

# Geographical and Sustainability Sciences, BS

## Requirements

The Bachelor of Science with a major in geographical and sustainability sciences requires a minimum of 120 s.h., including 69–74 s.h. of work for the major depending on a student's choice of track (geographic information science or sustainability science). Students must maintain a grade-point average of at least 2.00 in all courses for the major and in all UI courses for the major. They must also complete the College of Liberal Arts and Sciences GE CLAS Core. Transfer students must complete a minimum of 15 s.h. of School of Earth, Environment, and Sustainability coursework in the major.

The BS with a major in geographical and sustainability sciences requires the following coursework.

| Requirements       | Hours |
|--------------------|-------|
| Foundation Courses | 27-28 |
| Track Requirements | 42-46 |

## Foundation Courses

| Course #                                       | Title   | Hours |
|--|---|-------|
| All of these:                                  |   |       |
| SEES:1070                                      | Contemporary Environmental Issues                               | 3     |
| SEES:1085                                      | Fundamentals of Environmental Science                           | 4     |
| SEES:2010                                      | Interdisciplinary Environmental Seminar                         | 1     |
| SEES:2050                                      | Foundations of GIS  | 4     |
| One of these:                                  |   |       |
| SEES:2310                                      | Introduction to Climatology                                     | 3     |
| SEES:2374/<br>BIOL:2374                        | Biogeography  | 3     |
| SEES:2930                                      | Water Resources   | 3     |
| SEES:2950                                      | Environmental Conservation                                      | 4     |
| SEES:3320                                      | Earth's Climate System  | 3     |
| One of these:                                  |   |       |
| SEES:1090                                      | Globalization and Geographic Diversity                          | 3     |
| SEES:2110/<br>GHS:2110                         | Eight Billion and Counting: Introduction to Population Dynamics | 3     |
| SEES:2910                                      | The Global Economy  | 3     |
| One of these:                                  |   |       |
| CS:1110  | Introduction to Computer Science                                | 3     |
| STAT:2010                                      | Statistical Methods and Computing                               | 3     |
| STAT:3200/<br>DATA:3200/<br>IGPI:3200/ISE:3760 | Applied Linear Regression                                       | 3     |

At least one of these (for a total of 3 sh):

|               |                                       |     |
|---------------|---------------------------------------|-----|
| SEES:3400     | Iowa Environmental Policy in Practice | 3   |
| SEES:3992     | Undergraduate Research (or ICIGO)     | 1-3 |
| CCP:1201      | Academic Internship                   | 1-3 |
| One of these: |                                       |     |
| SEES:4030     | Senior Project Seminar                | 3   |
| SEES:4995     | Honors Thesis                         | 3   |

## Tracks

Students must complete one of two tracks: geographic information science or sustainability science. Students may not use any course to satisfy more than one requirement.

### Geographic Information Science Track

Students in the geographic information science track complete 30–31 s.h. in common track courses and at least 12 s.h. in elective courses.

### Geographic Information Science Track Courses

| Course #                             | Title  | Hours |
|--------------------------------------|--|-------|
| All of these:                        |  |       |
| SEES:1020                            | The Global Environment   | 3     |
| SEES:1035                            | Our Digital Earth  | 3     |
| SEES:3050/<br>IGPI:3050              | Geospatial Programming   | 3     |
| SEES:3500/<br>IGPI:3500              | Introduction to Environmental Remote Sensing                     | 3     |
| SEES:3520/<br>IGPI:3520              | GIS for Environmental Applications                               | 3     |
| SEES:3540/<br>IGPI:3540              | Geographic Visualization   | 3     |
| SEES:4010                            | Field Methods in Physical Geography                              | 3     |
| SEES:4580/<br>IGPI:4581              | Introduction to Geographic Databases                             | 3     |
| Two of these:                        |  |       |
| SEES:3570                            | Light Detection and Ranging (LiDAR): Principles and Applications | 3     |
| SEES:4150/<br>GHS:4150/<br>IGPI:4150 | Health and Environment: GIS Applications                         | 3     |
| SEES:4500/<br>IGPI:4500              | Advanced Remote Sensing  | 4     |
| SEES:4520/<br>IGPI:4520              | GIS for Environmental Studies: Applications                      | 3     |

### Geographic Information Science Track Electives

Students in the geographic information science track complete at least 12 s.h. in track electives, including at least 3 s.h. selected from each of three categories: computer science; math and statistics; and society, environment, and sustainability.

