

EARTH AND ENVIRONMENTAL SCIENCE

Overview

The Department of Earth and Environmental Science is responsible for BS and BA majors in Environmental Science and Geology, as well as minors in both disciplines, the Environmental Sustainability Certificate, and Aquitas Fellowship Program in Sustainability.

Environmental Science Major

In the Environmental Science Program at Wheaton College students learn the science and service of environmental stewardship, and the understanding and care of God's physical creation. Through acts of scholarship and service, students and faculty protect environmental systems, inform the global church, and influence society and culture to make appropriate responses of stewardship that reflect creation care.

The core curriculum covers four broad areas of environmental science:

- the interdisciplinary foundation and issues of environmental science in the core natural sciences,
- the technical skills needed to assess environmental problems and develop and implement solutions
- the environmental and social science connections inherent to environmental problems,
- professional development through practical experiences in environmental study, management and research as expressions of service to God, other human beings, and creation.

These thematic areas are infused with a Biblical theology of creation care and stewardship.

Students select, in consultation with their academic advisor, elective environmental science courses that complement their individual interests. These electives provide more advanced expressions of theory and practice in lectures, discussions, laboratory, field experience, and environmental research. This curriculum prepares students not only to be an effective servant as an environmental professional, but to become an agent of transformation of the professional culture of environmental science in ways that increase Christian influence and expression in this field.

Field science experience is a key component of preparation for an environmental vocation. Environmental Science majors will participate in at least one field intensive course. Most Environmental Science majors complete this requirement by studying at the Wheaton College Science Station in the Black Hills of South Dakota the summer after their freshman or sophomore year. Wheaton in the Black Hills completes two of the Core Requirements for the major as well as satisfying the field-intensive course requirement. Upon completion of a summer of study in the Black Hills Environmental Science students are eligible to apply for internship and research positions at the Science Station in following years. Participation in a HNGR internship or a semester abroad at the International Sustainable Development Studies Institute are other ways to meet the field requirement of the major and complete the major elective requirements. There are additional opportunities for off campus field studies including the Au Sable Institute (Michigan) and the Woods Hole Marine Biological Laboratory (Massachusetts). A field intensive

course will be at least 2 weeks of full-time study, or the equivalent, in a rural or remote natural environment.

An internship or research experience is a distinctive requirement for Environmental Science students at Wheaton College. Internships can be completed with private, governmental or non-profit organizations. With appropriate planning and coordination students may complete their internship through the Human Needs and Global Resources (HNGR) program, Urban Studies Program, or other approved experiential learning semester experience. Research experiences can be completed in collaboration with Wheaton faculty on campus or at field locations. While the Environmental Science program will provide assistance and direction, it is the student's responsibility to arrange and obtain approval for their internship or research experience.

Students who complete an Environmental Science major are granted a Bachelor of Science degree unless they request a Bachelor of Arts degree.

Environmental Science Honors Program

Students who wish to graduate with Honors in Environmental Science must apply for the program at least one year prior to their intended graduation and must meet program criteria at the time of application. Students will complete ENVR 499 Environmental Science Honors Research (4 credit hours total) in their senior year. This course will require research conducted with a Wheaton professor, attendance at weekly meetings, and completion of a thesis. All students will present their honors research in a symposium-like setting at the end of the spring semester. The departmental honors designation will appear on a student's transcript and on the printed program at graduation. All honors theses will be kept in the Earth and Environmental Science Department and in the College library.

Geology Major

Geology education at Wheaton College prepares students for professional engagement as geoscientists and informed societal participation in a world of expanding knowledge, diminishing natural resources and rapid environmental change, that is motivated by our passion for what God has created and by our commitment to biblical principles of creation care.

The department's geology courses offer the student a general knowledge of the earth, its structure, composition, internal and external processes, and past history. Emphasis is placed upon field and laboratory investigation directed towards development of useful skills and a grasp of basic theoretical and working concepts. Field courses include eight weeks of study during a summer at the Wheaton College Science Station in the South Dakota Black Hills. The Geology major prepares students for advanced graduate study in the geosciences or range of employment opportunities including natural resource development, environmental management, and education.

