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 69–75 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.

In planning coursework, students should be guided by the College of Liberal Arts and Sciences maximum hours rule: students earning a BS may apply a maximum of 56 s.h. earned in one department to the minimum 120 s.h. required for graduation, whether or not the coursework is accepted toward requirements for the major; students who earn more than 56 s.h. from one department may use the additional semester hours to satisfy requirements for the major (if the department accepts them), and the grades they earn become part of their grade-point average, but they cannot apply the additional semester hours to the minimum 120 s.h. required for graduation.

Students who are earning two majors from the same department (e.g. a BS in geographical and sustainability sciences and a BA in environmental policy and planning), two degrees from the same department (e.g. a BS in geographical and sustainability sciences and a BA in earth and environmental science), or a major and a minor from the same department (e.g. a BS in geographical and sustainability sciences and a minor in environmental policy and planning) may apply more than 56 s.h. from their home department toward their degree, but they must earn at least 56 s.h. of credit in courses outside their home department in order to graduate.

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

Requirements	Hours
Foundation Courses	27-28
Track Requirements	42-47

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 (sustainability science track students may not select this option)	3
SEES:2374/ BIOL:2374	Biogeography	3
SEES:2930	Water Resources	3
SEES:2950	Environmental Conservation (sustainability science track students may not select this option)	4
SEES:3320	Earth's Climate System	3
One of these:		
SEES:1090	Globalization and Geographic Diversity	3
SEES:2110/ GHS:2110	Eight Billion and Counting: Introduction to Population Dynamics (sustainability science track students may not select this option)	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/ DATA:3200/ 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/ IGPI:3050	Geospatial Programming	3
SEES:3500/ IGPI:3500	Introduction to Environmental Remote Sensing	3

SEES:3520/ IGPI:3520	GIS for Environmental Applications	3
SEES:3540/ IGPI:3540	Geographic Visualization	3
SEES:4010	Field Methods in Physical Geography	3
SEES:4580/ IGPI:4581	Introduction to Geographic Databases	3
Two of these:		
SEES:3570	Light Detection and Ranging (LiDAR): Principles and Applications	3
SEES:4150/ GHS:4150/ IGPI:4150	Health and Environment: GIS Applications	3
SEES:4500/ IGPI:4500	Advanced Remote Sensing	4
SEES:4520/ 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	4
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/ DATA:3200/ IGPI:3200/ISE:3760	Applied Linear Regression	3
STAT:3510/ IGPI:3510	Biostatistics	3

Society, Environment, and Sustainability Elective Courses

Course #	Title	Hours
At least one of these:		
SEES:3090/ GHS:3070	Hungry Planet: Global Geographies of Food	3
SEES:3110/ GHS:3111	Geography of Health	3
SEES:3315	Ecosystem Ecology	4
SEES:3340	Ecosystem Services	3
SEES:3350	Urban Ecology	3
SEES:3760/ GHS:3760	Hazards and Society	3
SEES:3920/ 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/ URP:4750	Environmental Impact Analysis	3
SEES:4770/ AFAM:4770/ GHS:4770	Environmental Justice	3

Sustainability Science Track

Students in the sustainability science track complete 24—26 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/ BUS:2013/ URP:2013	Introduction to Sustainability	3
SEES:2110/ 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/ AFAM:4770/ GHS:4770	Environmental Justice	3
POLI:2417	Comparative Environmental Policy	3
One of these:		
SEES:2673/ 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/ 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/ GHS:3300	Sustainable Development	3
SEES:3780/ GHS:3780/ HIST:3240/ POLI:3431	U.S. Energy Policy in Global Context	3
SEES:3920/ URP:3001	Planning Livable Cities	3
SEES:4750/ URP:4750	Environmental Impact Analysis	3
SEES:4770/ AFAM:4770/ 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/ 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/ IGPI:3500	Introduction to Environmental Remote Sensing	3
SEES:3520/ 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/ GHS:4150/ IGPI:4150	Health and Environment: GIS Applications	3
SEES:4500/ IGPI:4500	Advanced Remote Sensing	4
SEES:4520/ IGPI:4520	GIS for Environmental Studies: Applications	3

Natural Systems Elective Courses

Course #	Title	Hours
At least one of these:		
SEES:2673/ BIOL:2673	Ecology	3
SEES:3070	Marine Ecosystems and Conservation	3
SEES:3080	Oceanography	3
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