Sustainability-focused Courses

BGEN/CS 160S (UG) – Issues in Sustainability
This literature-intensive course is intended to expose the student to a variety of essays addressing the balance of economic development with the principles of sustainability and social equity. The student is offered an introduction to sustainability concepts, natural systems/cycles and environmental economics. Natural capitalism and triple bottom line maximization is explored, along with the role of corporations and small businesses in sustainable development. A survey of issues surrounding corporate social responsibility and sustainability-driven innovation will be conducted.

BGEN 445 (UG) – Sustainability Reporting (Kent Swift)
This course provides students with an understanding of sustainability reporting by organizations. Topics covered include sustainability reporting metrics for the public disclosure of the economic, environmental, and social impacts of organizations. Regulation of sustainability reporting, greenwashing, and external assurance of sustainability reports are also covered.

BMGT 491 (G) - Business & Sustainability (Eva Rocke)
This course explores how changing perceptions around environmental and social issues influence current business practices. Through this exploration, we discuss the impact these influences have on business and how adept firms can gain competitive advantage through embracing and integrating them into their core strategies. Though environmental and social issues have gained prominence in recent years and have even spawned conversations around concepts – e.g., sustainability, sustainable strategy, sustainable development - many firms remain ill-equipped to successfully address these issues through their actions. Thus, this course focuses on developing your understanding of these opportunities, what you can do to develop more sustainably aware action in your personal and professional lives, and how firms can profitably integrate environmental and social issues into their strategies and actions.

CCS 103x (UG) – Intro to Climate Change (Peter McDonough)
This is an introductory and foundational course on the scientific and social dimensions of global climate change. The goal of this course is to provide students with a basic understanding of the fundamental scientific, social, political and technological issues arising from rapid climatic change. As a result, it provides students with a breadth of knowledge and builds connectedness across these varied dimensions of the complex global issue.

CCS 352 (UG) - Climate Change Field Studies
This is an interdisciplinary field course focused on climate change impacts and adaptation. Through site visits and meetings with key decision-makers, students gain knowledge of projected impacts due to climate change (water availability, wildfire, beetle kill, biodiversity), the impacts to various sectors of human society (land management, food and water security, economic stability, and livelihoods), and different mitigation and adaptation responses.

CCS 395 (UG) Climate Solutions - Peter McDonough
Small, project-based course combining local climate action, mitigation and adaptation measures, and design thinking to plan and implement group-based, local climate solutions.

CHMY 291 (UG) - Chemistry of the Environment- Lu Hu
Human activities have been making substantial changes to the chemical and physical properties of the atmosphere, ocean, and land. This introductory course will discuss such perturbations to the Earth system and their implications for climate, air pollution, carbon cycle, water quality, and soil health. This course will begin by reviewing relevant basic principles of physical sciences. We will then apply these perspectives to understanding pressing global environmental issues, organized by case studies. The lectures will involve a lot of active learning activities, discussion, and interaction. The course is suitable for students of all backgrounds and majors.

CHMY 541 (G) – Environmental Chemistry
Chemical principles and reactions in natural systems: Fate of chemical contaminants in the environment; partitioning of contaminants between phases (air/water/soil); chemistry of atmospheric pollutants; computer modeling of equilibrium

and kinetic processes; degradation and transformation of organic contaminants.

CSTN 282 (UG) Green Building Concept & Design I
This course takes a holistic approach to natural resource conservation and energy efficiency in the construction industry. From integrated design, building site selection and evaluation, through building design, material selection and efficiencies, passive heating and cooling, and construction techniques. Students design an energy efficient residence to be built by next year's class.

CSTN 283 (UG) Green Building Concept & Design II
This course builds on concepts learned in CSTN 282 Green Building Concepts and Design I. Students learn how to weatherize existing buildings and green remodeling and preservation techniques, design and build outdoor living spaces, and green landscaping practices. They learn how to document building for green rating for both NAHB Standards and LEED. They will conduct blower door tests and learn to test for and mitigate radon gas. Students will also refine the energy efficient residential plan they produced in Green Building Concepts and Design I.

CSTN 298 (UG) Green Building Practicum
(R-6) Offered at Missoula College. Extended classroom experience which provides practical application of classroom learning. Course provides opportunities for students to apply the principles of sustainable building design and construction.

ENSC 105 (UG) – Intro to Environmental Science
Provides students with opportunities to use class knowledge to make a difference; helps students build all of the following: scientific literacy; skills in critical thinking, research and self-instruction; an understanding of the scientific basis of environmental issues, policies and laws; habits of sustainable living, scientifically-informed, active participation in social decisions, and service to their community and to the earth.

ENSC 501 (G) – Scientific Approach to Environmental Problems
The strength and limitations of the scientific approach to investigating and solving selected environmental problems with an emphasis on the natural sciences.

ECNS 433 (UG) Economics of the Environment - Katrina Mullan
This course outlines a theoretical framework for the analysis of environmental problems, including concepts of market failure and externalities, materials balance and property rights. The policy implications of this analytical model and the empirical evidence on its practical application are explored for a range of topics including pollution and the preservation of natural environments and species.

ECNS 445 (UG) – International Environmental Economics & Climate Change
An introduction to the economics of various policy approaches towards climate change and other international environmental issues such as trans-boundary pollution problems, international trade and the environment and pollution haven hypothesis.

ENST 225S (UG) - Sustainable Communities.
Exploration of ways that communities promote sustainability & environmental health. Introduction of relevant social science concepts.

ENST 335 (UG) – Environmental Vision
Provides background, overview, interpretations, and understanding of key concepts, themes, approaches, and forms in American nature and environmental nonfiction as well as that literature’s response to and influence on environmental events, figures, and movements.

ENST 395 (UG) Field Studies: Environmental Studies.
Via extended backcountry travel, experiential examination of cultural history and public lands management, and how

those affect ecosystem integrity. Investigation of personal roles in and relationships with human and ecological communities. Offered by WRFI.