The Geology major has two options available leading to either a Bachelor of Science degree or a Bachelor of Arts degree. Both degrees require a core of geology courses plus supporting courses in other science disciplines and mathematics.

Geology Honors Program

Students who wish to graduate with Honors in Geology must apply for the program at least one year prior to their intended graduation and must meet program criteria at the time of application. Students will complete GEOL 499 Geoscience Honors Research (4 credit hours total) in their

senior year. This course will require research conducted with a Wheaton professor, attendance at weekly meetings, and completion of a thesis. All students will present their honors research in a symposium-like setting at the end of the spring semester. The departmental honors designation will appear on a student's transcript and on the printed program at graduation. All honors theses will be kept in the Earth and Environmental Science Department and in the College library.

Faculty

Chair, Professor Stephen O. Moshier

Professors Chris Keil, Laura S. Meitzner Yoder

Assistant Professors Andrew Luhmann, Kathryn Maniero

Instructor Lisa Heidlauf

Lab Coordinator Katy Foltz

Programs

- Geology, Bachelor of Science (<https://catalog.wheaton.edu/undergraduate/arts-sciences/earth-environmental-science/geology-bs/>)
- Geology, Bachelor of Arts (<https://catalog.wheaton.edu/undergraduate/arts-sciences/earth-environmental-science/geology-ba/>)
- Geology Minor (<https://catalog.wheaton.edu/undergraduate/arts-sciences/earth-environmental-science/geology-minor/>)
- Environmental Science Major (<https://catalog.wheaton.edu/undergraduate/arts-sciences/earth-environmental-science/environmental-science-major/>)
- Environmental Science Minor (<https://catalog.wheaton.edu/undergraduate/arts-sciences/earth-environmental-science/environmental-science-minor/>)
- Environmental Sustainability Certificate (<https://catalog.wheaton.edu/undergraduate/arts-sciences/earth-environmental-science/environmental-sustainability-certificate/>)
- Aequitas Fellowship Program in Sustainability (<https://catalog.wheaton.edu/undergraduate/arts-sciences/earth-environmental-science/aequitas-fellowship-program-sustainability/>)

Courses

See the Financial Information (<https://catalog.wheaton.edu/financial-information/>) section of this catalog for course fees.

Geology Courses

GEOL 201. Exploring the Dynamic Earth - Field. (4 Credits)

Introduction to geoscience in the field, focus on geological history of the SD Black Hills through on-site study of rocks, minerals, fossils, and earth processes as seen in rock strata, folds, faults, mountains, mines and other human impacts on the environment. Emphasis on field excursions and data collection procedures (topographic and geologic maps, sample collection, and feature interpretations). "Indoor" lab work supports the fieldwork. Offered only at the Wheaton College Science Station.

Tags: SP

GEOL 206. Geology of National Parks - Field. (4 Credits)

This course utilizes national parks, monuments, and forests to introduce students to geologic processes, cycles, and systems in a field context. Students will visit and directly observe the geology of national parks, monuments, and forests during extensive fieldwork. Potential field excursions include visits to Yellowstone, Grand Tetons, Wind Cave, and Badlands National Parks as well as national monuments and forests, such as Mount Rushmore, Devils Tower, and Jewel Cave. Additionally, students will design and perform field experiments in analog systems within the Black Hills region and utilize Google Earth to collect geologic data directly for national parks. Students also have the opportunity to consider the historical, social, governmental policy, environmental management, and theological implications of wilderness and natural areas and to engage with claims about the age of the Earth. Offered at the Wheaton College Science Station.

Tags: SP

GEOL 211. Exploring the Dynamic Earth. (4 Credits)

Introduction to the physical properties and processes of the Earth with special emphases on the current practice of geology and its significant contributions to humans and the environment. Topics are presented in the plate tectonic framework to include minerals and rocks, igneous activity, earthquakes, rivers, ground water, glaciers, and energy and mineral resources. Three and a half hours lecture and two hours laboratory per week. Field trip fee.