## Computer Science Elective Courses

| Course #               | Title                                | Hours |
|------------------------|--------------------------------------|-------|
| At least one of these: |                                      |       |
| CS:1210                | Computer Science I: Fundamentals     | 4     |
| CS:2110                | Programming for Informatics          | 4     |
| CS:2210                | Discrete Structures                  | 3     |
| CS:2230                | Computer Science II: Data Structures | 4     |
| CS:3210                | Programming Languages and Tools      | arr.  |

## Mathematics and Statistics Elective Courses

| Course #                                       | Title                             | Hours |
|--|-----------------------------------|-------|
| At least one of these:                         |                                   |       |
| MATH:1010                                      | Trigonometry                      | 3     |
| STAT:2010                                      | Statistical Methods and Computing | 3     |
| STAT:3200/<br>DATA:3200/<br>IGPI:3200/ISE:3760 | Applied Linear Regression         | 3     |
| STAT:3510/<br>IGPI:3510                        | Biostatistics                     | 3     |

## Society, Environment, and Sustainability Elective Courses

| Course #                             | Title                                     | Hours |
|--------------------------------------|---|-------|
| At least one of these:               |   |       |
| SEES:3090/<br>GHS:3070               | Hungry Planet: Global Geographies of Food | 3     |
| SEES:3110/<br>GHS:3111               | Geography of Health                       | 3     |
| SEES:3315                            | Ecosystem Ecology                         | 4     |
| SEES:3340                            | Ecosystem Services                        | 3     |
| SEES:3350                            | Urban Ecology                             | 3     |
| SEES:3760/<br>GHS:3760               | Hazards and Society                       | 3     |
| SEES:3920/<br>URP:3001               | Planning Livable Cities                   | 3     |
| SEES:4210                            | Sustainability as a System Science        | 3     |
| SEES:4310                            | Climate Change                            | 3     |
| SEES:4470                            | Ecological Climatology                    | 3     |
| SEES:4750/<br>URP:4750               | Environmental Impact Analysis             | 3     |
| SEES:4770/<br>AFAM:4770/<br>GHS:4770 | Environmental Justice                     | 3     |

## Sustainability Science Track

Students in the sustainability science track complete 24–25 s.h. in common track courses and at least 21 s.h. in elective courses.

## Sustainability Science Track Courses

| Course #                            | Title                          | Hours |
|-------------------------------------|--------------------------------|-------|
| All of these:                       |                                |       |
| SEES:2013/<br>BUS:2013/<br>URP:2013 | Introduction to Sustainability | 3     |

|                        |   |   |
|------------------------|---|---|
| SEES:2110/<br>GHS:2110 | Eight Billion and Counting: Introduction to Population Dynamics | 3 |
| SEES:2310              | Introduction to Climatology                                     | 3 |
| SEES:3800              | Environmental Policy  | 3 |
| SEES:4210              | Sustainability as a System Science                              | 3 |

|                                      |                                  |   |
|--------------------------------------|----------------------------------|---|
| One of these:                        |                                  |   |
| SEES:4770/<br>AFAM:4770/<br>GHS:4770 | Environmental Justice            | 3 |
| POLI:2417                            | Comparative Environmental Policy | 3 |

|                         |                            |   |
|-------------------------|----------------------------|---|
| One of these:           |                            |   |
| SEES:2673/<br>BIOL:2673 | Ecology                    | 3 |
| SEES:3315               | Ecosystem Ecology          | 4 |
| One of these:           |                            |   |
| SEES:2950               | Environmental Conservation | 4 |
| SEES:3350               | Urban Ecology              | 3 |

## Sustainability Science Track Electives

Students in the sustainability science track complete at least 21 sh. in track electives, including at least 3 s.h. selected from each of five categories: communications, human systems, integrated natural and human systems, methods, and natural systems. Courses taken to complete a foundation course or track requirement may not also be used to satisfy the electives requirement.