ENST 396 (UG) – PEAS Supervised Internship (Caroline Stephens)
This course concerns the biology and technology of sustainable agriculture. The course is a combination of hands-on work on the PEAS farm and traditional academics

ENST 476 (UG) – Environmental Citizenship (Robin Saha)
Covers technique for fostering sustainable environmental behaviors and is a service learning course with projects related to campus and community sustainability.

EVST 489 (UG) – Environmental Justice Issues and Solutions (Robin Saha)
Examination of evidence, causes and consequences of social inequality in the distribution of environmental risks and in access to natural resources and environmental amenities. Community, government and industry responses and service approaches for addressing environmental inequities.

ENST 535 (G) – Local Climate Solutions
This course seeks to develop students' understanding and skills for participating in local solutions to climate change that can also support broader conservation, efficiency and sustainability efforts. This will be accomplished by engaging in planning and carrying out group projects that further advance existing climate change mitigation or adaptation efforts.

ENST 542 (G) - Conservation without Borders
Review of the political systems and administrative systems of each country relevant to natural resource policy decision-making and ecological systems. Study theory of integration of conservation with management such as common pool resource management, transboundary protected areas and international agreements. Review pertinent literature, interact with stakeholders, and produce group reports.

ENST 542 (G) – Transboundary Environmental Resolution
Review of the political systems and administrative systems of each country relevant to natural resource policy decision-making and ecological systems. Review pertinent literature, natural resource policy decision-making and ecological systems. Review pertinent literature, interact with stakeholders, and produce group reports.

ENST 560 (G) – Environmental Impact Assessment
Covers legal and scientific aspects of the Environmental Impact Analysis (EIA) including: What is required by international, national and state law and regulations? How does one organize an effective interdisciplinary team research effort and public participation program? What scientific tools are used in EIA? How could the EIA process be improved?

ENST 570 (G) – Ethical Issues in Ecological Restoration
A critical examination of the ethical issues that emerge in the field of ecological restoration, and decisions to manipulate nature intentionally for social and ecological goals.

ENST 594 (G) – Intro to UM FLAT
In-depth analysis of a current environmental sustainability topic. Different topics offered each semester and are driven by current events and student interests.

GBLD 499 (UG) Global Leadership Capstone - Sustainability Focus
Culminating project addressing a global question, to include a written proposal (completed and presented in semester 1) and execution of a project (completed and presented in semester 2). In AY19, there were 2 capstone sections of this course offered that were focused entirely on sustainability issues and solutions.

GEO 318 (UG) – Earth's Changing Climate (Joel Harper)

The future of our climate from the perspective of climate system dynamics. Three modules address (1) the processes and time scales governing Earth's heat balance, the basic rules of changing climate; (2) climate variability stemming from internal dynamics of the climate system; and, (3) constraining projections of future change with regards to feedbacks and uncertainties in climate system processes. Emerging research is highlighted throughout the course on unsettled scientific problems in climate science and the approaches taken by scientists to solve them.

GEOS 548 (G) Advanced Topics in the Cryosphere- Joel Harper
In depth analysis of cutting edge research findings concerning present and future sea level rise. Overview of ice sheet stability and processes capable of yielding rapid sea level rise. Assessment of the major uncertainties in projecting future timing and rates of sea level rise.

GPHY 335 (UG) – Water Policy
This course centers on water policy in the American West. A major concern that is addressed as to do with the sustainability of our water supplies in the context of drought, climate change, and increasing water demands.

GPHY 395-02 (UG) - **Field Studies: Sustainability and Agriculture - Taught through the Swan Valley Connection.**
Agriculture and Sustainability delves into the intricacies of growing food and sustaining rural communities in Western Montana. The course explores the intersection of natural resource conservation and economic opportunity on the working agricultural landscapes of our region. We examine the role of agriculture in rural and regional economies, the resource conservation issues associated with agriculture, and the barriers and opportunities that exist within these economies for producers to sustain both natural resources and their livelihoods. Students will specifically engage with cattle ranches in the Blackfoot Valley; diversified producers in the Mission Valley; and family subsistence farms in the Swan Valley to investigate the potential for sustainable resource use, value-added products, and emerging strategies to secure long-term benefits to both communities and landscapes. Students will gain practical experience visiting and working with regional food producers.

GPHY 421 (UG) – Sustainable Cities
A discussion of sustainability efforts in cities around the world. Topics include, for example, urban sprawl and smart growth, alternative energy, public transportation, integrated waste management, integrated water management, green architecture, and urban agriculture.

GPHY 433 (UG) - Community Resilience
Examines human-environment relations and interactions. Topics include human geographic perspectives on landscape, cultural ecology, political ecology, community resilience in relation to complex adaptive systems, and planning applications.

GPHY 465 (UG) – Planning Principles & Processes
Surveys planning principles, practices and issues in urban and rural environments. Attention is devoted to Montana, state planning programs in the United States., and federal programs and policies that influence land-use planning. Emphasizes skills and techniques used in plan development and implementation.

GPHY 564 (G) - Planning Design - Graduate course in the analysis of land-use problems and design. Sustainability and geodesign are among the lenses used throughout the course to consider in modern applications of planning.

HNRS 104 (UG) – Campus Sustainability (Eva Rocke)
Introduces the many areas of campus operations and academics that incorporate the University's sustainability values. Freshman intro to sustainability course.

HONR 120 (UG) - Intro to Honors: Biomimicry - Peter McDonough
Experiential freshman seminar looking at the philosophy and practice of nature-inspired design in response to climate change and its indirect impacts.

LIT 522 (G) – Ecocriticism
The course is on water issues, primarily in the US West and the ways writers think about water and aridity as integrated components of their representational work.

LIT 524 (G) - Nature, Language and Politics
(R-9) Offered intermittently. Investigation of environmental, social and political thought from the perspectives of literature and cortical theory.

MBA 645 (G) – Topics in Sustainability
This course explores the business implications of sustainability and resilience. Students will examine social and environmental dimensions and investigate solutions including product design, metrics, organizational change, and natural resource conservation.

NASX 260 (UG) - Sustainable Indigenous Community Development in Mexico, the United States, and Canada
This course introduces the student to concepts in indigenous/rural sustainable community development in the countries of North America in broad historical and cultural frameworks.

