

Sustainability Course Inventory (AY 2018-19)

last revised 12.06.2018 B. Haney

Courses on Sustainability

Regular Term

BIOL-160	Ecology and Evolutionary Biology	Biology 160 describes the characteristics of healthy ecosystems, ways ecosystems and ecological processes are threatened, and steps that can be taken to maintain or restore ecological processes.
BIOL-364	Global Health, Environment, & Sustainability	Students examine contemporary societal challenges around sustainability.
ECON-232	Sustainability Economics	Students examine contemporary societal challenges around sustainability.
ECON-233	Economics of Energy and Sustainability	Students examine the relationship of energy to the economy through the lens of sustainability.
ENST-210	Human Impacts on Environment	Students examine contemporary societal challenges around sustainability.
ENST-302	Environment and Society	Students examine contemporary societal challenges around sustainability.
SCES-122	Science Content and Skills for Elementary Teachers	This course addresses issues related to sustainability, such as the interconnectedness of factors in an ecosystem, fragmentation, global climate change, and associated human responsibility as it relates to care for the natural world.
ENGR-184	Sustainability Challenges	This course examines the challenges to achieving sustainability in three areas: economic, social, and environmental.
ENGR-384	Analysis of Sustainability Engineering Systems	This course analyzes the effectiveness of proposed sustainability engineering systems and methods to obtaining that goal in three areas: economic, social, and environmental.
GEO-352	Urban Planning for Sustainable Communities	Students examine complex, contemporary societal challenges around urbanization and sustainability.

Interim

ENGR-W80	Sustainable Energy Systems	Students examine contemporary societal challenges around sustainability.
ENST-395	Seminar in Environ Studies	Students examine contemporary societal challenges around sustainability.
PHIL-W10	Peaceable Kingdom: Transforming Our Relationships with Animals	Students examine contemporary societal challenges around sustainability.

Courses with a Sustainability Component

Regular Term

ARTE-315	Elementary Art Education	Students examine aspects of art education in relation to society and the environment.
ARTE-316	Secondary Art Education	Students examine aspects of art education in relation to society and the environment.
BIOL-123	Living Systems	Students examine the ecosystem in relation to society and contemporary societal challenges.

BIOL-230	Physiological Systems	Interrelationships between plants and soils are presented and ways in which plants of various photosynthetic systems respond to temperature, carbon dioxide and precipitation variation are developed.
BIOL-250	Research Design & Methodology	Students examine the ecosystem in relation to society and contemporary societal challenges.
BIOL-332	Plant Physiology	Interrelationships between plants and soils are developed, physiological ecology of individual plant and plant community functions, and ways in which physiological processes of plant types are responding to global climate change.
BIOL-338	Animal Behavior	Impacts of anthropogenic noise on bird communication and nesting success; impacts of habitat loss and fragmentation on animal movement, distribution, and genetic diversity are presented.
BIOL-345	Ecosystem Ecology & Mgmt	Students examine the ecosystem in relation to society and contemporary societal challenges.
BIOL-346	Plant Taxonomy	Students examine the ecosystem in relation to society and contemporary societal challenges.
BIOL-395	Perspectives in Biology	Students develop an ethics-centered thesis paper and presentation on a biological issue of their choice.
BUS-360	Management and Org. Behavior	This course helps students develop an integrated understanding of management based on God's revelation in creation and His Word.
BUS-362	Ethics in Business	It familiarizes business students with three key knowledge areas, current legal stipulations for business conduct, normative frameworks for evaluating actions or policies, and systems and techniques for promoting ethical behaviors and overcoming rationalizations for misbehavior.
BUS-365	Human Resource Management	The emphasis is placed on respect, integrity and the inherent dignity of human beings and how business can create opportunities for individuals to express their vocation in the performance of God-glorifying work.
BUS-366/PSYC-	Adv Topics in Human Resources	The principles of industrial and organizational psychology and human resource management are applied to current topics including employee socialization and employee attitudes and behaviors.
BUS-380	Marketing	It studies the distribution of ideas, goods, services, experiences, and values that attempts to satisfy individual and organizational needs.
BUS-382	Consumer Behavior	Students explore the various ways consumer choices can affect the environment.
CHEM-103	General Chemistry I	The course is taught from a biblical and reformed world-view and addresses the issues of water, climate, energy and food and the human responsibility for applying chemical knowledge to better care for natural resources.

