

Department	Abbreviation	Course #	Title	Description	Credits	Level	Type	FY13	FY14	FY15
Agricultural & Biosystems Engineering	ABE	434	Natural Resources Engineering and Lab	Precipitation, infiltration, evapotranspiration and runoff from small agricultural watersheds and application to design of conservation structures, water erosion control practices. Design of drainage and irrigation systems. Feedlot pollution control principles. Prerequisites: EM 331. Corequisites: ABE 434L-434.	4	UG	Course that includes sustainability	X	X	X
Agricultural & Biosystems Engineering	ABE	434L	Natural Resources Engineering and Lab	Precipitation, infiltration, evapotranspiration and runoff from small agricultural watersheds and application to design of conservation structures, water erosion control practices. Design of drainage and irrigation systems. Feedlot pollution control principles. Prerequisites: EM 331. Corequisites: ABE 434L-434.	0	UG	Course that includes sustainability	X	X	X
Agricultural & Biosystems Engineering	ABS	475	Integrated Natural Resource Management and Lab	A capstone course that requires students to integrate previously-learned natural resource techniques and information into the strategic planning process. Students will be divided into small groups for plan development. Various majors are involved to allow for integrated course material. Lab to accompany ABS 475. Prerequisites: Senior Standing and PS 390 or senior standing and written consent. Corequisites: ABS 475L-475.	3	UG	Course that includes sustainability	X	X	X
Agricultural & Biosystems Engineering	ABS	475L	Integrated Natural Resource Management and Lab	A capstone course that requires students to integrate previously-learned natural resource techniques and information into the strategic planning process. Students will be divided into small groups for plan development. Various majors are involved to allow for integrated course material. Lab to accompany ABS 475. Prerequisites: Senior Standing and PS 390 or senior standing and written consent. Corequisites: ABS 475L-475.	0	UG	Course that includes sustainability	X	X	X
School of Design	ARCH	521	Building Specification	Students will develop the skills necessary to produce professional contract documents, construction documents and outline specifications, with an emphasis on sustainable building technologies. Computer aided drafting (CAD) and Building Information Modeling (BIM) will be covered. Prerequisites: ARCH 351.	2	G	Course that includes sustainability			X

School of Design	ARCH	552	Whole Building Studio II	Second of a two-semester studio sequence. Students will prepare detailed and coordinated drawings, models and specifications of integrated assemblies and systems using their building proposals from the first course. Projects will document LEED points and address sustainable concepts. Prerequisites: ARCH 551.	6	G	Course that includes sustainability			X
School of Design	ARCH	631	Building Technology I	Introduction to basic building structural systems, daylighting, environmental systems, building services and envelope with an emphasis on sustainable technology. Prerequisites: ARCH 351.	2	G	Course that includes sustainability			X
School of Design	ARCH	411	Site, Environment, Urbanism, & Public Space	Lecture and field work in urban design principles, environmental responsibilities, architecture's role in the sustenance of public space in the implementation of site design technologies. Prerequisites: ARCH 341.	2	UG	Course that includes sustainability	X	X	X
Animal Science	AS	563	Agricultural Waste Management	Understand agricultural or biological wastes. Develop an understanding of regulatory requirements and best management practices that advocate responsible environmental stewardship. Topics include production, collection, handling, treating, and reusing agricultural and biological wastes. Course will emphasize written and oral reports. Prerequisites: PS 213 or PS 313. Cross-Listed: AST 463-563.	3	G	Course that includes sustainability			X
Animal Science	AS	463	Agricultural Waste Management	Understand agricultural or biological wastes. Develop an understanding of regulatory requirements and best management practices that advocate responsible environmental stewardship. Topics include production, collection, handling, treating, and reusing agricultural and biological wastes. Course will emphasize written and oral reports. Prerequisites: PS 213 or PS 313. Cross-Listed: AST 463-563.	3	UG	Course that includes sustainability		X	X

