Accounting	D	
ACCT 3705 – Volunteer Income Tax Assistance	C	Provides volunteer experience preparing tax returns for low and moderate income Duluth residents through both classroom and hands-on training.
American Indian Studies	D	
AMIN 2015 - Ojibwe History and Cuture	c	Anishinabe, Ojibwe, and Chippewa. Origins and lifestyle; relationship between traditional and contemporary times. Emphasis on Minnesota. Through spring 2015 this course will carry Liberal Education Cultural Diversity credit and effective fall 2015 it will carry Liberal Education Sustainability credit.
Anthropology	D	
ANTH 3201 - Culture & Sustainability in Ecuador	c	Put anthropology concepts in motion by fully engaging in experiential learning opportunities. Observe and engage while exploring various cultural and sustainability sites within Ecuador, all while acquiring and putting Spanish language skills into practice (all language levels welcome.)
ANTH 3640 - What is a City?: Archaeological Perspectives on Urbanism	c	Survey of historically and archaeologically documented urban case studies and thematic concepts, e.g., the use of space, political and economic implications of living in a city, abandonment of cities, and the impact of cities on the environment. Liberal Education sustainability credit will be effective fall 2015.
ANTH 3888 – Anthropology of Food	C	Advanced survey and comparative study of the relationship between food and culture in the past and present. Topics include the prehistoric, biological, and cultural aspects of the collection, production, distribution, preparation, and consumption of food, and an analysis of its social, cultural, political, and economic significance.
ANTH 4500 - The New Commons: Governing Shared Resources for Present and Future Generations	c	This course examines efforts and provides skills to manage water, climate, wildlife, and internet, cultural heritage and other key pieces of ecosystem and community infrastructure at global and local levels as "commons," shared resources governed by culturally diverse, engaged communities for present and future generations.
ANTH 4623 – Anthropology and Contemporary Human Problems	C	Cultural roots of such interrelated contemporary human problems as over-population, food production and distribution, health and nutrition, social and ecological disorders. Review of alternative solutions to such problems as suggested by anthropological study and analyses.
ANTH 4631 – Anthropology and the Environment	C	In-depth study of some of the methods and concepts concerning the interrelations of certain human populations with their environments in diverse natural, cultural, historical, and evolutionary settings.
ANTH 4632 - Anthropology of Landscapes	c	Cross-cultural examination of concepts related to landscape and space. Topics include culturally constructed landscapes, notions of belonging, memory, pilgrimage, commemoration, and ways of gaining food and resources. Theoretical background and analytical examples drawn from the four subfields of anthropology: cultural, physical, linguistics, and archaeology. Liberal Education sustainability credit will be effective fall 2015.
ANTH 4633 – Ethnobotany	c	Advanced survey and study of interrelations between humans and plants, including material, symbolic, ritualistic and other aspects of human-plant interactions. Combines cultural anthropology and botany to investigate the roles of plants as food, medicine, natural resources and/or gateways to culturally sanctioned religious experiences. Liberal Education sustainability credit will be effective fall 2015.
ANTH 4653 – Senior Seminar	c	Contemporary topics in selected branches of anthropology. Active participation in group research project to develop and enhance anthropological research skills.
Art and Design	d	

ART 1004 - Sustainable Visual Culture Practices	c	The course examines art and design practices worldwide that are responding to current sustainability challenges and offering transformative solutions. We will explore definitions, principles and goals of sustainability and identify current global challenges, including" water protection and land use, energy and waste, ecosystems and habitat, ecological debt and social inequity, framed within the intersection of class, gender and race. Within a participatory, interactive learning environment, we will analyze the work of artists and designers that are creating strategies to transition to live within planetary boundaries. Case studies of participatory and ecological art, cradle-to-cradle design and bio-minicry, are among the practices that will be introduced, discussed and critiqued. Through active learning methods, including journaling, collaging, photographing and working in paris and groups, participants will explore their own relationship to sustainable ways of living.