CHEM-103H	General Chemistry I - Honors	The course is taught from a biblical and reformed world-view and addresses the issues of water, climate, energy and food and the human responsibility for applying chemical knowledge to better care for natural resources.
CHEM-105	Chemical Principles	The course is taught from a biblical and reformed world-view and addresses the issues of water, climate, energy and food and the human responsibility for applying chemical knowledge to better care for natural resources.
CHEM-105H	Chemical Principles - Honors	The course is taught from a biblical and reformed world-view and addresses the issues of water, climate, energy and food and the human responsibility for applying chemical knowledge to better care for natural resources.
CHEM-271	Environmental Chemistry	It has a special focus on environmental problems arising from the activities of humans, including study of acid precipitation, greenhouse gases, water and soil pollution, and risk assessment all presented within the context of a Christian view of humans and nature.
CHEM-295	Chemistry Seminar	Numerous speakers every semester intentionally educate on and promote issues of sustainability.
CS-112	Intro to Data Structures	Advanced programming techniques such as indirection, inheritance and templates are introduced, along with an emphasis on algorithm analysis, efficiency and good programming style.
CS-374	High Performance Computing	A study of architectures, algorithms and programming techniques that help minimize the execution times of computer programs.
ECON-221	Principles of Microeconomics	Topics include the role of the government in the economy and environmental impact of economic activities.
ECON-222	Principles of Macroeconomics	It includes study of business investment, government spending, taxation, monetary policy, unemployment, and inflation and its effect on global and intergenerational equity.
ECON-236	Emerging Economies: BRIC	Students will consider how legal, technological, political, and cultural environments influence economic and business relations between countries.
ECON-241	Health Econ & Health Policy	Topics include efficiency and equity of resource allocation, ethical perspectives on health care access, history and current direction of U.S. and international health care policy.
ECON-330	Urban Growth and Development	Students examine the ecological footprint of various models of urban life.
ECON-337	Wrld Poverty & Econ Devel	The course considers the impact of poverty, economic growth, and government interventions on the poor and future generations
ECON-339	Government Finance & Public Policy	Students examine the impact of taxation and zoning on the ecological footprint of the economy.
EDUC-302	Curriculum & Instruction for Diverse Learners	Pre-service teachers engage in experiential education, partnering with Plaster Creek Stewards and four 8 th grade classes from two West MI schools, one upstream the other downstream. A total of five class hours are spent in field-based training and stream-health data collection.