## Communications Elective Courses

| Course #               | Title                         | Hours |
|------------------------|-------------------------------|-------|
| At least one of these: |                               |       |
| CNW:3664/<br>ENGL:3764 | Writing About Science         | 3     |
| JMC:1800               | Environmental Communication   | 3     |
| JMC:3185               | Topics in Understanding Media | 3     |

## Human Systems Elective Courses

| Course #   | Title   | Hours |
|--|---|-------|
| At least one of these:                             |   |       |
| SEES:3300/<br>GHS:3300                             | Envisioning Future Worlds: Sustainable Development and Its Alternatives | 3     |
| SEES:3780/<br>GHS:3780/<br>HIST:3240/<br>POLI:3431 | U.S. Energy Policy in Global Context                                    | 3     |
| SEES:3920/<br>URP:3001                             | Planning Livable Cities   | 3     |
| SEES:4750/<br>URP:4750                             | Environmental Impact Analysis   | 3     |
| SEES:4770/<br>AFAM:4770/<br>GHS:4770               | Environmental Justice   | 3     |
| ECON:3650  | Policy Analysis   | 3     |
| ENTR:3700  | Sustainable Innovation and Management                                   | 3     |
| POLI:2417  | Comparative Environmental Policy  | 3     |

## Integrated Natural and Human Systems Elective Courses

| Course #               | Title                            | Hours |
|------------------------|----------------------------------|-------|
| At least one of these: |                                  |       |
| SEES:2930              | Water Resources                  | 3     |
| SEES:2950              | Environmental Conservation       | 4     |
| SEES:3331              | Human Dimensions of Climate      | 3     |
| SEES:3760/<br>GHS:3760 | Hazards and Society              | 3     |
| SEES:4310              | Climate Change                   | 3     |
| ANTH:2261              | Human Impacts on the Environment | 3     |

## Methods Elective Courses

| Course #                             | Title  | Hours |
|--------------------------------------|--|-------|
| At least one of these:               |  |       |
| SEES:3500/<br>IGPI:3500              | Introduction to Environmental Remote Sensing                     | 3     |
| SEES:3520/<br>IGPI:3520              | GIS for Environmental Applications                               | 3     |
| SEES:3570                            | Light Detection and Ranging (LiDAR): Principles and Applications | 3     |
| SEES:4010                            | Field Methods in Physical Geography                              | 3     |
| SEES:4150/<br>GHS:4150/<br>IGPI:4150 | Health and Environment: GIS Applications                         | 3     |
| SEES:4500/<br>IGPI:4500              | Advanced Remote Sensing  | 4     |
| SEES:4520/<br>IGPI:4520              | GIS for Environmental Studies: Applications                      | 3     |

## Natural Systems Elective Courses

| Course #                | Title  | Hours |
|-------------------------|--|-------|
| At least one of these:  |  |       |
| SEES:2673/<br>BIOL:2673 | Ecology  | 3     |
| SEES:3070               | Marine Ecosystems and Conservation                 | 3     |
| SEES:3080               | Introduction to Oceanography                       | 2     |
| SEES:3095               | Field Ecology                                      | 4     |
| SEES:3315               | Ecosystem Ecology                                  | 4     |
| SEES:3350               | Urban Ecology                                      | 3     |
| SEES:3360               | Soil Genesis and Geomorphology                     | 3     |
| SEES:4110               | Global Biogeochemical Cycles                       | 3     |
| SEES:4470               | Ecological Climatology                             | 3     |
| SEES:4600               | Biogeography, Ecology, and Conservation of Mammals | 4     |

Iowa Lakeside Laboratory course (prefix IALL)  
approved by advisor