Tags: SP

GEOL 212. The Dynamic Earth and Environment. (4 Credits)

Introduction to the processes, cycles and systems of earth and environment. Special emphasis on human dependence upon earth's physical properties and processes and the environmental impacts of human activity. Plate tectonics and environmental systems provide frameworks for understanding earth materials and structures, global change, natural hazards (volcanoes, earthquakes, floods), water resources (surface and ground water, glaciers), biological/agricultural resources, energy and mineral resources, and associated environmental hazards. Explorations of biblical creation accounts and environmental stewardship relevant to course topics. Three and a half hours lecture and two hours laboratory per week. Field trip fee.

Tags: SP

GEOL 232. Environmental Geochemistry. (4 Credits)

Solutions; kinetics; chemical equilibrium; acid/base chemistry; carbonate chemistry; oxidation/reduction chemistry; carbon, nitrogen, phosphorous and sulfur cycles; surface chemistry; atmospheric chemistry; chemical weathering and soils; environmental mineralogy; diagenesis; organic geochemistry; radiogenic isotopes; stable isotopes. Three and a half hours lecture and three hours laboratory per week. Field trip fee and lab fee. Alternate years. Prerequisite: GEOL 201 or GEOL 211 or GEOL 212 or ENVR 212; and CHEM 231.

GEOL 307. Water: the Essential Natural Resource. (4 Credits)

An overview of our most important natural resource - water. Topics include occurrence, chemistry, physiological requirement for water effects upon past and present civilizations, surface and groundwater flow, global water supply, water pollution, water exploration and extraction. Field trip fee.

Tags: SIP

GEOL 308. Energy & Climate Change. (4 Credits)

New catalog description for your consideration: Climate science basics including Earth systems interactions between sun, land, sea, air and life that control climate conditions. Review of climate change in Earth history and the influence of human activity on climate. Introduction to methods for documenting climate conditions past and present for monitoring change and application of data to models for predicting global change. Overview of international efforts to monitor and mitigate global change and shift energy production from fossil fuels to renewable sources. Review of history, science, economics and policy of energy resources from the industrial revolution to future technologies.

Tags: SIP

GEOL 321. Earth History and Stratigraphy. (4 Credits)

Basic principles of interpreting Earth history: geologic time, stratigraphic analysis, reconstructing past environments. Actualism, catastrophism and engagement with Christian theology in the historical development of geology. Overview of Earth history including origin of Earth-Moon, history of life, stratigraphic record and tectonic activity. Three hours lecture, two hours laboratory. Prerequisite: GEOL 211 or ENVR-GEOL 212. Additional course fee required: \$25 lab, \$120 field trip.

Tags: SIP

GEOL 332. Studies In Regional Geology. (1 or 2 Credits)

Geologic study in the field of a selected region during an excursion over spring vacation or in May following commencement. Learning emphasis is on structural and stratigraphic framework, interpretation of geologic history, and natural resources of the region. Assignments include background readings, participation in discussions in the field, and preparation of field notes. Field trip fee varies by destination. (1 or 2 credit hrs, repeatable for a max. of 4) Prerequisite: GEOL 201 or GEOL 211 or GEOL 212 or ENVR 212.

GEOL 336. Process Geomorphology. (4 Credits)

The study of earth surface processes and the landforms they produce in the context of engineering and environmental applications. Topics include processes and landforms associated with: weathering, mass wasting, rivers, karst, neotectonics, glaciers, shorelines, and wind. Individual project and laboratory assignments required, including qualitative descriptions and quantitative measurements from topographic and geologic maps, and aerial photographs. Three and a half hours lecture and three hours laboratory per week. Field trip fee and lab fee. Alternate years. Prerequisite: GEOL 201 or GEOL 211 or GEOL 212 or ENVR 212.

GEOL 341. Quantitative Methods for Environmental Analysis and Problem Solving. (4 Credits)

Mathematical approaches to quantitatively describe, analyze, and understand environmental processes. Descriptive and inferential statistical techniques and numeric modeling are used to address environmental problems. Emphasis is on applications of the methods to practical problems and the use of computer resources. Three and a half hours lecture and two hours laboratory per week. See ENVR 341.