Agricultural & Biosystems Engineering	AST	563	Agricultural Waste Management	Understand agricultural or biological wastes. Develop an understanding of regulatory requirements and best management practices that advocate responsible environmental stewardship. Topics include production, collection, handling, treating, and reusing agricultural and biological wastes. Course will emphasize written and oral reports. Prerequisites: PS 213 or PS 313. Cross-Listed: AST 463-563.	3	G	Course that includes sustainability	X	X	X
Agricultural & Biosystems Engineering	AST	463	Agricultural Waste Management	Understand agricultural or biological wastes. Develop an understanding of regulatory requirements and best management practices that advocate responsible environmental stewardship. Topics include production, collection, handling, treating, and reusing agricultural and biological wastes. Course will emphasize written and oral reports. Prerequisites: PS 213 or PS 313. Cross-Listed: AST 463-563.	3	UG	Course that includes sustainability	X	X	X
Construction & Operations Management	CM	332	Building Construction Methods & Systems	The study of the structural and finish systems that make up a building and the related methods of implementation. Prerequisites: CM 216 and junior standing or instructor approval.	3	UG	Course that includes sustainability	X	X	X
Construction & Operations Management	CM	430	Building Environmental Certification	Preparation for accreditation by a recognized authority in the efficient construction of buildings.	3	UG	Course that includes sustainability	X		
Natural Resource Management	EES	275	Introduction to Environmental Science	Presents an introduction and review of the factors influencing the quantity, quality and distribution of resources within the environment, uses of the environment and relation to human population size and demographics, effects of natural and human disturbances on the environment and economic and political considerations for environmental management. Prerequisites: CHEM 112 AND BIOL 101, BIOL 103, BIOL 151 or BIOL 153. Notes: ** Course meets IGR #2.	3	UG	Course that includes sustainability	X	X	X

Geography	GEOG	559	Political Geography	Spatial perspectives of political phenomena from the local to the global scales. Issues include ethnicity, nationalism, boundaries, territory, power, electoral geography, and impacts on the natural environment. Notes: ** Course meets IGR #2.	3	G	Course that includes sustainability	X	
Geography	GEOG	447	Geography of the Future	A futuristic analysis of Earth's natural environmental elements, natural resources, population and settlement, and cultural institutions at the global, national, and state levels.	3	UG	Course that includes sustainability	X	X
Geography	GEOG	459	Political Geography	Spatial perspectives of political phenomena from the local to the global scales. Issues include ethnicity, nationalism, boundaries, territory, power, electoral geography, and impacts on the natural environment. Notes: ** Course meets IGR #2.	3	UG	Course that includes sustainability		X
School of Design	LA	101	Introduction to Landscape Architecture	A survey of the field of Landscape Design and Environmental Planning. Introduction to conceptual aspects of the discipline with a focus on landscape appreciation, environmental problems of land use, conservation, landscape design and planning, and land ethics and stewardship.	3	UG	Course that includes sustainability		X
School of Design	LA	264	Planting Design and Specifications	Preparation of planting designs, plans, and specifications for projects of increasing complexity. Emphasis on northern plains landscapes. Focus on use of native plants and sustainable design. Projects from small residential scale to larger regional scale. Design applications emphasizing the space forming potential and functional use of natural and man-made plant groups. Prerequisites: LA 214 and HO 250-250L.	4	UG	Course that includes sustainability		X

History, Political Science, Philosophy, & Religion	PHIL	454	Environmental Ethics	Presents humanity's relationship to the environment, its responsibility to nature, and its obligations to future generations, attending to both theory and applications, including the debate over causes of environmental crisis, the value of endangered species, the wilderness, and natural objects; the seriousness of the growing global population and obligations to feed the poor, the feasibility of sustaining an ecological responsible society. Cross-Listed: REL 454-554. Notes: ** Course meets IGR #2.	3	UG	Course that includes sustainability	X			
Plant Science	PS	546	Agroecology	Agroecology is the study of the ecological principles important in agricultural systems. Topics in this course will include energy flow and nutrient cycling, population and community ecology, weed and insect ecology, and water and nutrient conservation.	3	G	Course that includes sustainability	X	X	X	
Plant Science	PS	446	Agroecology	Agroecology is the study of the ecological principles important in agricultural systems. Topics in this course will include energy flow and nutrient cycling, population and community ecology, weed and insect ecology, and water and nutrient conservation.	3	UG	Course that includes sustainability	X	X	X	
Plant Science	PS	310	Soil Geography and Land Use Interpretation and Lab	Relationship of soil characteristics and soil classification to land use interpretations. Laboratory exercises involve field and laboratory procedures used in soil survey investigations. Studio to accompany PS/GEOG 310 Prerequisites: GEOG 132-132L or PS 213-213L or instructor consent. Corequisites: PS 310L-310. Cross-Listed: GEOG 310-310L. Notes: ** Course meets IGR #2.	3	UG	Course that includes sustainability	X	X	X	
Plant Science	PS	310L	Soil Geography and Land Use Interpretation and Lab	Relationship of soil characteristics and soil classification to land use interpretations. Laboratory exercises involve field and laboratory procedures used in soil survey investigations. Studio to accompany PS/GEOG 310 Prerequisites: GEOG 132-132L or PS 213-213L or instructor consent. Corequisites: PS 310L-310. Cross-Listed: GEOG 310-310L. Notes: ** Course meets IGR #2.	0	UG	Course that includes sustainability	X	X	X	

