SUSTAINABILITY AND RENEWABLE ENERGY SYSTEMS MINOR

The Minor strives to help UWP students develop an in-depth and interdisciplinary understanding of issues related to energy and renewable energy within the framework of sustainable utilization of resources.

Course	Title	Credits
Required Core Courses [1]		
ENERGY 2130	Energy, Environment, and Society	3
ENERGY 2340	Fundamentals of Energy Sources	4
ENERGY 4920	Senior Design Project	3
ENERGY 3XXX or 4XXX	3000 or 4000-level and above [2]	3
Electives:		
Select 9 Credits from the following:		**9**
Sustainability and Renewable Energy Systems Courses [1]		
ENERGY 3XXX	3000-level and above Except ENERGY 3950 or ENERGY 3970	
ENERGY 4XXX	4000-level and above	
Agriculture Courses		
AGBUS 3500	Agricultural Prices and Risk Management	
AGBUS 3530	Agricultural Commodity Marketing	
AGET 3950	Soil and Water Conservation Engineering	
AGET 4790	Materials Handling and Energy Seminar	
SCSCI 3260	Seed and Grain Crops	
SCSCI 3340	Soil Nutrient Management	
SCSCI 4350	Soil and Water Conservation	
Biology Courses		
BIOLOGY 2040	Cell Biology	
BIOLOGY 3240	Microbiology	
BIOLOGY 3330	Genetics	
BIOLOGY 3450	Ecology and Evolution	
BIOLOGY 3530	Biotechnology	
Business Administration Courses		
BUSADMIN 2100	Supply Chain Management	
BUSADMIN 3230	Small Business Management	
BUSADMIN 3430	Risk Management and Insurance	
BUSADMIN 3620	Corporate Finance	
Chemistry Courses		
CHEMSTRY 3110	Environmental Chemistry Lab	
CHEMSTRY 3130	Environmental Chemistry	
CHEMSTRY 3510	Organic Chemistry I Lab	
CHEMSTRY 3540	Organic Chemistry I	
CHEMSTRY 4610	General Biochemistry Lab	
CHEMSTRY 4630	General Biochemistry	
Civil and Environmental Engineering Courses		
CIVILENG 4630	Geographic Information Systems	
CIVILENG 4640	Site Design and Stormwater Management	
CIVILENG 4680	Cycling Infrastructure in the Netherlands	
ENVENG 3340	Environmental Engineering	
ENVENG 4330	Air and Waste Management	
ENVENG 4410	Wastewater Treatment and Management	
Ecological Restoration and Resource Management Courses		
ECORES 3020	Restoration Revegetation	
ECORES 3410	Wetland Ecology, Restoration and Management	

ECORES 3880	Environmental Law
Electrical Engineering Courses	
ELECTENG 3410	Introduction to Electrical Machines and Power Systems
ELECTENG 4430	Power Electronics
ELECTENG 4440	Electric Motor Drives
ELECTENG 4450	Power Systems Analysis and Design
Environmental Sciences and Society Courses	
ENVSS 3230	Geographic Information Systems
ENVSS 3330	Environmental Conservation
ENVSS 3340	Biogeography
ENVSS 4150	Global Environmental Change
Industrial Engineering Courses	
INDSTENG 3730	Engineering Management
INDSTENG 4230	Facilities Design
INDSTENG 4430	Quality Engineering
INDSTENG 4830	Engineering Continuous Improvement
Applied Engineering Technology Management Courses	
AETM 2430	Building Construction Materials
AETM 3560	Industrial Control Systems
AETM 4030	Electrical Power
AETM 4530	Commercial Planning and Design
AETM 4630	Building Systems Analysis
Mechanical Engineering Courses	
MECHENG 3640	Heat Transfer
MECHENG 4520	Power Plant Design
MECHENG 4550	Heat Transfer Applications
MECHENG 4600	Energy Systems Design
MECHENG 4630	Internal Combustion Engine Design
MECHENG 4650	Environmental Control Design
MECHENG 4720	Thermal Systems Laboratory
MECHENG 4730	Thermo-Fluid Systems Design
Social and Environmental Justice Courses	
SEJ 2230	Introduction to Social and Environmental Justice
Total Credits	**22**

1 All ENERGY courses require a C- or better grade to satisfy minor requirements.

2 May not take ENERGY 3320, ENERGY 3950 or ENERGY 3970 to fulfill this requirement.