ART 3305 – Sustainability Studio: Theory and Practice	c	Within a studio-based context, this course examines the potential of art and design to address issues of sustainability. Drawing from historical and contemporary precedents, student will explore and analyze solutions to the interdependence and growing incongruity between the natural environment and societal demands. As a combined media course, students will use a range of technical and conceptual methods, synthesizing previously learned studio experience and skills, examining the potential of found, ready made, and/or recycled materials to fulfill sustainable challenges.
Biology	d	
BIOL 1001 – Biology and Society	c	This course covers basic biology as it pertains to contemporary issues. Biology coverage includes cell biology, genetics, evolution and ecology. In addition to helping students understand biology, students will learn to more critically evaluate science that is presented in the media.
BIO 1012 - General Bio II	c	Fundamental concepts of biology, including classification and diversity of life, anatomy, physiology, and development of prokaryotes, protistans, fungi, animals, and plants; behavior; population, community, and ecosystem ecology.
BIO 1012 - Evolution	c	Origin, history, opposition, and evidence supporting evolutionary ideas. Basic concepts: origin of life, phylogeny, biological history, mechanisms of evolutionary change, population genetics, speciation, tempo of evolution, macroevolution, extinction, biogeography, evolution of social systems, altruism.
BIOL 1010 – Home Horticulture	c	Concepts of basic botany, plant identification, growth and culture with practical application to sustainable landscaping, vegetable gardening, fruit culture, house plants and flower garden design. Labs include plant propagation, grafting, seed propagation, and an experiment using the scientific methods, there will be a lab report, a paper, a class presentation, a design project and two field trips.
BIOL 4803 – Field Ecology	c	Provides undergraduates with an introduction to field ecology, including field identification of northern Minnesota terrestrial and aquatic flora and fauna and basic field methods to quantify distribution and abundance of plants and animals. Sampling methods taught include releves, variable radius plots, point-counts, random plots, line transects, calling surveys, dip nets and tow nets. Fieldwork will include exploration of issues related to project design and data collection, summarization and evaluation. Additional hours in the field may be required beyond regular course hours.
Chemical Engineering	d	

CHE 1020 – Sustainable Engineered Systems	c	Explore the engineered world using basic conservation tools (mass, momentum and energy balances). Use concepts from pollution control, unsustainable and sustainable systems, economics, history, and political contexts to understand what a sustainable future may look like. Develop problem solving skills and creativity.
CHE 1143 - Life Cycle Analysis	c	Comprehensive survey of environmental engineering. Fundamental science and engineering principles as basis for analyzing environmental issues. Federal laws on air pollution, wastewater discharge, and hazardous waste. Wastewater treatment, air pollution control, waste minimization, resource recovery, and recycling.
CHE 2001 – Introduction to Environmental Engineering	c	Elementary principles of chemical processes, emphasizing material and energy balances.
CHE 2111 – Materials and Energy Balances	c	Application of thermodynamic principles to chemical engineering, emphasizing pressure-volume-temperature relationships, thermodynamic laws, thermochemistry, chemical equilibrium, and phase relationships.
CHE 2121 – Thermodynamics	c	This course introduces pulping and bleaching processes followed by the paper making process. The various processes in pulp and paper manufacturing, the grades of paper and language of the industry will be introduced and the equipment used in papermaking will be explored. Following the course, students will be able to do basic calculation related to pulp and paper and will understand the basic principles of pulp and paper manufacturing.
CHE 3251 – Introduction to Pulp and Paper Process Technology	c	Preliminary design of chemical processing or hazardous waste treatment plant. Use of engineering economics and calculation of rate return and hazardous waste management as applied to chemical plants. Market survey, flow sheet preparation, material and energy balances.
CHE 4501 – Chemical Engineering Design I	c	Comprehensive investigation of the engineering systems involved in the sustainable production of fuels, chemicals, and materials from bioresources.
