### GEOENVIRONMENTAL STUDIES PROGRAM – B.S.

All courses are three credits unless noted in parentheses.

#### Required Geoenvironmental Studies Core (15 cr.)
- ESS 355 Meteorology (If ESS111, sub a course)
- ESS 210 Physical Geology (If ESS110, sub a course)
- GEO 222 Soils
- GEO 226 Hydrology
- GEO 391 Geography Seminar (1)

#### Geography Electives (6 cr.)
- GEO 250 Economic Geography
- GEO 244 Land Use
- GEO 306 Geography of Latin America
- GEO 310 Transportation Geography
- GEO 315 Geography of S. and SE Asia
- GEO 314 Industrial Geography
- GEO 317 Geography of East Asia
- GEO 320 Historical Geography
- GEO 322 Urban Geography
- GEO 415 Regional Geographic Studies
- GEO 450 Geography-Geology Field Study

#### Geoenvironmental Complex Systems (9cr)
- ESS 404 Applied Meteorology and Climatology
- ESS 413 Mineral and Rock Resources
- ESS 442 Environmental Geology
- ESS 490 Selected Topics
- GEO 301 Intro to Biogeography
- GEO 306 Geomorphology
- GEO 402 Environmental Health
- GEO 404 Groundwater and Hydrogeology
- GEO 444 Environmental Land Use Planning
- GEO 445 Water Resources Management
- GEO 450 Geography-Geology Field Study
- GEO 490 Selected Topics

#### Geoenvironmental Field Experience (3+ cr.)
- GEO 260 Internship (2.0 overall & major Jr status)

#### Technique Course Electives (6+ Cr)
- GEO 202 GIS I: Introduction to GIS
- GEO 339 Remote Sensing
- GEO 352 Cartography
- GEO 363 GIS II: Intermediate GIS
- GEO 420 GIS III: Advanced GIS
- GEO 425 Image Processing
- GEO 440 Field Techniques
- GEO 441 Quantitative Methods
- GEO 450 Geography-Geology Field Study

#### Allied Sciences (22+ Credits) (Recommended)

<table>
<thead>
<tr>
<th>Biology (9-11 Credits By Advisement)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIO 115 Principles of Bio I (4) (required for Ecology)</td>
</tr>
<tr>
<td>BIO 145 Problems of the Environment</td>
</tr>
<tr>
<td>BIO 210 Field Geology (Prereq: BIO 115)</td>
</tr>
<tr>
<td>BIO 242 Ecological Principles (Prereq: BIO 115 and Soph Standing)</td>
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<tr>
<td>BIO 248 Field Natural History (Prereq: BIO 210) Field Biology</td>
</tr>
<tr>
<td>BIO 442 Hydrobiology (prereq: BIO 115 and 116)</td>
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<tr>
<td>BIO 448 Field Botany and Plant Taxonomy (Prereq)</td>
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<thead>
<tr>
<th>Chemistry/Physics (7-8 Credits By Advisement)</th>
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<tbody>
<tr>
<td>CHM 105 Chemistry: Observational Approach</td>
</tr>
<tr>
<td>CHM 121 Chemical Bonding</td>
</tr>
<tr>
<td>CHM 125 Lab IIB Stoichiometry and Reactions (1)</td>
</tr>
<tr>
<td>CHM 122 Chemical Dynamics</td>
</tr>
<tr>
<td>CHM 126 Lab IIB Equilibrium and Instrument (1)</td>
</tr>
<tr>
<td>PHY 121 Introductory Physics I (3)</td>
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<table>
<thead>
<tr>
<th>Math (3-4 Credits By Advisement)</th>
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<tbody>
<tr>
<td>MAT 140 Finite Math</td>
</tr>
<tr>
<td>MAT 165 Prob. With Statistical Reasoning (prereq)</td>
</tr>
<tr>
<td>MAT 175 Pre-Calculus</td>
</tr>
<tr>
<td>MAT 177 Applied Statistics</td>
</tr>
<tr>
<td>MAT 211 Calculus I (4)</td>
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<tr>
<td>MAT 212 Calculus II (4)</td>
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<thead>
<tr>
<th>Computer Science (3-4 Credits By Advisement)</th>
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<tbody>
<tr>
<td>CSC 103 Overview of Computer Science</td>
</tr>
<tr>
<td>CSC 180 Microcomputer Basic</td>
</tr>
<tr>
<td>CSC 110 Computer Science I (4)</td>
</tr>
<tr>
<td>CSC 111 Computer Science II (4)</td>
</tr>
<tr>
<td>ISM 142 Intro to Business Computer Systems</td>
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<thead>
<tr>
<th>Geographic Information Systems (GIS) Certificate (12 Cr)</th>
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<tbody>
<tr>
<td>Select Two of the Following Courses:</td>
</tr>
<tr>
<td>GEO 202 GIS I: Introduction to GIS</td>
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<tr>
<td>GEO 363 GIS II: Intermediate GIS</td>
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<td>GEO 440 Field Techniques</td>
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<td>GEO 441 Quantitative Methods</td>
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#### General Education (48+ Credits)