Plant Science	PS	412	Environmental Soil Chemistry	Fundamentals of soil chemical properties and processes important for the sound management of soil resources. Topics include sorption/desorption of inorganic and organic compounds, bioavailability of nutrients and contaminants, oxidation/reduction, phase equilibria, soil organic matter, soil mineralogy, ion exchange, and saline/sodic soils. Prerequisites: PS 213-213L and CHEM 108-108L or CHEM 120-120L.	3	UG	Course that includes sustainability	X		X
Plant Science	PS	512	Environmental Soil Chemistry	Fundamentals of soil chemical properties and processes important for the sound management of soil resources. Topics include sorption/desorption of inorganic and organic compounds, bioavailability of nutrients and contaminants, oxidation/reduction, phase equilibria, soil organic matter, soil mineralogy, ion exchange, and saline/sodic soils. Prerequisites: PS 213-213L and CHEM 108-108L or CHEM 120-120L.	3	G	Course that includes sustainability	X		X
Plant Science	PS	362	Environmental Soil Management and Lab	Management systems designed to maintain soil productivity and environmental quality are examined. Soil problems important in production systems and environmental management including compaction, erosion, and nonpoint pollution are analyzed based on underlying environmental and agronomic principles. Computer simulation models are used and applied to soil problems. Prerequisites: PS 213-213L. Corequisites: PS 362L-362. Notes: ** Course meets IGR #2.	3	UG	Course that includes sustainability	X	X	X
Plant Science	PS	362L	Environmental Soil Management and Lab	Management systems designed to maintain soil productivity and environmental quality are examined. Soil problems important in production systems and environmental management including compaction, erosion, and nonpoint pollution are analyzed based on underlying environmental and agronomic principles. Computer simulation models are used and applied to soil problems. Prerequisites: PS 213-213L. Corequisites: PS 362L-362. Notes:** Course meets IGR #2.	0	UG	Course that includes sustainability	X	X	X
Plant Science	PS	431	Insect Ecology and Biological Control	This course will examine the ecological relationships between insects and their environment. Topics will include natural history, behavior, population dynamics, interactions between insects and their food plants, predators, and diseases; insect evolutionary ecology, and insect agroecology. These topics will also be explored in the context of the biological control of arthropod and weed pests by natural enemies.	3	UG	Course that includes sustainability		X	

Plant Science	PS	531	Insect Ecology and Biological Control	This course will examine the ecological relationships between insects and their environment. Topics will include natural history, behavior, population dynamics, interactions between insects and their food plants, predators, and diseases; insect evolutionary ecology, and insect agroecology. These topics will also be explored in the context of the biological control of arthropod and weed pests by natural enemies.	3	G	Course that includes sustainability	X	
Natural Resource Management	RANG	321	Wildland Ecosystems	Structure, function and multiple-use management of the major wildlandecosystems of North America. Ecological concepts and renewable resource management strategies will be examined.	3	UG	Course that includes sustainability	X	
History, Political Science, Philosophy, & Religion	REL	454	Environmental Ethics	Presents humanity's relationship to the environment, its responsibility to nature, and its obligations to future generations, attending to both theory and applications, including the debate over causes of environmental crisis, the value of endangered species, the wilderness, and natural objects; the seriousness of the growing global population and obligations to feed the poor, the feasibility of sustaining an ecological responsible society. Cross-Listed: REL 454-554. Notes: ** Course meets IGR #2.	3	UG	Course that includes sustainability	X	
Natural Resource Management	WL	515	Upland Game Ecology & Management & Lab	Upland game birds and mammals as components of ecosystems. Effects of farming; industry; social change; technology; and federal, state, and private programs on game and non-game species. Techniques for individual species management. Prerequisites: WL 363-363L. Corequisites: WL 415L- 415L/515L-515.	3	G	Course that includes sustainability	X	X
Natural Resource Management	WL	517	Large Mammal Ecology & Management & Lab	Large mammal life histories and distributions. Relationships of nutrition, reproduction, interspecific competition, and predation to management of large mammal habitat and harvest. Techniques for research and management of large mammals. Prerequisites: WL 355-355L. Corequisites: WL 417L- 417/517L-517.	3	G	Course that includes sustainability	X	