CHE 4603 – Biorenewable Resources	c	
Chemistry	d	Topics in general, organic, and biological chemistry using sustainability as the underlying theme. Study of chemical principles, their application, and their impact on daily life. Independent unit in contrast to CHEM 1113, 1151, 1153 or 1161. CHEM 1103 alone satisfies the requirements in liberal education categories Natural Sciences and Sustainability. Alternatively, the combination of CHEM 1103 and CHEM 1104 meets liberal education category requirements for Natural Sciences with lab.
CHEM 1103 - Aspects of Chemistry	c	The study of the chemistry associated with scientific and technological discoveries made during the Industrial Revolution in England from 1750-1850. Twenty-first Century "green chemistry" solutions to reduce detrimental impacts of industrialization such as those that occurred during the Industrial Revolution. The study of the lives of selected chemists and natural scientists whose work was located in the Midlands of England.
CHEM 1105 – From the Industrial Revolution to Green Chemistry	c	Study of chemical processes in natural air, water, soil and sediment environments. Sources, reaction, transport, effects, and fates of natural and anthropogenic chemical species will be covered. Methods of analysis of environmental samples, with emphasis on quantitative treatment of data.
CHEM 2212 – Environmental Chemistry	c	Survey of the principles of green chemistry emphasizing basic toxicology, the evaluation of waste production and environmental performance, catalysts and organic solvents, renewable resources and intentional design of green reactions and processes.
CHEM 2212 - Principles of Green Chemistry	c	
Civil Engineering	d	
CE 1100 – Green Homes		

CE 1100 - Geologic Principles for Civil Engineers	c	The course presents an introduction of geology for civil engineers. The theory component of the course presents a comprehensive survey of Earth's composition, structure, and dynamics to develop an understanding of internal processes, plate tectonics, and surface processes as a framework for geological history and development of life (this component follows the same structure of the course GEOL 1110 - Geology and Earth Systems). The lab component of the course focuses on the application of geological science principles to topics that are relevant to the civil engineering profession. These topics include identification of mineral and rock samples in a context of construction materials or materials existing as part of foundations or excavations of civil engineering structures; topographic and geologic maps; description of rock mass and rock structures and computational engineering geology problems.
CE 3026 – Project Management	c	Study of basic concepts and models for successful management of projects in engineering. Topics discussed include: engineering economics, project delivery process, bid development, cost estimation, life cycle cost evaluation, contract structure, scheduling, resource allocation and LEED requirements.
CE 4515 - Sustainable Design and Construction	c	Introduction to sustainable design and construction including LEED, materials, construction/transportation/production, life-cycle/service, rating systems, codes, regulations, economical issues and social issues.
CE 5515 - Sustainable Design and Construction	c	Introduction to sustainable design and construction including LEED, materials, construction/transportation/production, life-cycle/service, rating systems, codes, regulations, economical issues and social issues.
Communication	d	
COMM 3405 – Health Campaigns	c	Survey course examines how individual and community models of health behavior change are used to design, implement, and evaluate campaigns that promote healthy behaviors and reduce high-risk health behaviors.
COMM 3620 – Controversy in the Boundary Waters	c	Considers the rhetorical and political processes conditioning the debate over the Boundary Waters Canoe Area's wilderness designation. Culminates in a class field trip to the BWCA, and a group project pertaining to contemporary environmental rhetoric.
Cultural Studies		
CST 1101 – Introduction to Cultural Studies		
CST 4500 – The New Commons: Activism, Culture, History		
Economics	d	
ECON 3721 – Natural Resource and Energy Economics	c	Microeconomic analysis of natural resource and energy markets. Role of these resources in production processes and waste generation, use and pricing of nonrenewable and renewable resources over time, resource availability, sustainable development, and ecological economics.
Education	d	
EDUC 1201 – Managing Planet Earth	c	Environmental education; exploration of key concepts and principles that govern how nature works; potential solutions to environmental and resource problems.