NRGY 101 (UG) – Introduction to Sustainable Energy
A survey of traditional energy systems and technologies. Introduces conventional primary energy sources--coal, oil, gas, nuclear--and examines the technologies used to capture, convert, distribute, store, and utilize these energy sources. Consideration is given to physical and engineering aspects, as well as economic, social environmental, and political factors that determine the sustainability of these sources.

NRGY 102 (UG) – Introduction to Sustainable Energy II
A survey of renewable energy systems and technologies. Addresses physical and technical aspects of wind, solar, geothermal, hydro, tidal, biological, and wave energy systems. Consideration is given to engineering, economic, social, environmental, and political factors that determine implementation and sustainability.

NRSM 121 (UG) – Nature of Montana
An exploration of the major natural resource management issues facing the people of Montana and the social processes to manage environmental conflicts. Provides an introduction to the function of ecological systems and the impacts of human uses on the environment and looks at strategies for addressing global climate change, ex-urban population growth, and protecting environmental quality.

NRSM 210 (UG) - Soils, Water, and Climate - Ashley Ballantyne
This course explores the main factors affecting ecosystem function and how these factors interact to shape the world in which we live. Fundamental principles on how soils, water, and climate affect ecosystem processes are introduced in the lecture portion of the class and these principles are reinforced through field based lab exercises.

NRSM 215/ NRSM 110 Field Studies in Conservation (taught fall 2019--now titled NRSM 110) 1- (Brian Chaffin)
First year seminar in environmental science & sustainability. A field exploration of local (western Montana) issues related to environmental conflict and sustainability. Provides an introduction to the coupling between ecological systems and human uses of natural resources and looks at strategies for addressing global environmental change at the local scale.

NRSM 281 (UG) - Science of Climate Change- Ashley Ballantyne
Climate change is one of the great challenges facing society today and for generations to come. In this course we explore the physical processes affecting Earth's climate and how they have been altered by human activities. Human induced climate change is also examined in the context of fluctuations that have occurred throughout Earth's history. This course allows students to disentangle the important underpinnings of Earth's climate system and think critically about potential climate solutions.

NRSM 379 (UG) – Collaboration in Natural Resource Decisions
This entire course is focused on how to engage diverse stakeholders in discussions around the sustainable use of natural resources.

NRSM 418 (UG) - Ecosystem Climatology - Ashley Ballantyne
Earth's ecosystems are affected by climate, but they also affect climate from local to global scales. In this course we learn about the surface energy and carbon budgets of ecosystems and how water and carbon flow from the biosphere to the atmosphere. We then explore how human alteration or restoration of ecosystems may alter climate from local to global scales.

NRSM 422 (UG) - Natural Resources Policy & Administration (taught spring 2020): Brian Chaffin
Focuses on the laws, policies, and administration thereof to sustainably govern natural resources, with a particular emphasis on the American West and the context of public lands.

NRSM 426 (UG) – Climate and Society
Climate and Society is about the social and political dimensions of climate change mitigation and adaptation, with a focus on international and domestic processes and cases.

NRSM 427 (G) - Water Policy (taught fall 2019)
This course focuses on the governance and management of water as a major global sustainability challenge. Students engage in the myriad of approaches to governing the flow and use of water as a resource and the inherent challenges to equitably allocating water to sustain ecosystems and human populations through law and policy.

NRSM 449 (UG) - Climate Change Ethics and Policy
This course focuses on the ethical dimensions of climate change policy. It will cover the following major topics: (1) climate change, personal and collective responsibilities, (2) ethics, climate change and scientific uncertainty, (3) distributive justice and international climate change negotiations, (4) intergenerational justice and climate change policy.

NRSM 498 (UG) – Resource Conservations Internships
This course empowers students to engage directly with local natural resource conservation partners who all work toward sustainability.

NRSM 574 (G) – Perspectives in Human Dimensions
This is a graduate course focused on various conservation social science theories employed in the broad field of human dimensions of natural resources. Human dimensions is a field focused on engaging social and ecological sciences to promote sustainability.

PHL 323 (UG) - Ethics of Climate Change
This course examines some of the fundamental issues raised by global climate change and considers how environmental ethics might help to address these issues. Students will become acquainted with the essential elements of climate change science and be provided with an introduction to contemporary approaches to environmental ethics that have developed out of the primary ethical traditions of western thought: deontological (Kantian) ethics, utilitarian ethics, and virtue ethics. In addition, the course examines alternative understandings of the appropriate relationship between humans and the natural world including: Deep Ecology and Native American perspectives.

PSCI 324 (UG) – Sustainable Climate Policies: China and the USA
Explores historic, current, and future greenhouse-gas emissions of the United States and China, reasons why both are the two largest C02 emitters, and prevailing national and subnational government policies and nongovernmental actions that affect emissions mitigation and adaptation.

PSCI 463 (UG) – Development Administration

Study of the functions and processes of public administration in the Third World. Focus on alleviating poverty and underdevelopment through building sustainable systems. Includes project design and development planning activities.

PTRM 353 (UG) – Tourism & Sustainability Himalaya
In this course we will explore the opportunities and challenges of development with particular reference to nature-based tourism and sustainability in an isolated but rapidly globalizing region of the Himalaya. Students will learn through extensive readings, class discussions, direct field experience (including living in a remote mountain village), meetings with development officials, sustainability activists and stakeholders in the region.

PTRM 451W (UG) – Tourism & Sustainability
Theories and conceptual models are applied to analyzing relationships between the integration of planning theories to sustainability concepts.

PTRM 482 (UG) – Wilderness & Protected Area Management
Examination of the origin, evolution, and application of the park concept on state, federal, and international levels. Evaluation of legislation, philosophy, and policy leading to consideration of goals, objectives, and strategies for wilderness and protected area management.

PTRM 485 (UG) - Recreation Planning (William Rice)
Increasingly, planning for wildland recreation opportunities occurs in highly politicized settings. In these settings, a variety of interest groups vie and compete for allocation of scarce resources. This course is designed to develop the conceptual background needed to participate and eventually lead recreation planning processes in an era of turbulence. This background includes understanding various wildland recreation planning frameworks, the role of the public in planning processes, relevant federal environmental planning policies, predominant recreation conditions within wildland settings that require consideration, and management strategies for achieving desired planning goals.