5 Courses – Total of 15 Hours

<table>
<thead>
<tr>
<th>Fluency in Writing (3 credits) ENG 101, ENG 106 or ENG 110</th>
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<tbody>
<tr>
<td>Fluency in Speaking (3 credits) HIS 105 and HIS 106</td>
</tr>
<tr>
<td>Mathematical Competency (3 credits)</td>
</tr>
<tr>
<td>Historical Perspective (6 credits) HIS 105 and HIS 106</td>
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<table>
<thead>
<tr>
<th>Category A: (1 Course)</th>
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<tbody>
<tr>
<td>Logic and Numbers for Rational Thinking</td>
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<tr>
<th>Category B: (3 Courses)</th>
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<tbody>
<tr>
<td>Linguistic, Literary, Artistic and Cultural Traditions</td>
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<tr>
<th>Category C: (3 Courses)</th>
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<tbody>
<tr>
<td>Biological and Physical Sciences</td>
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<tr>
<th>Category D: (2 Courses)</th>
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<tr>
<td>Political, Economic, and Geographic Sciences</td>
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<tr>
<th>Category E: (2 Courses)</th>
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<tr>
<td>Social and Behavioral Sciences</td>
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February 2009
Required Skills and Competencies

**Category A—Logic and Numbers for Rational Thinking** (One course - 3 credit hours)

The courses in this category emphasize the use of symbols as means of expressing complex thoughts and information lucidly and accurately.

- **One course must be taken from any of the following, with the exception the mathematics course selected under Basic Skills and Competency may not be used for this requirement.**
  - CPS103 Overview of Computer Science
  - CPS150 Microcomputer Basic
  - MAT105 Math for Liberal Studies
  - MAT106 Finite Math
  - MAT107 Fundamentals of Math I
  - MAT117 Applied Statistics
  - MAT120 Basic Math Models
  - MAT124 Precalculus
  - MAT165 Prob w/Stats Reasoning
  - MAT161 Applied Calculus I
  - MAT121 Calculus I
  - PHL101 Intro to Philosophy
  - PHL102 Critical Thinking
  - PHL105 Intro, to Phil. of Mind
  - PHL105 Intro. to Ethical Theories and Problems

**Category B—Linguistic, Literary, Artistic, and Cultural Traditions** (3 courses - 9 credit hours)

The courses are designed to acquaint the student with the richness and diversity of aspects of culture, especially in literary and artistic excellence.

- **One course must be taken from the following:**
  - ENGL249 The Art of the Film
  - ENGL249 Intro to Cultural
  - Diverse Literature of the U.S.
  - ENGL249 Intro to Literature
  - FINS350 M. of French Lit.
  - FINS351 M. of Francophone Lit.
  - GER101 German Cinema
  - GER321 Berlin
  - GER322 Readings in 19th 20th
  - Century German Literature
  - SFNP260 Intro to Lit. Studies
  - SFNP360 M. of Spanish Lit.
  - SFNP561 M. of Spanish-American Lit.
  - Humanities (2 courses diff. disc.)
  - ART101 Art Appreciation
  - ART251 Art History I
  - ARH252 Art History II
  - ART270 Intro. to Cultural Studies
  - ART550 History of American Art
  - FRN101 Beginning French I
  - FRN102 Beginning French II
  - FRN103 Intermediate French
  - FRN150 French Civilization
  - FRN200 Introduction to Reading
  - FRN202 Intro. to French Convers.
  - FRN250 Commercial French I
  - GER101 Beginning German I
  - GER102 Beginning German II
  - GER125 Intermediate German
  - GER140 German Civ and Culture
  - GER200 Introduction to Reading
  - GER225 Inter. German Convers.
  - GER251 Commercial German
  - MUS121 Introduction to Music
  - MUS220 Opera & Music Theatre
  - MUS231 World Music
  - SOC370 Sociology of the Arts
  - SPE121 Introduction to Theater
  - SPE240 Dramatic Narrative Film
  - SFNP101 Beginning Spanish I
  - SFNP202 Beginning Spanish II
  - SFNP300 Intermediate Spanish
  - SFNP310 Spanish Civ and Culture
  - SFNP320 Introduction to Reading
  - SFNP202 Intro. Spanish Convers.
  - SFNP350 Commercial Spanish
  - SFNP365 Asp. de la Civiliz. Hisp.