Natural Resource Management	WL	519	Waterfowl Ecology & Management & Lab	Analysis of ecological and socio-economic factors affecting waterfowl habitat and populations. State and federal programs affecting wetland drainage and preservation. Field inspection of waterfowl habitat in the north-central states. Prerequisites: Department written consent for WL 419 only. Corequisites: WL 419L-419/519L-519.	3	G	Course that includes sustainability		X
Natural Resource Management	WL	713	Animal Population Dynamics	Methods of analysis and interpretation of vital statistics of animal populations. Current theories on natural regulation of animal populations. Particular emphasis on vertebrate species of economic and/or recreational importance. Comparison of environmental controls on of various animal groups. Corequisites: WL 713L.	3	G	Course that includes sustainability	X	X
Natural Resource Management	WL	515L	Upland Game Ecology & Management & Lab	Upland game birds and mammals as components of ecosystems. Effects of farming; industry; social change; technology; and federal, state, and private programs on game and non-game species. Techniques for individual species management. Prerequisites: WL 363-363L. Corequisites: WL 415L- 415L/515L-515.	0	G	Course that includes sustainability	X	X
Natural Resource Management	WL	517L	Large Mammal Ecology & Management & Lab	Large mammal life histories and distributions. Relationships of nutrition, reproduction, interspecific competition, and predation to management of large mammal habitat and harvest. Techniques for research and management of large mammals. Prerequisites: WL 355-355L. Corequisites: WL 417L- 417/517L-517.	0	G	Course that includes sustainability		X
Natural Resource Management	WL	519L	Waterfowl Ecology & Management & Lab	Analysis of ecological and socio-economic factors affecting waterfowl habitat and populations. State and federal programs affecting wetland drainage and preservation. Field inspection of waterfowl habitat in the north-central states. Prerequisites: Department written consent for WL 419 only. Corequisites: WL 419L-419/519L-519.	0	G	Course that includes sustainability		X

Natural Resource Management	WL	713L	Animal Population Dynamics Lab	Methods of analysis and interpretation of vital statistics of animal populations. Current theories on natural regulation of animal populations. Particular emphasis on vertebrate species of economic and/or recreational importance. Comparison of environmental controls on of various animal groups. Corequisites: WL 713L.	0	G	Course that includes sustainability	X		X
Natural Resource Management	WL	220	Introduction to Wildlife and Fisheries management	An introduction to the basic principles used in the management of wildlife and fish populations, their habitats, and their human users. The course is directed toward the presentation of general concepts that are integral to understanding the discipline.	3	UG	Course that includes sustainability	X	X	X
Natural Resource Management	WL	411	Principles of Wildlife Management and Lab	Application of ecological principles of the management of wild birds, mammals, and herps. History and development of wildlife management as a science; characteristics of, and factors affecting wildlife populations; techniques and theories of management; and, wildlife conservation. Prerequisites: WL 363-363L and WL 355-355L. Corequisites: WL 411L-411.	3	UG	Course that includes sustainability	X		X
Natural Resource Management	WL	412	Principles of Fisheries Management and Lab	Fisheries management as a science with an emphasis on freshwater fishes and ecosystems. Emphases include biota, habitat, and human management. Prerequisites: WL 220, WL 230 or department written consent. Corequisites: WL 412L-412.	3	UG	Course that includes sustainability	X	X	X
Natural Resource Management	WL	415	Upland Game Ecology & Management & Lab	Upland game birds and mammals as components of ecosystems. Effects of farming; industry; social change; technology; and federal, state, and private programs on game and non-game species. Techniques for individual species management. Prerequisites: WL 363-363L. Corequisites: WL 415L- 415L/515L-515.	3	UG	Course that includes sustainability	X		X