PUAD 595 (G) – Environmental Policy & Governance
This course surveys environmental politics, policy, and governance, primarily in the United States with international examples. We examine the nature and scope of environmental, energy, and natural resource problems; contrasting perspectives on their severity and policy implications; the goals and strategies of the environmental community and its opponents; public opinion on the environment; scientific, economic, political, and institutional forces that shape policymaking and implementation. We will place a particular emphasis on environmental regulations or the implementation side of environmental policy conducted by federal environmental agencies.

PUBH 560 (G) - Environmental & Rural Health (Tony Ward)
Relationship of people to their physical environment, how this relationship impacts health, and efforts to minimize negative health effects.

Total = 64

Undergraduate: 47
Graduate: 17

<u>Sustainability-Inclusive Courses</u>

ANTY 133 (UG) – Food & Culture
Examination of the ways culture shapes the satisfaction of a biological need; food production, preparation, choices, customs, taste, taboos, beverages, spices and food distribution around the globe.

ANTY 351 (UG) North American Archaeology (John Douglas)
This class looks at Native American life ways for the last 15,000 years in North America, with a focus on human-

environmental relationships, including careful consideration of big-game hunters, mixed hunter-gatherers, marine- and riverine- resource focused societies, and farmers at various scales across the continent. Stability, sustainability, and the relationship between societies and their food sources are key concepts.

ANTY 456 (UG) Historical Archaeology
Understanding and interpreting the past through historical archaeological remains, methods, and theories. Focuses on historical archaeological sites and topics from the American West, but also examines the field's global perspective.

BGEN 220 (UG) – Business Ethics and Social Responsibility
Focuses on moral judgments, responsibilities to society and their impact on decision making, with particular emphasis on business ethics and values. Addresses organizations and their relationship to the external environment, the law, and various stakeholders.

BIO 451 (UG) Landscape Ecology of the Northern Rockies (Solomon Dobrowski)
This is a summer field course in which we learn about the landscapes and socio-ecological systems relevant to the crown of the continent.

BIO 480 (UG) – Conservation Genetics
Genetic basis for solving biological problems in conservation including the genetics of small populations, the application of molecular genetic techniques to conservation biology and case studies of the application of genetics to conservation problems.

BIOB 109N (UG) – Montana Ecosystems
An introduction to the landscapes and ecosystem diversity of Montana, with an emphasis on exploring the dominant habitats of western Montana. Required, integrated laboratory includes field trip investigations, classroom lab exercises, and presentations.

BIOB 210N (UG) Communication of Biology
An examination of modern methods for sharing scientific discovery with an emphasis on biological issues related to the human experience.

BIOM 415 (UG) – Microbial Ecology, Diversity, and Evolution
A broad overview of the physiological, phylogenetic and genomic diversity and ecology of microorganisms within a framework of general ecological principles. Focuses on microbial interactions with their environment at the level of the individual, population and community, including intimate associations with plants and animals. Surveys current methods for studying microbial ecology and diversity in the environment.

BIOE 447 (UG) Ecosystem Ecology – Ben Colman
Introduction to systems thinking and the ecosystem concept, review of water and energy balances, carbon cycling, nutrient cycling, trophic dynamics, and species effects on ecosystem functioning across terrestrial and aquatic ecosystems.

BIOB 524 (G) – Physiological Plant Ecology
The physiological basis of plant adaptation and response to the environment.

BIOS 532 (G) Ecosystem Ecology
This course includes the fundamentals of an ecosystem approach to ecological research by emphasizing relationships among physical, chemical, and biotic elements of interactive systems. It will provide a fundamental basis for more advanced Systems Ecology courses (e.g., Limnology, Integrated Systems Ecology, Landscape Genetics, etc.).

BIOS 534 (G) Integrated Systems Ecology
Principles, theories, and empirical studies that describe the complex attributes and processes of coupled natural and

human systems. Landscape, climate, economic and social change dynamics and processes emphasized. Flagship course of the UM-DBS Systems Ecology Program.

BMKT 325 (UG) – Principles of Marketing
Course covers socio-cultural trends in society, including consumers' increasing concerns about the environmental impacts of the products they buy and the records on social well-being of the companies who make them. In addition, we discuss regulatory trends, including things like California's Zero Emission Vehicles mandates and how that affects national strategies. We also discuss segments of "green consumers" and how companies incorporate sustainability messages into their communications without being accused of greenwashing. We cover the triple bottom line as an important business strategy and how financial accounting methods have expanded to include environmental and social accounting. We also discuss innovation ecosystems for electric vehicles as well as a unit on biomimicry, a protocol for innovation and product development that is based on emulating nature in order to ensure that new products are designed with an eye to be in harmony with nature. I sometimes have a biomimicry speaker in this class.

BMKT 460 (UG) – High-technology marketing
Exploration of concepts and practices related to marketing in a fast-paced environment; draws from a range and diversity of industries and contexts including the Internet.

CCS 392 (UG) – Climate Change Internship

COMX 205Y (UG) – Deliberative Democracy
Students in this course learn how deliberative democratic processes are used to solve a variety of societal, economic, and environmental problems around the globe to create robust, sustainable solutions that meet the needs of diverse stakeholders. Examples include resource allocation, public health, nuclear waste storage, and transportation planning.

COMX 347 (UG) Rhetoric, Nature, and Environmentalism
Survey of rhetorical texts that shape public understanding of nature and environmental issues. Analysis of a range of historical and contemporary environmental texts using theoretical concepts from the rhetorical tradition.

COMX 349 (UG) Communication, Consumption, and Climate
Analyzes consumption as a communication practice, investigates discourses that promote consumption, and illuminates environmental impacts on consumption.

COMX 422 (UG) – Communication & Technology
This course takes a critical look at the influence of communication technologies on organizational communication. Students will examine how the world of work is changing due to new technologies and explore the social and ethical implications of technical innovation, adoption and use.