GEOL 343. Fundamentals of Mineral Science. (2 Credits)

A brief survey of theory and applications in mineralogy. Emphasis is on chemical classification, modes of occurrence, modern techniques of mineral identification, and utility. Three and a half hours lecture and two hours laboratory per week. Lab fee. Alternate years. Prerequisite: GEOL 201 or GEOL 211 or GEOL 212 or ENVR 212.

GEOL 344. Igneous and Metamorphic Petrology. (4 Credits)

The study of igneous and metamorphic rocks along with related topics in high-temperature geochemistry. Lecture sessions present petrogenesis and classification within the context of different plate tectonic settings. The emphasis is on topics such as magmatic melting and crystallization processes; the role of temperature, pressure, and fluids; thermodynamics; and isotope and trace element geochemistry. Laboratory projects include the identification and observation of rock types and their variation, quantitative use of thermodynamics and geochronology, and the significance of rock fabrics as observed in hand specimen and thin section. Three and a half hours lecture and three hours laboratory per week. Field trip fee and lab fee. Alternate years. Prerequisite: GEOL 343; GEOL 232 recommended.

GEOL 345. Sedimentary Geology. (2 Credits)

Description and interpretation of sedimentary rocks with emphasis on field content. Topics include classifications, sediment provenance, application of depositional facies models, diagenesis, basin analysis, and natural resources. Methods include field techniques and petrographic analysis of thin sections. Generally taught at the Wheaton College Science Station. Alternate years, SU. Prerequisite: GEOL 201 or GEOL 211 or GEOL 212 or ENVR 212; GEOL 321 recommended.

GEOL 355. Introduction to Soil Science. (2 Credits)

Basic survey including the origin and properties of soils, their classification and applications to agriculture, third world development, engineering, environmental issues. Laboratory and field experiences will provide opportunities to observe soil profiles and measure physical properties. Three and a half hours lecture and two hours laboratory per week. Field trip fee and lab fee. Offered irregularly.

GEOL 365. Physics of the Earth. (2 Credits)

Principles and applications of geophysics related to the study of the Earth's deep interior and geophysical prospecting. Topics include earthquake seismology, Earth's gravity, shape, magnetism, paleomagnetism, heat flow, temperature, and geodynamics. Also applied methods of seismic reflection and refraction, gravimetry, magnetism, electromagnetism, and resistivity. Three and a half hours lecture and two hours laboratory per week. Lab fee. Offered irregularly. Prerequisite: one four-hour physics laboratory course.

GEOL 371. Introduction to Geographic Information Systems. (2 Credits)

The hardware and software technology of GIS programs. Basic concepts of spatial data collection, storage, processing, and interpretation, combined with remote sensing. Uses the popular GIS software ArcGIS. Three hours lecture, two hours laboratory. Lab fee.

GEOL 372. GIS Practicum. (2 Credits)

Application of GIS methods to student-designed projects. Hardware and software expertise derived from GEOL 371. Two hours directed research, one hour discussion per week. Pre or Corequisite: GEOL 371.

GEOL 385. Topics in Earth Science. (2 or 4 Credits)

Selected topics from the following: economic geology, appropriate technologies, tectonics, and regional studies. Lectures or lecture/laboratory. Prerequisite: GEOL 201 or GEOL 211 or GEOL 212 or ENVR 212.

GEOL 395. Geoscience Research. (1 or 2 Credits)

Field, laboratory, or literature research in the geosciences under faculty direction. Application of data gathering and analysis methods. Communication of results in multiple formats. Prerequisite: Instructor approval.

GEOL 412. Field Geology. (6 Credits)

The comprehensive exercise of geological field techniques and interpretation in the context of western South Dakota and the Rockies. Projects involve the preparation of maps and reports from diverse areas and of varying complexity. Offered only at the Wheaton College Science Station. Alternate years, SU. Prerequisite: GEOL 443.

GEOL 413. Rocky Mountain Geology. (2 Credits)

Field geological study in the northern Rocky Mountains of South Dakota, Montana, and Wyoming. Observation of rock, strata, and structures in classic localities, including Black Hills, Devil's Tower, Big Horn and Bear Tooth Mountains, and Yellowstone and Grand Teton National Parks. Alternate years, SU.

