# EARTH AND SPACE SCIENCE (BS) / NATURAL SCIENCES (MS) - ENVIRONMENTAL SCIENCE TRACK (COMBINED OPTION)

## Program Overview

Environmental Science has emerged as one of the fastest growing career fields and its importance becomes ever more apparent with the rapid environmental changes occurring world-wide in the twenty-first century. It is an interdisciplinary science that relies on knowledge and techniques synthesized from the disciplines of Geology, Biology, Engineering, Chemistry, and Physics. Environmental scientists seek to solve complex human caused environmental problems associated with air and water pollution, natural habitat loss and degradation, and global change and as such their research has the potential to influence the future sustainability of our planet. As these issues grow in importance, the demand for these inter-disciplinary scientists, trained to understand and solve complex environmental problems and their consequences, will only continue to grow. The Environmental Science program at Columbus State University is structured to train scientists to address the existing challenges and those yet realized in the future. Columbus State University's Environmental Sciences program is the only one in Georgia that offers this breadth of background. The program is designed to educate a new generation of interdisciplinary Environmental Scientists who will have the knowledge and experiences need to solve the increasingly complex and multi-faceted environmental issues.

## Career Opportunities

## Program of Study

| Code | Title | Credit Hours |
|---|---|---|
| **Core IMPACTS Area : Institutional Priorities** [1] | | **4-5** |
| COMM 1110 | Public Speaking | 3 |
| ITDS 1779 | Scholarship Across the Disciplines | 2 |
| LEAD 1705 | Introduction to Servant Leadership | 2 |
| PERS 1506 | Perspectives 1-hour | 1 |
| PERS 1507 | Perspectives 2-hour | 2 |
| Foreign Language Course Options | | |
| ARAB, CHIN, FREN, GERM, GREK, ITAL, JAPN, KREN, LATIN, PORT, SPAN - 1001, 1002, 2001, 2002 | | |
| SWAH 1001 | Elementary Swahili I | |
| SWAH 1002 | Elementary Swahili II | |
| **Core IMPACTS Area : Mathematics & Quantitative Skills** [1] | | **3-7** |
| DATA 1501 | Introduction to Data Science | 3 |
| MATH 1001 | Quantitative Skills and Reasoning | 3 |
| MATH 1101 | Introduction to Mathematical Modeling | 3 |
| MATH 1111 | College Algebra | 3 |
| MATH 1113 | Pre-Calculus | 4 |
| MATH 1125 | Applied Calculus | 3 |
| MATH 1131 | Calculus with Analytic Geometry I | 4 |
| MATH 1132 | Calculus with Analytic Geometry II | 4 |
| MATH 1165 | Computer-Assisted Problem Solving | 3 |
| MATH 1401 | Introduction to Statistics | 3 |
| MATH 1501 | Calculus I | 4 |
| MATH 2125 | Introduction to Discrete Mathematics | 3 |
| STAT 1401 | Elementary Statistics | 3 |
| **Core IMPACTS Area : Political Science and U.S. History** | | **6** |
| HIST 2111 | U. S. History to 1865 | 3 |
| or HIST 2112 | U. S. History since 1865 | |
| POLS 1101 | American Government | 3 |
| **Core IMPACTS Area : Arts, Humanities, and Ethics** | | **6** |
| Select one Fine Arts course | | 3 |
| ARTH 1100 | Art Appreciation | |
| ARTH 2125 | Introduction to the History of Art I– Prehistoric through Gothic | |
| ARTH 2126 | Introduction to the History of Art II– Renaissance through Modern | |
| MUSC 1100 | Music Appreciation | |
| THEA 1100 | Theatre Appreciation | |
| ITDS 1145 | Comparative Arts [2] | |
| Select one Humanities course | | 3 |
| ENGL 2111 | World Literature I | |
| ENGL 2112 | World Literature II | |
| ITDS 1774 | Introduction to Digital Humanities | |
| PHIL 2010 | Introduction to Philosophy | |
| ITDS 1145 | Comparative Arts [2] | |
| **Core IMPACTS Area : Communicating in Writing** | | **6** |
| ENGL 1101 | English Composition I | 3 |
| ENGL 1102 | English Composition II | 3 |
| **Core IMPACTS Area : Technology, Mathematics, and Sciences** [1] | | **7-11** |
| ANTH 1145 | Human Origins | 3 |
| ASTR 1105 | Descriptive Astronomy: The Solar System | 3 |
| ASTR 1106 | Descriptive Astronomy: Stars and Galaxies | 3 |
| ASTR 1305 | Descriptive Astronomy Lab | 1 |
| ATSC 1112 | Understanding the Weather | 3 |
| ATSC 1112L | Understanding the Weather Lab | 1 |
| BIOL 1125 | Contemporary Issues in Biology Non-Lab | 3 |
| BIOL 1215K | Introductory Biology | 4 |
| BIOL 1225K | Contemporary Issues in Biology with Lab | 4 |
| CHEM 1151 & 1151L | Survey of Chemistry I and Survey of Chemistry I Lab | 4 |
| CHEM 1152 & 1152L | Survey of Chemistry II and Survey of Chemistry II Lab | 4 |
| CHEM 1211 & 1211L | Principles of Chemistry I and Principles of Chemistry I Lab | 4 |
| CHEM 1212 & 1212L | Principles of Chemistry II and Principles of Chemistry II Lab | 4 |
| CPSC 1105 | Introduction to Computing Principles and Technology | 3 |
| CPSC 1301K | Computer Science I | 4 |
| ENVS 1105 | Environmental Studies | 3 |
| ENVS 1105L | Environmental Studies Laboratory | 1 |
| ENVS 1205K | Sustainability and the Environment | 4 |