Natural Resource Management	WL	417	Large Mammal Ecology & Management & Lab	Large mammal life histories and distributions. Relationships of nutrition, reproduction, interspecific competition, and predation to management of large mammal habitat and harvest. Techniques for research and management of large mammals. Prerequisites: WL 355-355L. Corequisites: WL 417L-417/517L-517.	3	UG	Course that includes sustainability			X
Natural Resource Management	WL	419	Waterfowl Ecology & Management & Lab	Analysis of ecological and socio-economic factors affecting waterfowl habitat and populations. State and federal programs affecting wetland drainage and preservation. Field inspection of waterfowl habitat in the north-central states. Prerequisites: Department written consent for WL 419 only. Corequisites: WL 419L-419/519L-519.	3	UG	Course that includes sustainability			X
Natural Resource Management	WL	430	Human Dimensions in Wildlife & Fisheries & Lab	Interactions among various stakeholders, resource management agencies, and the wildlife and fisheries resources are studied. Topics such as public attitudes and expectations; agency structure, administration, and policy; tangible and intangible values of fishes, wildlife, and their habitats; the concept of biophilia as motivation for resource use; public relations; the philosophy and ethics of resource use and management; and, wildlife and fisheries law and its enforcement are included. Corequisites: WL 430L-430.	3	UG	Course that includes sustainability	X	X	X
Natural Resource Management	WL	411L	Principles of Wildlife Management and Lab	Application of ecological principles of the management of wild birds, mammals, and herps. History and development of wildlife management as a science; characteristics of, and factors affecting wildlife populations; techniques and theories of management; and, wildlife conservation. Prerequisites: WL 363-363L and WL 355-355L. Corequisites: WL 411L-411.	0	UG	Course that includes sustainability	X		X
Natural Resource Management	WL	412L	Principles of Fisheries Management and Lab	Fisheries management as a science with an emphasis on freshwater fishes and ecosystems. Emphases include biota, habitat, and human management. Prerequisites: WL 220, WL 230 or department written consent. Corequisites: WL 412L-412.	0	UG	Course that includes sustainability	X	X	X

Natural Resource Management	WL	415L	Upland Game Ecology & Management & Lab	Upland game birds and mammals as components of ecosystems. Effects of farming; industry; social change; technology; and federal, state, and private programs on game and non-game species. Techniques for individual species management. Prerequisites: WL 363-363L. Corequisites: WL 415L- 415L/515L-515.	0	UG	Course that includes sustainability	X		X
Natural Resource Management	WL	417L	Large Mammal Ecology & Management & Lab	Large mammal life histories and distributions. Relationships of nutrition, reproduction, interspecific competition, and predation to management of large mammal habitat and harvest. Techniques for research and management of large mammals. Prerequisites: WL 355-355L. Corequisites: WL 417L-417/517L-517.	0	UG	Course that includes sustainability		X	
Natural Resource Management	WL	419L	Waterfowl Ecology & Management & Lab	Analysis of ecological and socio-economic factors affecting waterfowl habitat and populations. State and federal programs affecting wetland drainage and preservation. Field inspection of waterfowl habitat in the north-central states. Prerequisites: Department written consent for WL 419 only. Corequisites: WL 419L-419/519L-519.	0	UG	Course that includes sustainability		X	
Natural Resource Management	WL	430L	Human Dimensions in Wildlife & Fisheries & Lab	Interactions among various stakeholders, resource management agencies, and the wildlife and fisheries resources are studied. Topics such as public attitudes and expectations; agency structure, administration, and policy; tangible and intangible values of fishes, wildlife, and their habitats; the concept of biophilia as motivation for resource use; public relations; the philosophy and ethics of resource use and management; and, wildlife and fisheries law and its enforcement are included. Corequisites: WL 430L-430.	0	UG	Course that includes sustainability	X	X	X
Civil & Environmental Engineering	CEE	225	Principles of Environmental Science and Engineering	Introduction to the basic principles of environmental management, environmental science and engineering, and natural resources engineering. The class will be team taught by faculty from environmental management, civil and environmental engineering, agricultural and biosystems engineering, and agricultural systems technology programs. The course will teach the fundamental physical, biological, and chemical principles of environmental processes. The course will also explore the impact of humans and human activity on ecosystems in the environment. Prerequisites: CHEM 106 or CHEM 112. Notes: Course meets IGR #2.	3	UG	Sustainability Course	X	X	X

Construction & Operations Management	CM	360	Building Design & Evaluation Concepts	The study of the design of buildings and the use of contemporary concepts to regulate and influence the design process. Prerequisites: CM 124 and CM 216.	3	UG	Sustainability Course				X
Economics	ECON	572	Resource and Environmental Economics	Resource and environmental economics surveys the allocation and conservation of natural resources from a perspective of optimal use and sustainability. Emphasis is placed on environmental economics including the problems of pollution, population, and economic growth. Methods for evaluating projects and programs are considered. Prerequisites: ECON 201.	3	G	Sustainability Course	X	X		X
Economics	ECON	372	Introduction to Resource and Environmental Economics	Introduction to environmental economics. The course surveys environmental issues such as pollution and carbon emissions. Cost-benefit analysis of the cleanup of environmental problems is introduced as are net present value metrics. Cross-Listed: AGEC 372.	3	UG	Sustainability Course	X	X		
Economics	ECON	472	Resource and Environmental Economics	Resource and environmental economics surveys the allocation and conservation of natural resources from a perspective of optimal use and sustainability. Emphasis is placed on environmental economics including the problems of pollution, population, and economic growth. Methods for evaluating projects and programs are considered. Prerequisites: ECON 201.	3	UG	Sustainability Course	X	X		X
Electical Enginering & Computer Science	EE	536	Photovoltaic Systems Engineering and Lab	Fundamentals of hybrid photovoltaic power systems. Topics may include: an overview of energy and electricity use; solar resource characteristics; load assessment; the fundamentals of solar cells, batteries, power electronics, and generators and other power sources; power system design; the National Electric Code; and energy economics. This lab provides practical experience in the design of hybrid photovoltaic power systems. Prerequisites: EE 320 and EE 360. Corequisites: EE 436L-436/536L-536.	3	G	Sustainability Course	X	X		X