GEOL 437. Hydrogeology. (4 Credits)

Basic processes and measurement of the hydrologic cycle, including: precipitation, evaporation, surface runoff, stream flow, soil moisture, and groundwater. Emphasis placed on groundwater, including: geology of occurrence, principles of flow, conceptual models of regional flow, chemistry and quality, well hydraulics, aquifer characteristics, resource development, detection of pollutants, and contaminant transport. Three and a half hours lecture and three hours laboratory per week. Field trip fee and lab fee. Alternate years. Prerequisite: GEOL 201 or GEOL 211 or GEOL 212 or ENVR 212.

GEOL 443. Structural Geology. (4 Credits)

Architecture of the dynamic earth. Earth movement and deformation in the context of plate tectonics. Laboratory simulation of stress and strain, study of deformed rocks, and interpretation of geologic maps; measurements and computations. Three and a half hours lecture and three hours laboratory per week. Field trip fee and lab fee. Alternate years. Prerequisite: GEOL 344.

GEOL 494. Senior Seminar for Geology Majors. (2 Credits)

Integration seminar for seniors or for juniors who have completed most geology requirements. Reading and discussion of history and philosophy of geological science and critical reflection of student's experience in Christian liberal arts education, understanding of vocation and ethical considerations of practice. Prerequisite: Completion of 16 credit hrs of GEOL courses.

General Education: SHAR

GEOL 495. Geoscience Independent Study. (2 to 4 Credits)

Field, laboratory or library research involving selection of a research problem, review of appropriate professional literature, completion of data collection and analysis, and preparation of a written report. Student will be encouraged to present results in an appropriate professional venue. Requires direct supervision and mentoring by geoscience faculty. Prerequisites: consent of instructor and department chair.

GEOL 496. Internship. (1 to 4 Credits)

Supervised off-campus experience with departmental approval. Graded pass/fail. Prerequisite: junior or senior standing with Geology or Environmental Studies major. (credit variable)

GEOL 499. Geoscience Honors Research. (1 to 4 Credits)

An independent project providing original geoscience research developed in a written honors thesis and culminating in an oral examination. Partially fulfills requirements for an honors degree in geoscience. Additional requirements are available in the Geology and Environmental Science office or on the department web page. Prerequisite: Acceptance to the Geoscience Honors program.

Environmental Science Courses

ENVR 212. The Dynamic Earth and Environment. (4 Credits)

Introduction to the processes, cycles and systems of earth and environment. Special emphasis on human dependence upon earth's physical properties and processes and the environmental impacts of human activity. Plate tectonics and environmental systems provide frameworks for understanding earth materials and structures, global change, natural hazards (volcanoes, earthquakes, floods), water resources (surface and ground water, glaciers), biological/agricultural resources, energy and mineral resources, and associated environmental hazards. Explorations of biblical creation accounts and environmental stewardship relevant to course topics. Three and a half hours lecture and two hours laboratory per week. Field trip fee.

Tags: SP

ENVR 221. Living in the Environment: An Introduction to Environmental Science. (4 Credits)

An introduction to the historical and contemporary problems and dilemmas faces as humans live in and interact with the environment. The scientific basis, cultural causes, social implications, ethical dimensions, and avenues for constructive response are addressed. Three lectures, three hours laboratory. Lab fee and field trip fee.

Tags: SP

ENVR 231. Environmental Law, Justice, and Development. (2 Credits)

Exploration of the effects of development on patterns of material use and waste release. Analysis of unsustainable practices and the resulting resource depletion and pollution production. Approaches to regulating environmental impacts. The disproportionate burden of resource loss and toxic emission on vulnerable populations is emphasized.

ENVR 305. Environmental Ethics. (4 Credits)

Tags: PI, SIP

ENVR 315. Nature, Environment & Society. (4 Credits)

An exploration of contemporary environmental issues and problems. The understanding of the natural world will support the analysis of the role of society in creating, perpetuating and addressing these challenges. The role of personal and cultural responsibility for stewarding the natural environment will be emphasized. Field and classroom investigations will focus on the Black Hills context.