**Category C—Biological & Physical Sciences** (3 courses - 9 credit hours)

The courses in this category have two comprehensive objectives—1) to make clear what kinds of problems in the physical world are susceptible to scientific investigation and what kinds of solutions such investigation can produce and 2) to provide an appreciation of the practice of scientific research and methodology, with its interaction of experiment and hypothesis.

- **One course must be taken from those listed in three of the following disciplines.**
  - ANT121 Physical Anthropology
  - BIO100 Basic Biology
  - BIO105 Biological Sciences: A Laboratory Approach
  - BIO500 Human Biology
  - BIO220 Field Biology
  - BIO224 Field Natural History
  - CHEM3 Chemistry: A Cultural Approach
  - CHEM103 Chemistry: An Observational Approach
  - CHEM21 Chemical Bonding
  - ES10 Chemistry of Conservation of Natural Resources
  - ES120 Introduction to Geology
  - ES210 Intro to the Atmosphere
  - ES310 Physical Geography
  - PHY103 Astronomy
  - PHY120 Physics for Society
  - PHY115 Physical Science: A Laboratory Approach
  - PHY121 Introduction to Physics I
  - PHY205 Intermediate Physics I

**Category D—Political, Economic, and Geographic Sciences** (2 Courses - 6 Credit Hours)

Institutions are formal ways which societies and cultures create over time to pursue activities important to them. Two of the most basic institutions in any large, collective society are its governmental structure and its economic system—that is, the ways which a society has chosen to regulate the interaction between individuals and groups and the ways in which it has chosen to satisfy and organize its material needs.

- **One course must be taken from those listed in two of the following disciplines.**
  - ECON101 Principles of Macroeconomics
  - ECON202 Principles of Microeconomics
  - ECON115 Principles of Economics
  - GEOG105 World Geography
  - GEOG105 Geog U.S. and Canada
  - PLS100 U.S. Gvt & Politcs
  - PLS101 Intro to Intl. Relations

**Category E—Social and Behavioral Sciences** (2 Courses - 6 Credit Hours)

An awareness and recognition of the disciplines which examine and analyze group and individual behavior is of increasing importance for all who seek to understand and to predict the patterns and processes of human activity. These disciplines examine the causes of human action and the diversity of its organization and structure.

- **One course must be taken from those listed in two of the following disciplines.**
  - ART101 Art Appreciation
  - ECON101 Principles of Microeconomics
  - ENGL249 Intro to Cultural
  - Diversity
  - ETH103 Intro to Culturally
  - Diverse Lit.
  - GEOG105 Cultural Geography
  - GEOG140 Geog of U.S. & Canada
  - WST100 Intro to Women's Sts.
  - WST100 Intro to Women's Studies

**University Diversity Requirement**

To complete the University diversity requirement, undergraduates are required to take one approved diversity course for a total of 3 credit hours. The following courses are the currently approved diversity courses:

- ARTH1 Art Appreciation
- CRJ561 Race, Ethnicity, & Crime
- ECH410 Family, School, & Comm. Partnerships in Early Childhood Education
- EEC411 Intro to Exceptionality
- ENG242 Intro to Multicultural Lit.
- ENG248 Intro to Culturally Diverse Lit of the U.S.
- ETH103 Intro. to Culturally Diverse Lit.
- GEOG105 Cultural Geography
- GEOG140 Geog of U.S. & Canada
- MGT447 Business and Society
- SOC101 Intro to Sociology: Society and Diversity
- SWK265 Underst. Human Diver. for Social Work Practice
- WST100 Intro to Women's Studies

**General Education**

At Shippensburg, the study and investigation begins with the completion of courses, usually taken during a student’s first or second year, in four required basic skills. These skills are fluency in writing, fluency in speaking, competency in math, and cultural awareness through historical perspective.

To achieve these basic skills, undergraduates are required to take five courses for a total of 15 credit hours:

- **Fluency in Writing.** Students must take one of the following for 3 credit hours: ENG101 College Writing, or ENG110 Advanced Placement Writing.

- **Fluency in Speaking.** Students must take SPE 100 Basic Oral Communication for 3 credit hours.

- **Mathematical Competency.** Students must take one mathematics course listed in Category A, Logic and Numbers for Rational Thinking, for 3 credit hours, or must place in the Advanced College Level through the university Mathematics Examination.

- **Historical Perspectives.** Students must take the following two courses for a total of six credit hours:
  - HIS105 World History I
  - HIS106 World History II

- **Library/Information Skills.** An integral aspect of the gen edu program is the development of library and information skills. This requirement is fulfilled through the completion of a self-paced, on-line tutorial which provides hands-on experience in finding information. All students enrolled in ENG101 (College Writing) or ENG110 Advanced Writing must complete this tutorial.