Electical Enginering & Computer Science	EE	735	Photovoltaics	This course will cover modern silicon photovoltaic (PV) devices, including the basic physics, ideal and nonideal models, device parameters and design, and device fabrication. The emphasis will be on crystalline and multicrystalline devices, but thin films will also be introduced. PV applications and economics will also be discussed.	3	G	Sustainability Course			X
Electical Enginering & Computer Science	EE	736	Advanced Photovoltaics	This course will cover advanced photovoltaic concepts, including thin films, compound semiconductors, spectral conversion devices, and organic and polymeric devices. Advanced device designs will be emphasized. Evaluation will include a research paper addressing a current PV topic. Prerequisites: EE 735.	3	G	Sustainability Course	X		X
Electical Enginering & Computer Science	EE	737	Organic Photovoltaics	Organic photovoltaic provides a variety of interesting and new properties which facilitate solar energy utilization. The objectives of this course are to introduce material properties of polymers, small molecules, dyes, and nanmaterials for photovoltaics; describe device mechanisms and behavior or organic photovoltaics; understand the photophysical processes in organic photovoltaics; and introduce different processing techniques for device fabrication.	3	G	Sustainability Course		X	X
Electical Enginering & Computer Science	EE	536L	Photovoltaic Systems Engineering and Lab	Fundamentals of hybrid photovoltaic power systems. Topics may include: an overview of energy and electricity use; solar resource characteristics; load assessment; the fundamentals of solar cells, batteries, power electronics, and generators and other power sources; power system design; the National Electric Code; and energy economics. This lab provides practical experience in the design of hybrid photovoltaic power systems. Prerequisites: EE 320 and EE 360. Corequisites: EE 436L-436/536L-536.	1	G	Sustainability Course			X
Electical Enginering & Computer Science	EE	436	Photovoltaic Systems Engineering and Lab	Fundamentals of hybrid photovoltaic power systems. Topics may include: an overview of energy and electricity use; solar resource characteristics; load assessment; the fundamentals of solar cells, batteries, power electronics, and generators and other power sources; power system design; the National Electric Code; and energy economics. This lab provides practical experience in the design of hybrid photovoltaic power systems. Prerequisites: EE 320 and EE 360. Corequisites: EE 436L-436/536L-536.	3	UG	Sustainability Course			X

Electical Enginering & Computer Science	EE	436L	Photovoltaic Systems Engineering and Lab	Fundamentals of hybrid photovoltaic power systems. Topics may include: an overview of energy and electricity use; solar resource characteristics; load assessment; the fundamentals of solar cells, batteries, power electronics, and generators and other power sources; power system design; the National Electric Code; and energy economics. This lab provides practical experience in the design of hybrid photovoltaic power systems. Prerequisites: EE 320 and EE 360. Corequisites: EE 436L-436/536L-536.	1	UG	Sustainability Course	X
Natural Resource Management	EES	525	Disturbance Ecology and Lab	Introduction to basic concepts of disturbance ecology. Demonstration and discussion of linkages between basic biology and management of natural resources. Introduction to field and laboratory techniques for monitoring and assessment of ecological responses to pollution and other forms of disturbance. Prerequisites: BIOL 153 and BIOL 311/NRM 311. Corequisites: EES 425L-425/525L-525.	4	G	Sustainability Course	X
Natural Resource Management	EES	525L	Disturbance Ecology and Lab	Introduction to basic concepts of disturbance ecology. Demonstration and discussion of linkages between basic biology and management of natural resources. Introduction to field and laboratory techniques for monitoring and assessment of ecological responses to pollution and other forms of disturbance. Prerequisites: BIOL 153 and BIOL 311/NRM 311. Corequisites: EES 425L-425/525L-525.	0	G	Sustainability Course	X
Natural Resource Management	EES	425	Disturbance Ecology and Lab	Introduction to basic concepts of disturbance ecology. Demonstration and discussion of linkages between basic biology and management of natural resources. Introduction to field and laboratory techniques for monitoring and assessment of ecological responses to pollution and other forms of disturbance. Prerequisites: BIOL 153 and BIOL 311/NRM 311. Corequisites: EES 425L-425/525L-525.	4	UG	Sustainability Course	X
Natural Resource Management	EES	425L	Disturbance Ecology and Lab	Introduction to basic concepts of disturbance ecology. Demonstration and discussion of linkages between basic biology and management of natural resources. Introduction to field and laboratory techniques for monitoring and assessment of ecological responses to pollution and other forms of disturbance. Prerequisites: BIOL 153 and BIOL 311/NRM 311. Corequisites: EES 425L-425/525L-525.	0	UG	Sustainability Course	X