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|---|---|---|
| GEOG 2215 | Introduction to the Geographic Information Systems | 3 |
| GEOL 1110 | Natural Disasters: Our Hazardous Environment | 3 |
| GEOL 1121 | Introductory Geoscience I: Physical Geology | 3 |
| GEOL 1121L | Introductory Geoscience I: Physical Geology Lab | 1 |
| GEOL 1122 | Introductory Geo-sciences II: Historical Geology | 3 |
| GEOL 1322 | Introductory Geo-sciences II: Historical Geology Lab | 1 |
| GEOL 2225 | The Fossil Record | 4 |
| PHYS 1111 & PHYS 1311 | Introductory Physics I and Introductory Physics I Lab | 4 |
| PHYS 1112 & PHYS 1312 | Introductory Physics II and Introductory Physics II Lab | 4 |
| PHYS 1125 | Physics of Color and Sound | 3 |
| PHYS 1325 | Physics of Color and Sound Lab | 1 |
| PHYS 2211 & PHYS 2311 | Principles of Physics I and Principles of Physics I Lab | 4 |
| PHYS 2212 & PHYS 2312 | Principles of Physics II and Principles of Physics II Lab | 4 |
| **Core IMPACTS Area : Social Sciences** | | **6** |
| Select one Behavioral Science course | | |
| ECON 2105 | Principles of Macroeconomics | |
| ECON 2106 | Principles of Microeconomics | |
| PHIL 2030 | Moral Philosophy | |
| PSYC 1101 | Introduction to General Psychology | |
| SOCI 1101 | Introduction to Sociology | |
| Select one World Cultures course | | 3 |
| ANTH 1107 | Discovering Archaeology | |
| ANTH 1105 | Cultural Anthropology | |
| ANTH 2105 | Ancient World Civilizations | |
| ANTH 2136 | Language and Culture | |
| ENGL 2136 | Language and Culture | |
| GEOG 1101 | World Regional Geography | |
| HIST 1111 | World History to 1500 | |
| HIST 1112 | World History since 1500 | |
| ITDS 1155 | The Western Intellectual Tradition | |
| ITDS 1156 | Understanding Non-Western Cultures | |
| **Core IMPACTS Total Hours** | | **42** |
| **Health and Wellness** | | **3** |
| KINS 1106 | Lifetime Wellness | 2 |
| or PHED 1205 | Concepts of Fitness | |
| Select one PEDS course (https://catalog.columbusstate.edu/course-descriptions/peds/#peds) | | |

[1] The hours applied in the Institutional Priorities; Mathematics & Quantitative Skills; and Technology, Mathematics, and Sciences areas must add to 18 credit hours.

