_

## I. Foundation Courses [10-11]

- \_\_\_\_\_ **GES 120:** Environment Science & Conservation [3]
- \_\_\_\_\_ **GES 220:** Lab & Field Techniques for Environmental Science [4]
- \_\_\_\_\_ Additional laboratory or field work from the following list:
  - GES 408:** Field Ecology [4]
  - GES 405:** Applied Landscape Ecology [4]
  - GES 406:** Aquatic Ecology [4]
  - GES 485:** Environmental Mapping [3]

## II. Background Courses

### Social Sciences/Humanities [6]

Two courses from the following:

- ECON 101:** Principles of Microeconomics [3]
- POLI 100:** American Governments & Politics [3]
- ANTH 211:** Cultural Anthropology [3]
- PHIL 150:** Contemporary Moral Issues *or* **PHIL 152:** Introduction to Moral Theory [3]
- HCST 100:** The Human Context of Science & Technology

(1) \_\_\_\_\_ (2) \_\_\_\_\_

### Math and Natural Sciences [32]

Two MATH courses from the following: [8]

- MATH 151:** Calculus & Analytic Geometry I [4] *and either:*
  - MATH 152:** Calculus & Analytical Geometry II *or:*
  - STAT 350:** Statistics with Applications in Biological Science [4] *or*
  - STAT 355:** Introduction to Probability & Statistics for Science & Engineering [4]
- Note:* STAT 355 recommended for those seeking advanced training in statistics, physical sciences & fields employing probability & frequency distributions

(1) \_\_\_\_\_ (2) \_\_\_\_\_

\_\_\_\_\_ **PHY 121:** Introductory Physics I [4]  
(Calculus-based; recommended for hydrology, geomorphology, earth science)

*or*

\_\_\_\_\_ **PHY 111:** Basic Physics I [4]

- \_\_\_\_\_ **CHEM 101:** Principles of Chemistry I [4]
- \_\_\_\_\_ **CHEM 102:** Principles of Chemistry II [4]
- \_\_\_\_\_ **CHEM 102L:** Introductory Chemistry Lab [2]
- \_\_\_\_\_ **GES 110:** Physical Geography [3]
- \_\_\_\_\_ **BIOL 100:** Concepts in Biology [4]
- \_\_\_\_\_ **GES 308:** Ecology [3]

### Areas of Concentration [18]

At least six upper-level courses in consultation with your advisor. At least one course must be at the 400 level. One techniques course is allowed, and is restricted to GES 386. One human-environment course is allowed, from this list: GES 326, 327, 329, 332, 432, 451, and 462.

A maximum of 2 courses in the concentration may be completed from outside the department (this includes transferred courses, courses taken abroad, and courses taken in other departments at UMBC).

**Area of Concentration:** \_\_\_\_\_

- 1] \_\_\_\_\_ [ ] 2] \_\_\_\_\_ [ ]
- 3] \_\_\_\_\_ [ ] 4] \_\_\_\_\_ [ ]
- 5] \_\_\_\_\_ [ ] 6] \_\_\_\_\_ [ ]

## List of Electives

### BIOL

- 301: Ecology & Evolution
- 457: Physiology of Marine & Estuarine Animals

### CHEM

- 300: Analytical Chemistry
- 461: Advanced Instrumentation
- 470: Toxicological Chemistry
- 490: Toxicology & Risk Assessment

### ENCE:

- 489: (...approved topics)

### GES

- 302: Natural Hazards/ Oceanography/...
- 305: Landscape Ecology
- 307: Conservation Biology
- 310: Geomorphology
- 311: Weather & Climate
- 313: Biogeography
- 314: Soils
- 317: Water Quality
- 318: Natural Environment of Chesapeake Bay
- 386: Intro to GIS
- 400: Advanced Soils/ Tropical Weather/ (...approved topics)
- 405: Applied Landscape Ecology
- 406: Aquatic Ecology
- 408: Field Ecology
- 410: Coastal Morphology
- 411: Fluvial Morphology
- 412: Biogeochemical Cycles & the Global Environment
- 413: Seminar in Biogeography
- 415: Climate Change
- 416: Hydrology
- 481: Advanced Remote Sensing
- 485: Environmental Mapping

### PHYS

- 335: Physics & Chemistry of Atmospheric Environment

### STAT

- 414: Environmental Statistics
- 451: Intro to Probability Theory
- 453: Intro to Mathematical Statistics
- 454: Regression

**Law School:** Environmental Law Seminar...

## **AREAS of CONCENTRATION** for the B.S Degree in Environmental Science

### **Earth System Science**

GES 302: Natural Hazards/ Oceanography (summer only)/ ...  
GES 305: Landscape Ecology  
GES 310: Geomorphology  
GES 311: Weather and Climate  
GES 313: Biogeography  
GES 314: Soils  
GES 400: Tropical Weather/ Hurricanes/ El Nino and Impacts on Society/...  
GES 405: Applied Landscape Ecology  
GES 410: Coastal Morphology  
GES 411: Fluvial Morphology  
GES 412: Biogeochemical Cycles and the Global Environment  
GES 415: Climate Change  
GES 416: Hydrology  
PHYS 335 Physics and Chemistry of the Atmospheric Environment

### **Watershed Processes**

GES 302: Natural Hazards  
GES 310: Geomorphology  
GES 311: Weather and Climate  
GES 314: Soils  
GES 317: Water quality  
GES 400: Advanced Soils  
GES 406: Aquatic Ecology  
GES 411: Fluvial morphology  
GES 412: Biogeochemical Cycles and the Global Environment  
GES 416: Hydrology  
GES 485: Environmental Mapping  
STAT 414: Environmental statistics  
ENCE 489: Chemistry of natural waters/ Introduction to subsurface hydrology/ Stormwater management/...

### **Ecosystems, Habitat and Biodiversity**

BIOL 301: Ecology and Evolution  
BIOL 457: Physiology of marine and estuarine animals  
GES 305: Landscape Ecology  
GES 307: Conservation Biology  
GES 313: Biogeography  
GES 314: Soils  
GES 318: Natural Environment of Chesapeake Bay  
GES 405: Applied Landscape ecology  
GES 406: Aquatic Ecology  
GES 408: Field Ecology  
GES 412: Biogeochemical Cycles and the Global Environment  
GES 413: Seminar in Biogeography  
GES 485: Environmental Mapping  
STAT 414: Environmental statistics

### **Environmental Chemistry and Toxicology**

CHEM 300: Analytical chemistry (requires 351, 352 as well as 101, 102)  
CHEM 461: Advanced instrumentation  
CHEM 470: Toxicological Chemistry  
CHEM 490/601: Toxicology and risk assessment (frequency uncertain)  
GES 314: Soils  
GES 317: Water quality  
GES 412: Biogeochemical Cycles and the Global Environment  
ENCE 489: Chemistry of natural waters  
ENCE 489: Fate and Transport of Environmental Contaminants/ Environmental Organic Chemistry  
PHYS 4xx: Physics and chemistry of the atmospheric environment

### **Environmental Statistics, Risk Assessment and Valuation**

CHEM 490: Toxicology and risk assessment  
ECON 437: Economics of natural resources  
ECON 439: Environmental economics