Tags: SIP

ENVR 325. The Global Commons: International Issues in Environmental Science. (4 Credits)

An examination of environmental issues and challenges around the globe. The scientific principles needed to understand and characterize the problems will be covered as well as the economic, political, historical and cultural factors that drive the development of the problems. Attention will be given to integrated and holistic approaches to addressing environmental challenges. Prerequisite: SP course.

Tags: GP, SIP

ENVR 332. Principles of Environmental Sustainability. (4 Credits)

An introduction to principles of environmental sustainability. This includes natural scientific, cultural and economic foundations. Practical applications as embedded in social, legal, historical and political contexts will be emphasized. Odd numbered summers. Black Hills campus. Runs concurrently with ENVR 333.

ENVR 333. Environmental Sustainability Practicum. (4 Credits)

A practicum based experience focuses around the implementation of sustainability practice technology, on the Science Station campus. Students will research, plan, and implement one project over the course of the summer. Odd numbered summers. Black Hills campus. Runs concurrently with ENVR 332.

ENVR 341. Quantitative Methods for Environmental Analysis and Problem Solving. (4 Credits)

Mathematical approaches to quantitatively describe, analyze, and understand environmental processes. Descriptive and inferential statistical techniques and numeric modeling are used to address environmental problems. Emphasis is on applications of the methods to practical problems and the use of computer resources. Three and a half hours lecture, two hours laboratory per week.

Tags: AAQR

ENVR 371. Introduction to Geographic Information Systems. (2 Credits)

The hardware and software technology of GIS programs. Basic concepts of spatial data collection, storage, processing, and interpretation, combined with remote sensing. Uses the popular GIS software ArcGIS. Three hours lecture, two hours laboratory. Lab fee.

ENVR 381. Environmental Pollution and Toxicology. (4 Credits)

A study of the sources, environmental and human health impacts, and regulatory and engineering control of environmental pollution. Air pollutants, surface and groundwater pollutants, solid waste and hazardous waste will be covered. Human health impacts will be studied from a toxicologic and epidemiology basis. Measurement techniques will be covered in lab sessions. Three lectures, three hours laboratory. Lab fee. Prerequisite: Laboratory science (SP) course.

ENVR 395. Independent Studies in Environmental Science. (2 to 4 Credits)

Field, laboratory and literature research under faculty direction. Application of data gathering and analysis methods. Communication of results in multiple formats. Prerequisite: Instructor approval.

ENVR 422. Sustainable Agriculture. (2 Credits)

This course provides an overview of the intersections among food production, environmental capacity, culture, economics, and governance. We will examine biophysical and human systems. Global and majority world applications and issues will play a prominent role in the course. Prerequisite: SP course

ENVR 432. Introduction to Environmental Engineering. (4 Credits)

Environmental engineering applies science and mathematics to identify problems and develop solutions that protect people from pollution in various forms, safeguards public health, and improves environmental quality. This course will take an algebra-based approach to introduce students to engineering principles and practices used in water resources management, water supply and treatment, wastewater treatment, air pollution management and solid waste management. A sustainability theme will run throughout the course, as will considerations for both domestic and international applications. Prerequisite: SP course.

ENVR 494. Environmental Science Capstone. (2 Credits)

A culminating experience for environmental science students' college career. Topics from across the breadth of the curriculum are integrated with environmental issues. Students explore the role of their liberal arts education and the practice of environmental stewardship as part of a personal and professional vocation. Prerequisites: ENVR 495 or 496, or permission of instructor.

General Education: SHAR

ENVR 495. Environmental Science Research. (2 to 4 Credits)

Field, laboratory, or library research involving selection of a research problem, review of appropriate professional literature, completion of data collection and analysis, and preparation of one or more professional papers submitted for presentation or publication in an appropriate professional venue. Requires direct supervision and mentoring by the program director of Environmental Science or faculty approved by the director.

ENVR 496. Environmental Science Internship. (2 to 4 Credits)

An extended and concentrated experience in research, management, or education in environmental science under approved professional supervision and college guidelines. Prerequisites: Sophomore standing or higher and approval by the program director of Environmental Science.