[2] ITDS 1145 Comparative Arts, though listed under both Fine Arts and Humanities, may be taken only once.

[1] Up to 3 can be added from Areas A, B and/or D with advisor approval.

[2] Courses taken for undergraduate credit may not be taken for graduate credit.

# BS and MS Requirements
# Major Requirements

| Code | Title | Credit Hours |
|---|---|---|
| **Core Requirements** | | |
| Complete the core requirements for this program | | 45 |
| Core Total | | 45 |
| **Field of Study Requirements** | | |
| Minimum grade of C is required | | |
| GEOL 1121 | Introductory Geoscience I: Physical Geology | 3 |
| GEOL 1121L | Introductory Geoscience I: Physical Geology Lab | 1 |
| Select one of the following sequences: | | 8 |
| Sequence 1: | | |
| PHYS 1111 | Introductory Physics I | |
| PHYS 1112 | Introductory Physics II | |
| PHYS 1311 | Introductory Physics I Lab | |
| PHYS 1312 | Introductory Physics II Lab | |
| Sequence 2: | | |
| PHYS 2211 | Principles of Physics I | |
| PHYS 2212 | Principles of Physics II | |
| PHYS 2311 | Principles of Physics I Lab | |
| PHYS 2312 | Principles of Physics II Lab | |
| Select 3 or more credits from the following: | | 3 |
| ASTR 1105 | Descriptive Astronomy: The Solar System | |
| ASTR 1305 | Descriptive Astronomy Lab | |
| ASTR 1106 | Descriptive Astronomy: Stars and Galaxies | |
| BIOL 1215K | Introductory Biology | |
| ENVS 1105 | Environmental Studies | |
| ENVS 1205K | Sustainability and the Environment | |
| GEOL 1110 | Natural Disasters: Our Hazardous Environment | |
| Up to 3 can be added from Areas A, B, and/or D with advisor approval | | 3 |
| Field of Study Requirements Total | | 18 |
| **Required for the Major** | | |
| Minimum grade of C is required | | |
| BIOL 3217K | Ecology | 4 |
| CHEM 2115 | Quantitative Chemical Analysis | 3 |
| CHEM 2315 | Quantitative Chemical Analysis Lab | 1 |
| ENVS 3105 | Foundations of Environmental Science | 4 |
| ENVS 5405U | Topics in Conservation (credits above 3 will count in Area H) | 3-5 |
| ENVS 5206U | Water Resources Management | 4 |
| GEOG 2215 | Introduction to the Geographic Information Systems | 3 |
| ATSC 5117U | Global and Climate Change | 3 |
| GEOL 5255U | Environmental Geology | 4 |
| STAT 1401 | Elementary Statistics | 3 |
| Take one of the following: | | |
| ENVS 5125U | Human Ecology | 3 |
| or ENVS 5226U | Culture and Environment | |
| Required for the Major Total | | 35 |
| **Major Electives** | | |
| **Area H1 Undergraduate Required Hours** | | **15** |