EDUC-398	Education Capstone	This course includes a unit on sustainability related to classroom material use and schools' environmental impact.
ENGL-230	Understanding Literature / Environmental Literature	First, literature invite us to linger in imaginary worlds, to slow down, to think more deeply about ourselves, our relationships, our God, and the real world in which we live. It helps us imagine—and come to love—forgotten, impossible, and wonderful places. As John Calvin said, "“there is not part of the world so small that at least some spark of God’s glory does not shine there.” Second, environmental literature explores ideas, actions, and moral decision-making as these relate to issues raised by environmental and creation care movements. Third, literature
ENGL-395	Senior Seminar (Felch)	Senior Seminar asks students T to think about four issues: their training as a wordsmith at Calvin College; the challenges of contemporary culture; the Christian tradition; and their own vocation. Environmental justice and creation care are woven into many of the works we study, but particularly come to the fore in Anne Dillard’s <i>Holy the Firm</i> , which examines the faithful life within the context of creation and suffering.
ENGR-101	Intro to Engineering Design	Students discuss engineering design norms, including the norm of stewardship.
ENGR-205	Principles of Materials Science	Students develop understanding of material properties, including sustainability factors that influence engineering design
ENGR-209	Introduction to Conservation Laws and Fluid Mechanics	This class is a survey in many domains of issues related to sustainability.
ENGR-294	Engineering Seminar	Some seminars focus on sustainability issues.
ENGR-303	Chem Engr Prncples/Thrmodynamics	Some lectures focus on sustainability issues.
ENGR-305	Mechanics of Materials	Understanding material strengths and how material fail allows for design which minimizes the use materials, allows for optimal material choices, and can work to manage the life cycle impact of the design.
ENGR-306	Prin of Environmental Engring	Students develop understanding of physical, chemical, and biological process used for the preservation and protection of the environment and society
ENGR-308	Environmental Engr Design	Students develop understanding of physical, chemical, and biological process used for the preservation and protection of the environment and society
ENGR-312	Chemical Engr Thermodynamics	Students design systems using physical, chemical, and biological processes for the preservation and protection of the environment and society
ENGR-318	Soil Mechanics&Foundatn Design	Study of soils includes consideration of environmental impact.
ENGR-319	Intro to the Thermal/Fluid Sci	One of the foundational concepts of thermodynamics is to do design with a minimum use of energy.
ENGR-320	Hydraulic Engineering	Groundwater flow topics invovle discussion of water quality
ENGR-321	Hydraulic Engineering Design	Hydrologic modeling includes an emphasis on protecting watersheds
ENGR-324	Matl & Proc in Manufacturing	Students complete a lab experience on life cycle design. Manufacturing processes are compared based on energy use and waste generation.

ENGR-328	Inter. Thermal/Fluids Sci. Des	Energy conversion machines (engines, refrigerators, air-conditioners) are discussed, and sustainability is used as a frame for the entire course
ENGR-330	Fluid Flow and Heat Transfer	Transfer and retention of energy and energy efficiency are discussed in many ways, including building insulation, the concept of thermal mass, heat losses, and heat transfer efficiency.
ENGR-333 ENGR-334	Thermal Systems Design Dynamics of Machinery	Always has a sustainability-related whole-class project A wind turbine gear design project requires students to research wind power contributions to sustainable energy generation.
ENGR-394 GEO-110	Engineering Seminar World Regions	Some seminars focus on sustainability issues. Environmental sustainability is featured covering the principal environmental issues facing each world region covered in the course - Latin America, Sub-Saharan Africa, North Africa & Southwest Asia, Europe, East Asia, South Asia & Southeast Asia.
GEO-120	Earth Systems	Understanding of Earth systems is applied to concepts of stewardship, resource use and wise living with place-based hazards and opportunities.
GEO-181	First-Year Research in Earth Sciences: Dunes	The research-based focus on understanding Great Lakes coastal dunes includes human interactions with dunes, including human impacts, dune management, and stewardship.
GEO-200	People, Place and Community	This course examines the role of humans in the context of their inhabitation of Earth.
GEO-230	The Global Economy	This course includes a section to deepen understanding of the relationship between the economy and environment, structured around <i>The Story of Stuff</i> by Annie Leonard.
GEO-242	Geography of Africa	This course on the geography of Africa includes topical foci and case studies of the challenges of water scarcity, environmental degradation and climate change in sub-Saharan Africa.
GEO-243	The US and World Regions	Environmental sustainability is featured covering the principal environmental issues facing each world region covered in the course - North America, Latin America, Sub-Saharan Africa, North Africa & Southwest Asia, Europe, East Asia, South Asia & Southeast Asia.
GEO-250	Meteorology	Human interactions with atmospheric processes and weather are examined, including weather hazards, air pollution and climate change.
GEO-261	Geographic Information Systems and Cartography	Through mapping and analysis, this course builds on sustainability concepts of agriculture planning, landscape change, built environment, and use of geospatial technologies (GIS, GPS) towards sustainability initiatives such as urban tree inventories. Final projects may be proposed as sustainability focused geographic analysis.
GEO-290	Seminar	Presentations by guest lecturers and students include topics related to sustainability in geology, geography and environmental studies.