CRWR 115 (UG) – Montana Writers Live
An introduction to Montanans, practicing creative writers and their work through reading, live performances and discussion. Regional poets and prose writers will read from their work and lead class discussion. Students prepare questions developed from readings and criticism.

CSD 365 (UG) – Acquired Speech and Language Disorders
Identification, assessment, and intervention for a variety of acquired speech and language disorders. Other topics include secondary conditions, potential psychosocial and educational concerns, multicultural considerations, and family roles.

CSD 550 (G) – Language & Learning Disorders in Young Children
Theoretical perspectives, research, and clinical issues concerning disorders of language in infants, toddlers and preschoolers considering contributing factors, special populations and basic assessment and intervention principles.

CSTN 120-122 (UG) – CSTN 120 - Carpentry Basics & Rough-In Framing
Introduction to the carpentry trade, including history, career opportunities, and requirements. The course covers building materials, fasteners, adhesives, hand tools, and power tools. OSHA rules and regulations for a safe working place and procedures for compliance are covered. This course includes a two-credit imbedded lab. Students will also learn now to install windows and an exterior door.

CSTN 142-143 (UG) – Interior & Exterior Finish Carpentry
Study of various types of siding, gutter systems, roof venting requirements, and framing with metal studs. Installation of sheathing, exterior siding, roofing felt, shingles, insulation vapor barriers, and stairs on small building constructed in CSTN 120. Installation of wood and metal doors. Demonstration of materials, layout and installation of suspended ceilings. Selection and installation of countertops, base cabinets and wall cabinets. Window, door, floor, ceiling trim and drywall is installed in a small building. This course includes a one-credit imbedded lab.

CSTN 205-206 (UG) – Advance Carpentry Lecture
Study of the process for angular measurement, using transits, theodolites, electronic distance measuring devices, lasers, and trigonometric calculating to lay out foundations and determine elevations. Installation of standing seam, lap seam, and built-up roofing systems; concrete, vinyl, wooden, tile, and carpeted floors as well as radiant heating; paneling, wainscoting, movable partitions, curtain walls and fire-rated commercial wall construction. Advanced stair systems, including shop built and prefabricated stairs, balustrades, mitered risers and treads, and layout of elliptical fastening methods, and assembly techniques. Project planning, scheduling, estimating, and management skills included. This course includes a two-credit lab.

CSTN 261 (UG) – Building Project Management
Introduction to building business and project management including overhead costs, payroll costs, estimating and scheduling. Covers elements of payroll computation and preparation, payroll tax returns, information returns, and identification and compensation of independent contractors. Students are introduced to building cost estimating, and scheduling of subcontractors and building inspections. This course includes a one-credit imbedded lab.

ECNS 450 (UG) – Advanced Topics in Economic Development
Advanced treatment of the processes of economic growth and development in the less developed world.

ENST/C&I 521 (G) – Foundations of Environmental Education
Problem-solving approaches to environmental education; problem identification, research and design and implementation of an educational approach to selected environmental issues.

ENSC 540 (G) – Watershed Conservation Ecology
Course assumes students have a level of knowledge presented in a college level ecology course. Integrates watershed science, policy, planning, action and organizing. The science component explores watershed connections, evaluating change and assessing watershed conditions. The policy component explains the scientific basis of national, state and local laws, programs and agencies that affect watersheds. The planning and action component discusses developing watershed conservation plans and selecting actions likely to address problems without creating other conservation plans and selecting actions likely to address problems without creating other problems. The organizing component covers how to help watershed communities make choices, resolve conflicts, build commitment and find funding. Students work individually or in teams to assist Montana groups in developing watershed CPR plans, initiating monitoring projects, and/or conducting education projects.

ENSC 550 (G) – Pollution Ecology
Course assumes students have a level of knowledge presented in a college level ecology course. Examines sources, fate, and effects of pollutants on organisms and ecosystems; methods of measuring and predicting pollutant fate and effects, assessing and reducing risks, estimating ecosystem assimilation capacity; setting standards and restoring ecosystems damaged by pollution. Briefly examines some relevant laws and policies at the federal, state and local level.

ENST 105 (UG) – Environmental Science
Provides students with opportunities to use class knowledge to make a difference; helps students build all of the following: scientific literacy; skills in critical thinking, research and self-instruction; an understanding of the scientific basis of environmental issues, policies and laws; habits of sustainable living, scientifically-informed, active participation in social decisions, and service to their community and to the earth.

ENST 201 (UG) – Environmental Information Resources
Students learn how to find, evaluate and use existing information to increase understanding of environmental issues and resolve controversies. Students will research a subject using a variety of sources (refereed literature, government sources, internet sources, interviews); evaluate sources critically; write a literature review and give an oral presentation on their topic. Focus is on critical thinking and dealing with the information explosion.

ENST 230 (UG) – Climate and Society
Explores the relationship between ideas about nature and the development of political and social ideas, institutions, and practices, primarily in western (Euro-American) society. Complements ethics offerings in philosophy aimed at environmental studies majors.

ENST 231 (UG) – Nature & Society Seminar
Explores the relationship between ideas about nature and the development of political and social ideas, institutions, and practices in primarily western (Euro-American) society.

ENST 310 (UG) Environment Montana: A to Z
The environment of Montana has changed dramatically since its founding 150 years ago. The purpose of this course is to provide an introduction to the land, people and places of Montana as viewed through the lens of environmental change. It will explore environmental change in relation to the actions of human beings. It will also explore how federal policies intersect with Montana environmental stories. Through a combination of lectures, readings, focused in-class discussions, and a research project students will learn the environmental stories of Montana.

ENST 320 (UG) – Earth Ethics: Moral Dimensions of Environmental Issues
This course is a case study approach to current issues in environmental ethics. Many, if not most of the cases deal directly with sustainability. Students analyze the cases and propose solutions.

ENST 367 (UG) – Environmental Politics and Policy
Course covers numerous topics related to citizen engagement in environmental policy and campus, local, state and national policy related to sustainability.

ENST 373A (UG) - Nature Works.
Writing workshop for the creation, critique, and revision of essays about the environment to include natural history, personal narrative, science interpretation, advocacy/editorial, place-based essay, and others. Examination of concepts, forms, and approaches to writing about environmental concerns, awareness and sensitivity. Reading and responding to published work, primarily from the perspective of technique and approach.