EDUC 4234 – Science, Technology, and Society	c	Nontechnical study of historical and cultural impact of natural science and technology on the earth and its inhabitants.
Electrical and Computer Engineering	d	
ECE 5501 – Energy Conversion Systems		
Environmental Education	d	
ENED 4555 – Foundations of Environmental Education	c	Provides a background of skills and understanding of environmental education delivery in various educational settings, with emphasis on formal classroom audience.

ENED 4565 - Young Children, Nature, and Sustainabilty	c	Focus on education for sustainability in an early childhood (infant-preschool age) context. Study of rational for merging education for sustainability and early childhood education, as well as recommended practices and possibilities for doing so. Also emphasized are skills for developing and implementing developmentally appropriate learning experience that support health development of young children and further education for sustainability goals.
ENED 5325 – Environemtal Issues Investigation	c	The study of resolving environmental problems that affect sustainability. This includes issue identification; building an effective team of investigators; and, study of the issue to the point of making recommendations to resolve the issue of sustainability management and education.
Environment and Sustainability	d	
ES 1001 – Introductory Seminar	c	Introduction to the complexities of multidisciplinary environmental issues through research and literature review with emphasis on development of critical thinking skills.
ES 2095 – Special Topics (recently: Sustainable Agriculture Field Techniques)	c	Special topics in environmental science.
ES 2803 - Issues in Global Ecology	c	Holistic approach to current status and future prospects of Earth's life support systems.
ES 3100 – Sustainable Food Systems	c	Historical and contemporary food systems within sustainability framework. Understands food within social, political, economic and environmental contexts. Looks at sustainable production, consumption and processing issues.
ES 3500 – Ecological Economics	c	Examine the basic principles and assumptions of Micro and Macro Economics, and their relevance in our modern global economic system. Examine the environmental/social consequences of deviations from these assumptions, and alternative economic models/analyses and policies consistent with sustainable development.
ES 4010 - Seminar	c	Critical discussion, research, and literature review of multidisciplinary environmental issues.
ES 4090 - Internship Preparation	c	Various employers and members of environmental organizations in the Duluth region, and in Minnesota will speak to the class each week to describe what they do in their perspective fields of environment and sustainability. Students will research careers in environmental work, producing reports on prominent fields and directions in environmental work. Students will be placed with perspective internship experiences at the end of the semester.
ES 4097 - Internship	c	Practical experience in some field of environmental work, under direction of a faculty adviser and a work-site adviser.
Environmental Science	d	
ESCI 2210 – Environmental Characterization and Monitoring	c	Scientific foundations of major environmental issues that impact society, including water, natural resources, and global climate change. Issues and human impacts will be explored through field and lab exercises designed to give the student hands on experience in environmental characterization and monitoring.
ESCI 3102 – Renewable Resources	c	Principles of renewable energy, energy conversion, irreversible thermodynamics and thermodynamic engines, thermoelectric generators, turbines, photovoltaic conversion, electrochemical conversion, fuel cells, pumping efficiency, wind energy, conversion of wave energy, heat pumps, ecosystems and biomass energy, and energy transmission and storage.
Geography	d	

GEOG 1202 – World Regional Geography	c	Principles of renewable energy, energy conversion, irreversible thermodynamics and thermodynamic engines, thermoelectric generators, turbines, photovoltaic conversion, electrochemical conversion, fuel cells, pumping efficiency, wind energy, conversion of wave energy, heat pumps, ecosystems and biomass energy, and energy transmission and storage.
GEOG 1304 – Human Geography	c	Ecological basis of human existence. Human population patterns and cultural diffusion. Agricultural geography. Political geography. Geography of language, religion, and ethnic groups. Effects of urbanization; economic geography.
GEOG 1414 - Physical Geography	c	Earth-sun relations, maps and globes, and major factors of the natural environment, including water resources, landforms, weather and climate, natural vegetation, and soils.