GEO-310	Urban Geography	The examination of the spatial organization and systems of cities includes history, infrastructure, economic life, social activities, ethnicities, institutions and politics.
GEO-322	Coastal Geomorphology	Coastal land use and hazards, shoreline management, and coastal stewardship are the focus of classes, labs, field trips and assignments.
GEO-351	City & Regional Planning	Land use planning and zoning, housing and community development, environmental planning, transportation planning, historic preservation and urban design, and other subfields are examined within neighborhood, downtown, suburban, regional and Third World contexts.
GEO-361	Advanced Geographic Information Systems	Through mapping and analysis, this course builds on sustainability concepts of geographic links to climate change with 3D ice monitoring, hydrological modeling, and construction of online mapping systems. Final projects may be proposed as sustainability focused geographic analysis.
GEO-380	Seminar in Geographic Thought	This course explores the development of philosophical thought in geography, including the historical underpinning roots of environmental determinism, globalization, climate effect influence on moral and social development, and humans as a geographic agents. This course helps students understand the conceptual framework of modern sustainability.
GEO-151	Introductory Geology	This course studies the materials and processes of Earth leading to a responsible Christian appreciation for and stewardship of Earth.
HIST-257	The American West	Examines the environmental impact of the development of the American west, particularly as it relates to water resources.
IDS-201	Intro to International Develop	Students examine the interrelationships between economic development, social injustice, and the environment.
IDS-351	Theories of Int'l Development	Students examine the interrelationships between economic development, social injustice, and the environment.
HE-266	Health: Disease, Sub Abuse, and the Environment	Students examine the interrelationships between health, social injustice, and the environment.
NURS-308	Strategies: Community-Based Health	Students examine the interrelationships between health, social injustice, and the environment.
NURS-380	Critical Reflections	Student groups examines critical issues in nursing from different perspectives (ethics, history etc.), including topics in sustainability.
POLS-208	Urban Politics	Students applies course concepts to contemporary societal challenges around sustainability.
POLS-212	American Public Policy	Students applies course concepts to contemporary societal challenges around sustainability.
POLS-214	Governments and Globalization	Students explore political institutions, intrastate conflict, human rights, environmental protection, and social welfare policies from a comparative perspective.
POLS-309	International Organizations and Law	Students applies course concepts to contemporary societal challenges around sustainability.
PUBH-101	Introduction to Public Health	Students examine the interrelationships between health, social injustice, and the environment.

PUBH-248	Epidemiology	Students examine the interrelationships between health, social injustice, and the environment.
PUBH-295	Public Health Seminar	Students examine the interrelationships between health, social injustice, and the environment.
REL-232	Creation and Humanity	It teaches the cultural mandate and the idea of stewardship.
REL-295	Christianity and Culture	It is a critical survey of models by which God's people have defined their relationship to the world, from Biblical times to the present.
REL-332	Theological Ethics	Ethical issues such as war, human sexuality and reproduction, death and dying, and the environment are analyzed in light of theological commitments.
SOC-302	Urban Sociology	It includes an evaluation of the ecological benefits of increased housing density, walkability, biking, mass transit, and the reduction in the acreage amount and overall design of suburban development.

Interim

BIOL-W80	Ecotoxicology	Students applies course concepts to contemporary societal challenges around sustainability.
ENST-W40	The Changing Great Lakes	Students applies course concepts to contemporary societal challenges around sustainability.
GEOL W40	Hawaii: Volcanoes in the Sea	Students applies course concepts to contemporary societal challenges around sustainability.
GEOL 112	Earth Science for Educators	Students applies course concepts to contemporary societal challenges around sustainability.
GEOL 153	Big Sky Geology: Montana Field Experience	Students applies course concepts to contemporary societal challenges around sustainability.
Sowk-W10	Grand Rapids	Includes a special emphasis on issues of social and environmental justice and the effects of city living on historically marginalized populations.