ENST 382 (UG) – Environmental Law
Introduction to the history, law and theory of environmental regulation in the United States using public and private land regulation mechanisms as case studies. Basic principles of constitutional and administrative law relevant to environmental regulation, substantive public and private land use law and the history of environmental problems and their regulation.

ENST 410 (UG) - Environmental Issues of Indigenous Peoples.
Examines traditional ecological knowledge (TEK) of Indigenous peoples of North America and the world.

ENST 427 (UG) – Society, Economics and Environment of the Mekong Delta

The course focuses on the history, culture, economy and environment of Vietnam, with particular emphasis on the Mekong Delta region. This is achieved through lectures from local professors at Can Tho University, active participation in field trips, the home stay, course readings, and synthesis through questions sets and discussions provided by University of Montana instructors. The goal of this half of the Vietnam study abroad program is to provide an understanding of the unique environments and the socio-economy of the Mekong Delta region to facilitate learning about the effects of climate change on these complex natural and anthropogenic systems.

ENST 430 (UG) Culture & Agriculture.
Surveys treatment of farmers and farming in the humanities. Course covers specific agricultural crops and their effect on social and environmental history, artistic commentary on agricultural life and farmer philosophy. Themes range from agriculturally influenced historical events to Wendell Berry's poetry to Albert Borgmann's philosophy.

ENST 437 (UG) – Climate Change Effects and Adaptation in the Mekong Delta
This course focuses on the threats posed by climate change in Vietnam, with particular emphasis on the Mekong Delta region. This is achieved through lectures from Can Tho University professors, active participation in field trips, the homestay, course readings, and synthesis through questions sets and discussions provided by University of Montana instructors. The goal of this half of the Vietnam study abroad program is to provide an understanding of the potential impacts of climate change on the ecosystems and people of the Mekong Delta, and explore opportunities for people to adapt to and mitigate these impacts.

ENST 472 (UG) General Science: Conservation Education
A study of the foundations of environmental science and conservation education with applications to community service and teaching.

ENST 480 (UG) – Food, Agriculture, Environment
Exploration of the premise that agricultural sustainability requires practices, policies, and social arrangements that balance concerns of environmental soundness, economic viability, and social justice among all sectors of society.

ENST 487 (UG) – Globalization, Justice, and the Environment
Study of current trends in economic globalization and its effects on efforts to work for social justice and environmental sustainability, particularly in the Global South. Examination of different models and theories of globalization, analysis of ethical issues raised, and assessment of alternatives proposed.

ENST 493 - Study Abroad: Environmental Justice Latin America.
Two week travel seminar to one or more Latin American countries to examine Latin American perspectives on environmental justice and efforts toward sustainable development within the context of the global economy and U. S. foreign policy.

ENST 505 (G) – Literature of Nature Writing
Study of nature, environmental, and place- based writing, with emphasis on the American tradition and its relationship to twenty-first century environmental concerns, challenges, and opportunities, and to the current practice of nature and environmental writing.

ENST 510 (G) – Native American Environmental Issues
This graduate readings seminar provides an overview of environmental issues of Native American communities through the 19th to 21st centuries.

ENST 513 (G) – Natural Resources Conflict Resolution
Examines the basic framework for preventing and resolving natural resource and environmental conflicts in America. Reviews the history of alternative approaches, emphasizes the theory and practice of collaboration, and considers future trends. This highly interactive course uses lectures, guest speakers, case studies, and simulations.

ENST 515 (G) Environmental Negotiation Mediation
This course prepares students to effectively engage in multiparty negotiation on natural resource and environmental issues. It is grounded in theory and provides an opportunity to develop practical skills in both negotiation and facilitation/mediation. Guest speakers, case studies, and simulations allow students to develop, test, and refine best practices.

ENST 519 (G) – Foundations of Change
Designed for the first-year graduate cohort in Environmental Studies, this foundational course aims to strengthen participants' capacities to effectively meet today's environmental and social justice challenges. Our incoming cohort (around 20-25 in recent years) includes students from a wide variety of backgrounds. The course provides an introduction to the history and development of the environmental movement(s), as well as a theoretical understanding of democracy, citizenship, power, and social change. Participants will also explore their own sense of personal purpose and develop community.

ENST 520 (G) Environmental Organizing
Developing understanding of and skills in community and environmental organizing. Emphasis on theory and practice of civic engagement and social change with a focus on developing and running campaigns and working in a group. Team projects.

ENST 548 (G) Supervision and Teaching Environmental Education
Design, selection and evaluation of materials for the teaching of environmental education.

ENST 563 (G) – Environmental Law I
Philosophy and values underlying environmental regulation, basic introduction to administrative law, in-depth study of air and water pollution and the environmental policy acts.

ENST 564 (G) – Environmental Law II
In-depth study of the laws addressing toxic substances and solid and hazardous waste, and the Endangered Species Act. Exploration of interaction between land use regulation and environmental law.

ERTH 303N (UG) Weather & Climate
Origin, composition, structure, and dynamics of the atmosphere, gas and radiation laws, energy budget and balance, weather elements, North American weather systems, and climate change.

FORS 320 (UG) – Forest Environmental Economics
Economic techniques to support decision making about the allocation of scarce resources, and management of forests for timber and other ecosystem services.

FORS 333 (UG) – Fire Ecology
A detailed analysis of fire ecology in terrestrial ecosystems with a focus on the Rocky Mountains, including re history, fire effects, landscape pattern, land use legacies, and management implications.

FORS 342 (UG) – Timber Harvesting & Roads
An overview of harvesting system capabilities and selection for multiple resource objectives. Fundamentals of forest road management. Best management practices as they apply to forest operations in Montana and the western United States.

FORS 505 (G) – Sampling Methods
Fundamentals of statistical sampling emphasizing natural and environmental resource applications. Principles of inferences and alternative estimators are studied in the context of simple random, systematic, unequal probability, stratified, and 3P/Poisson designs. Variable radius plot sampling, line intersect sampling, and other probability proportional to size designs used in forest and ecological inventories are also covered.