GEOG 2306 – Environmental Conservation	c	Integrated study of physical, economic, social, and political aspects of natural resource management. Emphasis on identifying environmental problems and evaluating alternatives for resolution, including planning, regulation, market incentives, and mitigation activities.
GEOG 3205: Belize: Culture & Conservation	c	This short term study abroad course takes place in Stann Creek and Toledo, the two southernmost districts of Belize. Students of all mapping skill levels will enjoy learning how these technologies can be used to learn about the beautiful and pristine landscapes of southern Belize. This small Central American country is known for its protected tracts of land, vast forests, and marine reserves; we will visit and learn how some of these protected areas are managed through conservation practice by examining the effects of deforestation, urbanization, agricultural practices, and other factors of ecology. We will explore the cultural significance of the forests and the bounty they bring to families that live there, sustainably growing their food and harvesting their own building and household materials.
GEOG 3334 – Urban Geography	c	As the world becomes more urbanized there seems to be less distinction between global problems and urban problems. Analysis of the relationship between urbanization and other aspects of our modern world such as economic globalization, increased levels of international migration, and warfare. Examine how global dilemmas can be seen in the national and international issues. Pay particular attention to the everyday struggles that occur in the households and neighborhoods of cities as people attempt to care for themselves and their families in this rapidly changing world.
GEOG 3461 – Geography of Global Resources	c	Spatial distribution and uses of global natural resources addressed through models of resource management, focusing on energy, non-fuel minerals, population, food, and technology. Theoretical approach and political perspective applied to trade, international economic development, and environmental issues.
GEOG 3481 – Urban Ecology	c	Introduction to theoretical, practical and policy aspects of urban ecology. Discusses methods of sustainable cities and ecologically responsible planning. Includes study of relevant field techniques and policy issues, including public participation in planning process and development of sustainable growth strategies.
GEOG 5573 – GIS in Regional Sustainability Applications		
Geology	d	
GEOL 1110 – Geology and Earth Systems	c	Comprehensive survey of Earth's composition, structure, and dynamics to develop an understanding of internal processes, plate tectonics, and surface processes as a framework for geological history and development of life.
GEOL 1130 – Introduction to Environmental Science	c	Earth's physical and biological systems and human interaction with the environment. Climate, rocks, soils, ecosystems, human population, land use, energy use and its consequences, environmental policy, air and water pollution, and conservation issues.

GEOL 1610 – Oceanography	c	Origin and history of ocean basins, sea floor morphology, chemistry of sea water, currents, waves, tides, life in the sea, primary productivity, nutrient dynamics, human impact.
Health	d	
HLTH 3101 – Community Health	c	Health promotion and disease prevention at local, state, and national levels. Comparison between health problems of individuals and those of groups. Analysis of functions and roles of voluntary and official agencies. Exploration of community-based programs.
HLTH 1100 - Health and Wellness Strategies for Life	c	A lecture series introducing students to health and wellness encompassing nutritional, physical, emotional and spiritual aspects of health and well-being with emphasis on behavioral, environmental and social influences on developing a satisfying and productive lifestyle in our society.
HLTH 3500 – Environmental Health	c	Biological, ecological, and physiological aspects of the environment; concurrent effects on health of the community; and possible solutions to environmental problems.
Mechanical Engineering	d	
ME 2211 - Thermodynamics	c	Thermodynamics, thermodynamic properties of liquids and gases, 1st and 2nd laws of thermodynamics, irreversibility and entropy. Carnot systems, work producing systems, combustion engine cycles, work absorbing systems, refrigeration cycles, psychrometrics.
Management Studies	d	
MGTS 4463 - Sustainability and Sustainable Management	c	This course will introduce students to the concepts of sustainability in a managerial context.
Marketing	d	
MKTG 3751 – Marketing Ethics	c	Introduces a broad range of ethical issues encountered by marketing practitioners, and helps discover, develop, and test personal sets of guidelines for making judgments when such issues arise.