Geography	GEOG	515	Environmental Geography	Geographical aspects of environmental issues including historical geography of environmental problems, global driving forces, land ethics and stewardship, environmental externalities, population, resources, climate change, and environmental restoration. Focus on connections between human and natural systems; consequence chains between cause and effect; impact of time and space on problem perception, analysis, and solution; and natural and human laws. Term paper required. Notes: ** Course meets IGR #2.	3	G	Sustainability Course		X		
Geography	GEOG	415	Environmental Geography	Geographical aspects of environmental issues including historical geography of environmental problems, global driving forces, land ethics and stewardship, environmental externalities, population, resources, climate change, and environmental restoration. Focus on connections between human and natural systems; consequence chains between cause and effect; impact of time and space on problem perception, analysis, and solution; and natural and human laws. Term paper required. Notes: ** Course meets IGR #2.	3	UG	Sustainability Course		X		
History, Political Science, Philosophy, & Religion	HIST	379	Environmental History of the U.S.	Examines the relationship between the natural environment and the historical movements of humans by tracing U.S. environmental changes, beginning with the activities of the Native American peoples through the Euro-American presence to the Cold War era.	3	UG	Sustainability Course		X		
School of Design	HO	350	Environmental Stewardship in Horticulture	Concepts and principles of stewardship and sustainability relative to realized and potential impacts of horticultural practices on the environment.	3	UG	Sustainability Course	X		X	X
University College	IDL	100	Concepts of Sustainability	This course will provide an overview of what sustainability is and how to measure sustainable actions. Students will learn sustainability concepts, such as systems thinking, sustainable design principles, and resource utilization. Students will learn the complex interactions between social systems, environmental ethics, and ecological literacy. Applications of sustainability in the arts and humanities and social, physical, and natural sciences will be presented. Notes: ** Course meets IGR #2.	3	UG	Sustainability Course			X	

Mechanical Engineering	ME	516	Renewable Energy Systems	Students will learn to apply the principles of energy conversion, energy conservation, and value engineering to the analysis of energy onversion systems, renewable energy generation equipment and systems. Students will become familiar with energy consumption requirements for conventional systems and the applications of renewable energy systems to provide alternative energy sources. Energy efficiency and global environmental sustainability are emphasized. A background in basic thermodynamics is assumed. Prerequisites: ME 311, ME 314 or PHYS 341.	3	G	Sustainability Course	X	X	
Mechanical Engineering	ME	416	Renewable Energy Systems	Students will learn to apply the principles of energy conversion, energy conservation, and value engineering to the analysis of energy onversion systems, renewable energy generation equipment and systems. Students will become familiar with energy consumption requirements for conventional systems and the applications of renewable energy systems to provide alternative energy sources. Energy efficiency and global environmental sustainability are emphasized. A background in basic thermodynamics is assumed. Prerequisites: ME 311, ME 314 or PHYS 341.	3	UG	Sustainability Course	X	X	
Physics	NE	435	Introduction to Nuclear Engineering	This course considers the design of nuclear fission and fusion reactors and particle accelerators including discussion of basic nuclear properties, the fission process and reactor control, fusion reactors, environmental effects and nuclear waste management. Prerequisites: PHYS 331 or consent.	3	UG	Sustainability Course	X	X	
Health & Nutritional Sciences	NFS	111	Food, People, and the Environment	The survey of global food cultures, their stewardship of natural resources, and their impacts on the environment. It will also explore the ethical issues of choices in post-harvest food processing and their interactions with the environment. The course will also cover topics related with the Land-Grant philosophy. Notes: ** Course meets IGR #2.	3	UG	Sustainability Course	X	X	X
Natural Resource Management	NRM	566	Environmental Toxicology and Contaminants	This course will prepare students in the area of Ecological Effects of Toxic Substances and other contaminants. Wildlife toxicology and impacts of agriculture on the Northern Plains will be emphasized. Topics covered will include pesticides, heavy metals, aquatic and terrestrial ecotoxicity and other topics related to Wildlife Toxicology. Cross-Listed: BIOL 466-566	3	G	Sustainability Course	X		