ENVR 497. Environmental and Conservation Science Research Seminar. (1 Credit)

A weekly seminar featuring presentations of on-going primary research on problems of environmental and conservation studies in the natural and social sciences. Graded pass/fail. One hour per week. Prerequisites: Sophomore standing or higher.

ENVR 499. Environmental Science Honors Research. (1 to 4 Credits)

An independent project providing original environmental science research developed in a written honors thesis and culminating in an oral examination. Partially fulfills requirements for an honors degree in environmental science. Additional requirements are available in the Geology and Environmental Science office or on the department web page. Prerequisite: Acceptance to the Environmental Science Honors program.

Aequitas Fellowship Program in Sustainability Courses

AQTS 131. Introduction to Aequitas Sustainability. (2 Credits)

This course welcomes students to the Aequitas Fellowship Program in Sustainability by providing an introduction to program themes and asking students to begin developing a personal ethic of creation care. In this first course, students will examine the choices that they personally control and the potential impact if individuals make choices with sustainability in mind. Students will examine their personal habits and consumption before working to implement a change guided by the pillars of sustainability. Class discussions will focus on the theological and practical motivations for embracing a personal ethic of creation care and students will begin the work of articulating a personal ethic of creation care that will extend throughout the Aequitas Sustainability program. This class will meet for two hours, once per week in student's first semester at Wheaton. (Open to Aequitas Fellowship Program in Sustainability students only)

AQTS 231. Aequitas Reading Group in Sustainability. (1 Credit)

This class serves as a reading group for the Aequitas Fellowship Program in Sustainability. Students will take this course twice – once in the fall and once in the spring. Each semester students will read and discuss three different books with themes related to sustainability, environmental justice and activism, and Christian environmental ethics. Students will also be given the opportunity to participate in a field trip or event that relates to one of the readings each semester. This class will meet for one hour, once per week each semester.

AQTS 331. Aequitas Cohort Project in Sustainability. (1 Credit)

This course prepares students to identify systems, infrastructure, or community practices that fail to meet the definition of sustainability and propose viable, alternative solutions. Students will work in groups to identify opportunities for sustainable growth at Wheaton College or with a community partner. In the fall semester, student groups will prepare and present competing proposals highlighting potential solutions that align with the three pillars of sustainability and quantifying the potential costs and impacts. In the spring, the cohort will work cooperatively to forward the winning proposal toward implementation. This implementation effort may require students to install an infrastructure change, write a grant, lead a student education campaign, work with student government or student groups, or require other creative forms of engagement. This class will meet for one hour, once per week each semester.

AQTS 332. Service Learning in Sustainability. (2 Credits)

This service learning experience prepares students to identify systems, infrastructure, or community practices that fail to meet the definition of sustainability and propose viable, alternative solutions. Students undertake service learning hours as a volunteer with a Wheaton College student organization relating to sustainability or work with a sustainability-related non-profit organization approved by the theme director. Students must work on a sustainability proposal and implementation of a sustainability-related project with the chosen organization and document their hours worked.

AQTS 431. Aequitas Leadership in Sustainability. (0 Credits)

This class serves as a 0-credit record-keeping course to mark the completion of Aequitas Sustainability fellows' independent projects. Students may fulfill this experience requirement by: (a) doing research work with a faculty member or other scholar focused on sustainability themes; (b) holding a major sustainability leadership position at Wheaton, such as being EVP of Sustainability or President of the Garden Prairie Project; (c) completing an extension of a project from an elective, sustainability-related course; (d) installation of a community art project, presentation of a senior recital or senior art show, or performance of a theatrical production with sustainability themes; (e) completion of a HNGR independent project with sustainability themes; (f) providing leadership for the cohort project of the next class of Aequitas Sustainability Fellows; or (g) other experiences with the approval of the cohort coordinator. The purpose of the experiential requirement is to help students connect their major program of study with the themes of sustainability and to demonstrate leadership in the implementation of sustainable solutions or education of others surrounding sustainable themes. Graded Pass/Fail.