| | | |
|---|---|---|
| Any 3000+ BIOL, CHEM, ENVS, or GEOL course. | | |
| With advisor approval, any 3000+ ANTH or GEOG course | | |
| **Combined Requirements:** | | **9** |
| Any Group B course from Area 2 of the graduate program, or with advisor approval, any 5000G+ ANTH, BIOL, CHEM, ENVS, GEOG, or GEOL course. | | |
| **Master's Degree Coursework: 36 hours** | | |
| **Area 1 Graduate Program Core Required Hours** | | **3** |
| ENGL 5149G | Grant Writing | |
| **Area 2 Program Electives Required Hours:** | | **21-22** |
| Group A: Take the following course | | |
| ENVS 5207G | Experimental Design and Statistical Analysis | |
| ENVS 5715G | Earth and Space Sciences Seminar | |
| ENVS 5235G | Geographic Information and Global Positioning Systems | |
| Group B: Take one of the following. Courses taken for undergraduate credit may not be taken for graduate credit | | |
| ANTH 5125G | Human Ecology | |
| ENVS 5165G | Hydrology | |
| ENVS 5226G | Culture and Environment | |
| ENVS 5315G | Stream Ecology | |
| ENVS 5405G | Topics in Conservation | |
| ENVS 5235G | Geographic Information and Global Positioning Systems | |
| GEOL 5135G | Oceanography | |
| GEOL 5215G | Geomorphology | |
| *Add 9 hours from Area H2 | | |
| **Area 3: Program Requirements:** | | **11-12** |
| Thesis Required Hours: | | |
| ENVS 7000 | Thesis Defense | |
| ENVS 7999 | Research in Environmental Science | |
| **Total Hours Required: 159** | | |

# Program Map

| Course | Title | Credit Hours |
|---|---|---|
| **First Year** | | |
| **Fall** | | |
| MATH 1113 | Pre-Calculus (minimum grade of C) [1] | 4 |
| ENGL 1101 | English Composition I (minimum grade of C) | 3 |
| CHEM 1211 | Principles of Chemistry I (minimum grade of C) | 3 |
| CHEM 1211L | Principles of Chemistry I Lab (minimum grade of C) | 1 |
| Area B2 | ITDS 1779 (2), LEAD 1705 (2), PERS 1506 (1; may be repeated with different topic), PERS 1507 (2) | 1 |
| ENVS 1205K | Sustainability and the Environment (minimum grade of C) | 4 |
| | **Credit Hours** | **16** |
| **Spring** | | |
| AREA H1 | BIOL 1215K Principles of Biology (minimum grade of C) [2] | 4 |
| CHEM 1212 | Principles of Chemistry II (minimum grade of C) | 3 |
| CHEM 1212L | Principles of Chemistry II Lab (minimum grade of C) | 1 |
| ENGL 1102 | English Composition II (minimum grade of C) | 3 |
| MATH 1131 | Calculus with Analytic Geometry I | 4 |
| | **Credit Hours** | **15** |
| **Second Year** | | |
| **Fall** | | |
| STAT 1401 | Elementary Statistics (minimum grade of C) | 3 |
| ENVS 3105 | Foundations of Environmental Science (minimum grade of C) [3] | 4 |
| Area E | World Cultures (ANTH 1105 is recommended) [4] | 3 |
| PHYS 1111 | Introductory Physics I (minimum grade of C) | 3 |
| PHYS 1311 | Introductory Physics I Lab (minimum grade of C) | 1 |
| KINS 1106 or PHED 1205 | Lifetime Wellness or Concepts of Fitness | 2 |
| | **Credit Hours** | **16** |
| **Spring** | | |
| PHYS 1112 | Introductory Physics II (minimum grade of C) | 3 |
| PHYS 1312 | Introductory Physics II Lab (minimum grade of C) | 1 |
| GEOL 1121 | Introductory Geoscience I: Physical Geology (minimum grade of C) | 3 |
| GEOL 1121L | Introductory Geoscience I: Physical Geology Lab (minimum grade of C) | 1 |
| BIOL 3217K | Ecology (minimum grade of C) [5] | 4 |
| Area B1 | COMM 1110 Public Speaking or foreign language 1001, 1002, 2001, 2002 | 3 |
| | **Credit Hours** | **15** |
| **Third Year** | | |
| **Fall** | | |
| CHEM 2115 | Quantitative Chemical Analysis (minimum grade of C) | 3 |
| CHEM 2315 | Quantitative Chemical Analysis Lab (minimum grade of C) | 1 |
| Area C | Humanities | 3 |
| GEOL 5255U | Environmental Geology (minimum grade of C) | 4 |
| ENVS 5206U | Water Resources Management (minimum grade of C) | 4 |
| | **Credit Hours** | **15** |
| **Spring** | | |
| GEOG 2215 | Introduction to the Geographic Information Systems (minimum grade of C) | 3 |
| ATSC 5117U | Global and Climate Change (minimum grade of C) | 3 |
| AREA H1 | Elective | 3-4 |
| AREA C | Fine Arts | 3 |