FORS 558 Landscape Ecology (G) - Solomon Dobrowski
It covers the theory and application of landscape ecology which provides core scientific underpinnings for conservation science and addresses socio-ecological systems.

GLBD 194 (UG) Energy Conflict (Peter McDonough)
Interdisciplinary, discussion-based seminar exploring the intersectionality and nuance of four major areas of energy and climate controversy: coal transition, nuclear power, oil pipelines, and international development.

GLI Capstone (GLBD 499) (Peter McDonough)
Group project class for seniors in the GLI program. The 2019/20 group focused their project and researching and documenting home sustainability measures, then publishing a resource website for residents interested in personal/home sustainability.

GPHY 111 (UG) – Introduction to Physical Geography
Introduction to the earth's major natural environmental systems, their spatial distribution and interrelationships, including weather and climate, vegetation and ecosystems, soils, landforms, and earth-surface processes.

GPHY 121 (UG) – Introduction to Human Geography
Introduction to Human Geography focuses upon the linkages between geography and society including analysis of regions, ethnic groups, urban landscapes, migration and population change, geopolitics, economics, and cultural differences.

GPHY 141SX (UG) – Geography of World Regions
An overall view of how the lands and peoples of the world are organized into coherent geographical regions, how landscapes differ from region to region, and how the people differ in terms of their traits, beliefs, ways of life, and economic livelihood.

GPHY 144 (UG) – Montana's Mountains
This course addresses sustainability in the context of mountain-society interactions in the Flathead Basin and Crown of the Continent Ecosystem. This course is field-based and looks at a range of sustainability concerns such as small-scale green energy systems, green technologies, small-scale mountain agriculture, and sustainable tourism.

GPHY 338 (UG) – Mountains & Society
A major component of this course deals with sustainable mountain development, the history of this concept as well as the indicators, opportunities and challenges associated with sustainable mountain development.

GPHY 433 (UG) – Cultural Ecology
Course examines issues related to culture and the natural environment. Topics include cultural origins and diversity, geography of religion, geolinguistics, plant and animal domestication, livelihood systems, folk and popular culture, ethnic geography, political patterns, demography, industries, urban genesis, and the transformation of environmental systems. Course has community resilience (for sustainability) as a major component.

GPHY 466 (UG) – Environmental Planning
Planning for sustainable use of land, water, and other resources is the main content.

GPHY 486 (UG) - Transport Planning
A project-oriented course focusing on patterns and trends in urban passenger transportation, principles of transport planning, and modeling in Geographic Information Systems (GIS). The goal for most analyses is efficient transportation in urban areas and several of the examples focus on sustainable transportation such as bicycle commuting.

GPHY 560 (G) – Seminar in Planning
A critical analysis of land planning history, theory, approaches, and practice. Emphasis is on the United States and

England.

LING 375X (UG) – Linguistic Ecology and Language Endangerment
Survey of endangered languages and the communities in which those endangered languages are spoken. Topics to be addressed include linguistic diversity, language endangerment, language shift and loss, language maintenance efforts, and prospects for the future of these languages.

LIT 420 (UG) – World Literature, Colonialism, and Global Theory: Comparative Literature in the New Millennium
The relationship between literary art and literary studies and the practices and discourses of globalization are the subject matter of this seminar. In the course we will trace the lineage of our contemporary economic, environmental, resource based and cultural world system—to describe globalization in the terms of Immanuel Wallerstein—to the colonial expansion of Europe in the sixteenth century. After exploring the roots of the present in what is (only apparently) the deep past, through the lens of the most important current work in Colonial and Globalization studies—Appadurai, Wallerstein, Moretti, Roy, Jameson, Tsing, et al.—we will also read in the diverse, complex and evolving body of culture that emerges out of and addresses the forces of globalization.

NASX 303E (UG) Ecological Perspectives in Native American Traditions
An examination of Native American environmental ethics and tribal and historical and contemporary use of physical environmental resources.

NASX 351 (UG) Traditional Ecological Knowledge
This course is one unit of the four unit (12 credit) summer semester program: Wild Rockies Summer Semester. Description: This course will explore the traditional ecological perspectives of the Salish, Kootenai, Blackfeet and Tlingit people, as well as how these perspectives relate to Western concepts of ecology. Through field-based activities, lectures by tribal elders, and personal exploration, students will come to a heightened understanding of the still vital cultural perspectives and practices of modern American Indians, particularly in the Rockies of Montana and Canada.

NRSM 265 (UG) – Elements of Ecological Restoration
Overview of the natural and social science elements of ecological restoration, including the ecological foundations of restoration, practices used to restore terrestrial and aquatic habitats, philosophical and ethical challenges involved, and current initiatives in Montana and the United States. Includes Saturday field trips.

NRSM 271 (UG) Conservation Ecology – Solomon Dobrowski
An overview of ecological concepts and how ecology is applied to further our understanding of ecosystems and conservation. Topics include: ecosystems functions and values, biomes, natural selection and speciation, biodiversity, succession, climate change, fragmentation, protected areas, impacts of exotic species and other human influences on ecosystem functions.

NRSM 373 (UG) – Wilderness and Civilization
Social and cultural perspectives on the wilderness idea and wildland practices. Course topics include history of wilderness and the wilderness movement, various philosophical viewpoints on wilderness, protected area management issues, and how wilderness fits into larger landscapes and societies.

NRSM 273 (UG) – Wilderness/Civilization Field Studies
Field studies in ecology and conservation. Includes natural history, field journaling, ecological monitoring, protected area management, and community conservation. One-day trips as well as extended backcountry trips. Part of the Wilderness and Civilization program.

NRSM 408 (UG) – Global Cycles and Climate Change
An analysis of the earth's major global biogeochemical cycles with a focus on the ways and extent to which each of them influences and interacts with the global climate system.

NUTR 221 (UG) – Basic Human Nutrition
The principles of science as applied to current concepts and controversies in the field of human nutrition.

PHAR 324 (UG) – Medicinal Plants
Plants and other natural substances which nourish, heal, injure, or alter the conscious mind.