Natural Resource Management	NRM	110	Environmental Conservation	Ecological approach to conservation; human's past and present impact on world environments; wise use of natural resources, including soil, water, air, forests, rangelands, energy, wildlife, and fisheries. Notes: ** Course meets IGR #2.	3	UG	Sustainability Course	X	X	X
Natural Resource Management	NRM	440	Restoration Ecology and Lab	Scientific principles involved in restoration of natural ecosystems on degraded and disturbed lands. An understanding of ecological principles is recommended prior to enrollment. Laboratory to accompany NRM 440. Corequisites: NRM 440L-440. Cross-Listed: BIOL 440-440L/LA 440-440L.	4	UG	Sustainability Course			X
Natural Resource Management	NRM	466	Environmental Toxicology and Contaminants	This course will prepare students in the area of Ecological Effects of Toxic Substances and other contaminants. Wildlife toxicology and impacts of agriculture on the Northern Plains will be emphasized. Topics covered will include pesticides, heavy metals, aquatic and terrestrial ecotoxicity and other topics related to Wildlife Toxicology. Cross-Listed: BIOL 466-566	3	UG	Sustainability Course		X	
Natural Resource Management	NRM	440L	Restoration Ecology and Lab	Scientific principles involved in restoration of natural ecosystems on degraded and disturbed lands. An understanding of ecological principles is recommended prior to enrollment. Laboratory to accompany NRM 440. Corequisites: NRM 440L-440. Cross-Listed: BIOL 440-440L/LA 440-440L.	0	UG	Sustainability Course			X
Sociology & Rural Studies	SOC	245	Energy, Environment, and Society	Course will use a sociological perspective to explore domestic and global production and use of energy and environmental consequences. Course will examine how trends in demographics, attitudes, technology, and global politics influence energy production and usage. Students will gain energy literacy by measuring their own energy usage, analyzing impacts of energy production, and completing an applied research project that investigates local energy usage and/or production	3	UG	Sustainability Course			X

Natural Resource Management	WL	712	Wetlands Ecology and Management	Botanical, zoological, hydrological, pedological, and biogeochemical components of wetland systems are studied. Course includes the management of wetlands for various functional values, government jurisdiction in wetland regulation, and wetland classification. North American wetland systems are discussed with emphasis on northern glaciated prairie wetlands. Corequisites: WL 712L.	3	G	Sustainability Course		X	
Natural Resource Management	WL	723	Fisheries Ecology & Management	Principles and techniques of selected practices for reservoir, lake, pond and lotic fisheries management. Corequisites: WL 723L.	3	G	Sustainability Course		X	
Natural Resource Management	WL	712L	Wetlands Ecology and Management Lab	Botanical, zoological, hydrological, pedological, and biogeochemical components of wetland systems are studied. Course includes the management of wetlands for various functional values, government jurisdiction in wetland regulation, and wetland classification. North American wetland systems are discussed with emphasis on northern glaciated prairie wetlands. Corequisites: WL 712L.	0	G	Sustainability Course		X	
Natural Resource Management	WL	723L	Fisheries Ecology & Management Lab	Principles and techniques of selected practices for reservoir, lake, pond and lotic fisheries management. Corequisites: WL 723L.	0	G	Sustainability Course		X	
Natural Resource Management	WL	400	Habitat Conservation and Restoration Lab	An introduction to major land-use practices, how these practices and conservation programs influence wildlife production, and alterations or manipulations of habitat to achieve specific wildlife conservation and management goals. Emphasis will be placed on how the management of other resources can be integrated with those of wildlife. Prerequisites: WL 220 and WL 230. Corequisites: WL 400L-400.	3	UG	Sustainability Course	X	X	X

Natural Resource Management	WL	400L	Habitat Conservation and Restoration Lab	An introduction to major land-use practices, how these practices and conservation programs influence wildlife production, and alterations or manipulations of habitat to achieve specific wildlife conservation and management goals. Emphasis will be placed on how the management of other resources can be integrated with those of wildlife. Prerequisites: WL 220 and WL 230. Corequisites: WL 400L-400.	0	UG	Sustainability Course	X	X	X
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