Philosophy	d	
PHIL 3325 – Environmental Ethics	c	Moral dimension of relationship between humans and earth's natural environment. Pollution, energy policy, economics, law, and environment; endangered species; rights of nonhumans; preservation and conservation; obligations toward future generations; ethical theory and environment.
Physics	d	
PHYS 1035 – Energy	c	Energy as a fundamental topic for understanding both the natural and man-made world. Will discuss concepts of human production, transmission, storage, and utilization of energy, as well as how these processes interact with natural pathways of energy such as the carbon cycle.
Psychology	d	
PSY 3211 – Group Dynamics	c	Principles and processes of interaction in groups; structure and functioning of groups; leadership, communication, decision making, social influence; aspects of sensitivity training.
Social Work	d	
SW 1210 – Global Issues	c	Global problems of war, peace, national security; population, food, hunger; environmental concerns, global resources; economic and social development; human rights. Examines issues from a global problem-solving perspective. Value, race, class, gender differences.
Sociology	d	
SOC 4860 – Environmental Sociology	c	Examines the relationship between humans and the natural environment, including the role of science, technology, economics, religion, and culture. Emphasis on the social justice implications of environmental issues and contemporary topics, such as global warming and sustainable agriculture and energy. Considers the diverse positions and actions of environmental movements and possible solutions to environmental problems.
Spanish	d	

SPAN 2550 – Globalization and Sustainability in Latin America		c	The study of the origins and recent trends in globalization in Latin America. Special focus on practices that promote environmental, economic, political, social and cultural sustainability. The course may focus on Central America, the Caribbean, and Andes, the Southern Cone, the Amazon or any other geocultural region in Latin America. The course is open to all majors and will be taught in English.
Urban and Regional Studies		d	
URS 1001 - World Cities: An Introduction to Global Urbanization		c	This course explores the phenomenon of urbanization with a focus on how different regions and cultures around the world are responding to urban growth. Taught from an interdisciplinary perspective, this course will examine the historical and contemporary causes of urbanization with a special emphasis on how urban policy makers and community residents are working to solve the problems created by metropolitan development. Particular attention will be paid to economic globalization, housing political representation, migration, and ecological sustainability. While in 1950 only 30% of the world's population was urban, now over 50% of the earth's population lives in cities - with much of that growth coming from cities in the developing world. This course investigates the forces behind this incredible rate of urban growth and grapples with the problems and possibilities created by global urbanization.
Water Resources Science		d	
WRS 5101 - Water Policy		c	Socio-cultural, legal, and economic factors that affect water resources management. Historical trends in water policy, resulting water laws in the United States. Federal state and local institutional structures for water management.
Women's Studies		d	
WS 3600 - Ecofeminist Theories and Practices		c	In-depth study of ecofeminist theories that explore the interlocking oppressions of women, the earth/nature/other animals, and colonized Others. Scientific, economic, religious, philosophical issues examined. Applied ecofeminist analysis of individual, local, regional, national and transnational ethical, social and environmental issues, such as food and farming, animals, toxins, birthing and reproductive technologies, water quality, and privatization, etc.
WS 3775 – Women, Globalization, and Food		c	This course offers a critical feminist examination of the impact of globalization and economic restructuring on the tangled roots and route of women's work in the food chain in both the First World and Global South. The course also offers firsthand experiences by visiting origins of food, small and large-scale farms, community gardens, organic food stores and large corporate food chain stores as well as preparing meals from ingredients that students select based on tastes and affordability. Additionally, the course brings globalization to our doorsteps through meals that students prepare and serve by answering the question What is on your plate for dinner, lunch, or breakfast, and from what countries and whose labor? Finally, the course offers in-depth analysis of the processes through which current corporate industrial mega farms lead to hunger and water famine, environmental degradation and poor health, not only the Third World but also in the First World.

30	**78**	43	35
#depts	**#courses**	**Sustainability-focused (meets Lib Ed Sustainability category)**	**Sustainability related (does not meet Lib Ed Sustainability category**