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|---|---|---|
| HIST 2111<br>or HIST 2112 | U. S. History to 1865<br>or U. S. History since 1865 | 3 |
| | **Credit Hours** | **15-16** |
| **Fourth Year** | | |
| **Fall** | | |
| ENVS 5405U | Topics in Conservation (minimum grade of C) | 3-4 |
| POLS 1101 | American Government | 3 |
| Area H2 | 5000+G Elective: Environmental Science Seminar suggested | 1 |
| Area H2 | 5000+G Elective: Any course from Area 2 of the graduate program | 4 |
| AREA H1 | Elective | 3-4 |
| | **Credit Hours** | **14-16** |
| **Spring** | | |
| Area H1 | Electives | 3-4 |
| AREA H2 | 5000+G Elective: Any course from Area 2 of the graduate program | 4 |
| Area E | Behavioral Science | 3 |
| Select one of the following: | | 3 |
| ENVS 5125U | Human Ecology (minimum brade of C) | |
| ENVS 5226U | Culture and Environment (minimum grade of C) | |
| PEDS Activity | | 1 |
| | **Credit Hours** | **14-15** |
| **Summer** | | |
| ENVS 7999 | Research in Environmental Science | 5 |
| Area 2B | Elective (Grad) | 3 |
| | **Credit Hours** | **8** |
| **Fifth Year** | | |
| **Fall** | | |
| ENGL 5149G | Grant Writing | 3 |
| ENVS 5207G | Experimental Design and Statistical Analysis | 4 |
| ENVS 7999 | Research in Environmental Science | 3 |
| | **Credit Hours** | **10** |
| **Spring** | | |
| ENVS 7000 | Thesis Defense | 0 |
| ENVS 7001 | Certification Exam | 0 |
| ENVS 7999 | Research in Environmental Science | 4 |
| ENVS 5715G | Earth and Space Sciences Seminar (Grad) | 1 |
| ENVS 5235G | Geographic Information and Global Positioning Systems | 4 |
| | **Credit Hours** | **9** |
| | **Total Credit Hours** | **147-151** |

1 Substitute MATH 1131 Calculus with Analytic Geometry I for MATH 1113 Pre-Calculus if math placement allows.

2 BIOL 1215K Introductory Biology is a prerequisite for BIOL 3217K Ecology.

3 STAT 1401 Elementary Statistics is a coreq for ENVS 3105 Foundations of Environmental Science (Area G).

4 ANTH 1105 Cultural Anthropology is a prereq for Culture and the Environment (Area G).

5 BIOL 3217K Ecology prereq ESS: BIOL 1215K Introductory Biology, CHEM 1211 Principles of Chemistry I, CHEM 1211L Principles of Chemistry I Lab, CHEM 1212 Principles of Chemistry II, CHEM 1212L Principles of Chemistry II Lab, and ENVS 3105 Foundations of Environmental Science.

# Additional Notes

All graduate level courses must be B or better (>=B) to count toward the graduate portion of the degree.

Application Requires:

1. Complete application for admission into this joint BS+MS program.
2. Attain junior standing (62+ credits).
3. Complete both:
   a. All courses in Area F, and
   b. At least 15 credits of Area G courses.
4. Achieve minimum institutional GPA of 3.0 overall and 3.5 calculated on all Area G
5. Submit research proposal
6. Submit a proposed plan of study (by semester)
7. Submit a recommendation letter from a prospective graduate thesis advisor
8. Score 1000+ on the GRE (New GRE combined 290)
9. Apply for MS NS Environmental Science Track

This program map illustrates appropriate coursework for completing a degree within five years, provided that course grades allow for earned credit. Since not all courses are taught every semester, please consult with your advisor to determine when courses can be taken in a different semester or sequence than illustrated. This map is for illustrative purposes only and does not constitute a legal contract on the part of CSU since degree requirements or course offerings could change.

# Admission Requirements

# Additional Program Requirements