PHL 112E (UG) Intro to Ethics and Environment
An introductory-level ethics course with a special interest in the natural environment. The course will (a) introduce students to the three classical traditions in ethics - virtue, Kantianism, and utilitarianism, (b) ground these theories in questions about the moral status of non-humans and our moral duties to non-humans, (c) include an applied section that covers animal welfare, biotechnology, and other current topics.

PHL 422 (UG) Environmental Philosophy
Critical exploration of selected philosophical and literary texts pertinent to the ethics of human relationships with the natural environment.

PHL 504 (G) – Topics in Environmental Philosophy
Critical study/discussion of current (as well as benchmark) texts and issues in environmental ethics, environmental politics, and the philosophy of ecology. Interdisciplinary; open to interested students from all disciplines.

PHL 505 (G) – Issues in the Anthropocene
Reading and interpretation of selected writings in contemporary environmental philosophy.

PHL 507 (G) Philosophical Foundations of Ecology
In this seminar we will look at some of the key papers in philosophy of ecology (and perhaps, more broadly, environmental philosophy). Some of the topics covered will be: whether nature can be thought to be in balance, the complexity-stability debate, the role and nature of models in ecology, whether there are laws of ecology, whether communities and ecosystems are "super-organisms" or simple aggregates, what biodiversity is and why we should care about it.

PSCI 324 (UG) Climate Policies: China & the US
Explores historic, current, and future greenhouse-gas emissions of the United States and China, reasons why both are the two largest C02 emitters, and prevailing national and subnational government policies and nongovernmental actions that affect emissions mitigation and adaptation.

PSCI 332 (UG) Global Environmental Politics
This course focuses on the unique set of collective action problems faced by global actors in the governance of the environment and the institutions they use to overcome those problems. Themes include the tragedy of the commons, climate change, and environmental security.

PSYX 230 (UG) – Developmental Psychology
The study of human physical, cognitive and psychosocial development throughout the lifespan. Content covers major theories, the influence of genetics, and the environment from a chronological aspect. Appropriate for Social Work, Nursing, Addiction Studies, Education, and Psychology. The course includes a unit on Children's relationship with nature, including general declines in the time children spend outdoors, the corresponding increase in time spent using technology, and the associated effects. In addition to lecture and discussion, the unit includes a film on this topic ("Play Again") and an out-of-class activity.

PSYX 330 (UG) – Child Development
The study of human biological, cognitive, and social-emotional development from the prenatal period through adolescence. Content covers major theories, research methods, and empirical findings fundamental to Developmental

Psychology. Psychology, Communicative Sciences and Disorders, Social Work, Nursing, Education, and Health and Human Performance.

SOCI 101 (UG) – Introduction to Sociology
Overview of the principles and concepts used in the study of human social interaction, groups, communities and societies.

SOCI 270 (UG) – Intro to Development Sociology
Introduction to sociological perspectives on international development, globalization, and sustainability. Rural and environmental issues emphasized.

SOCI 355 (UG) – Population and Society
An introduction to contemporary world population problems including population growth, tracking, fertility, mortality, population policy, and the relationship between population and environment. Emphasizes gender issues in international context.

SOCI 471 (UG) – Gender and Global Development
Advanced perspectives on the relationships between gender and colonization, international development, and globalization.

WILD 105 (UG) - Wildlife & People
Interactions of wildlife and people in today's society.

WILD 170 (UG) - Fish & Wildlife Interest Group
Discussion section for incoming students that explores current issues, skills, and professional opportunities in the fields of fish and wildlife biology. Sustainability thread differs each year depending on current events and professional interests of the students.

WILD 180 (UG) – Careers in Wildlife Biology
Central components of this class include an overview of wildlife and environmental legislation and addressing the future challenges and opportunities in wildlife and natural resource conservation. Sustainability is an important thread throughout that coverage.

WILD 230 (UG) – Conservation Science
The goal of this class is to introduce students to major issues related to the conservation of biodiversity. Lectures will illustrate how science can be used to identify and solve conservation problems. Lectures will cover current threats to biodiversity (human population growth, extinctions, habitat destruction, degradation and fragmentation, overexploitation, invasive species, global climate change) and discuss how science can be used to help ameliorate these impacts.

WILD 370 (UG) – Wildlife Habitat Conservation and Management
This class focuses on techniques, concepts, principles, and analyses underlying effective habitat conservation and management. Private lands conservation and private-public partnerships are emphasized in the class. Sustainability is central to these efforts to preserve, protect and conserve habitat while recognizing societal needs and dependencies on those landscapes.

WILD 408 (UG) – Advanced Fisheries
This class focuses on the analysis and interpretation of fish population and community data to inform management. Sustainability concepts are fundamental to fisheries conservation and management. In fact, the goal of achieving sustainable fisheries is central to conservation efforts led by various state, federal, and tribal agencies, often in direct collaboration with various non-governmental organizations.

WILD 410 (UG) – Wildlife Policy & Biopolitics
Overview of the laws affecting wildlife and how those laws are initiated, implemented, and enforced; impact of politics, interest groups, and agency jurisdictions.

WILD 470 (UG) – Conservation of Wildlife Populations
Application of population ecology principles and theory to the conservation and management of wildlife populations.

WILD 480 (UG) – The Upshot
Designed for students to apply their knowledge in the development of wildlife management planning.

WILD 485 (UG) - Aquatic Invertebrate Ecology
This course is designed to provide students an understanding of the life histories, ecology and importance of macroinvertebrates in freshwater aquatic systems. The primary focus will be on insects, although an introduction to other invertebrates will also be included. The lab portion will involve identification of major groups of aquatic macroinvertebrates and participation in an environmental assessment using invertebrates as indicators of stream condition and restoration efficacy.

WILD 494 (UG) – Senior Wildlife Seminar
This class emphasizes strategic communication within wildlife conservation. Students are taught to understand communication within the broader sociopolitical and economic circumstances in which sustainable conservation is achieved. Our ability to manage for sustainable ecosystems depends heavily on our approaches to communicating science and information to diverse publics.

Total: 110

Undergraduate: 88
Graduate: 22