Minor in Sustainable Engineering

About This Program

Sustainable Engineering could be defined as engineering for human development that meets the needs of the present without compromising the ability of future generations to meet their own needs. Due to population growth and expanded global development, the next generation of professionals must be able design with fewer resources for a wider variety and greater number of end users. The Minor in Sustainable Engineering prepares engineering and science students to work across multidisciplinary teams to plan and design products/processes by evaluating them from economic, environmental, and societal perspectives**.**

The minor is available to all undergraduates who have the necessary prerequisites.

Competencies

1. Upon completion, students will be able to explain key sustainability concepts.
2. Upon completion, students will be able to describe the broader global/societal context of sustainable engineering designs.
3. Upon completion, students will be able to use life cycle assessment to quantify environmental and economic impacts of various design alternatives.
4. Upon completion, students will be able to identify and quantify trade-offs among social, economic, and environmental drivers in engineering decision making.
5. Upon completion, students will be able to apply engineering knowledge and principles to design sustainable engineering solutions.

Curriculum

Foundations		
CE 3300	INTRODUCTION TO SUSTAINABLE ENGINEERING (INTRODUCTION TO SUSTAINABLE ENGINEERING)	3
ENGR 4395	SUSTAINABLE ENGINEERING DESIGN PROJECT	3
Electives		
For Societal Context, select 1 of the following:		3
ECON 2305	PRINCIPLES OF MACROECONOMICS	
IE 2308	ECONOMICS FOR ENGINEERS	
For Sustainable Engineering select 3 from the following:		9
ARCH 3354	INTRODUCTION TO ENVIRONMENTAL & SUSTAINABILITY STUDIES (For usstainable Engineering Electives (9-10 hours))	
ARCH 3357	DESIGN TECHNOLOGIES - BUILDING INFORMATION MODELING FOR ARCHITECTS/ENGINEERS	
ARCH 3361	ARCHITECTURE AND ENVIRONMENT	
ARCH 3551	BASIC DESIGN FOR ENGINEERS	
ARCH 3553	DESIGN STUDIO: ARCHITECTURE I	
ARCH 4332	ENERGY USE AND CONSERVATION IN ARCHITECTURE	
AREN 4307	CONSTRUCTION SUSTAINABILITY	
AREN 4326	GIS/HYDROLOGIC & HYDRAULIC MODELING	
BE 3415	FUNDAMENTALS OF BIOMOLECULAR ENGINEERING	
BE 4331	BIOPOLYMERS AND BIOCOMPATIBILITY	
BE 4368	AN INTRODUCTION TO TISSUE ENGINEERING AND REGENERATIVE MEDICINE	
BE 4373	FORMULATION AND CHARACTERIZATION OF DRUG DELIVERY SYSTEMS	
CE 4307	CONSTRUCTION SUSTAINABILITY	
CE 4310	SYSTEM EVALUATION IN CIVIL ENGINEERING	
CE 4323	LANDFILL DESIGN	
CE 4326	GIS/HYDROLOGIC AND HYDRAULIC MODELING	
CE 4350	INTRODUCTION TO AIR POLLUTION	
CE 4351	PHYSICAL UNIT PROCESSES	
CE 4353	WATER CHEMISTRY	
CE 4354	INTRODUCTION TO SOLID WASTE ENGINEERING	
CE 4355	DESIGN OF WATER AND WASTEWATER TREATMENT FACILITIES	
CM 3337	CONSTRUCTION ADMINISTRATION AND ECONOMICS	

CM 4357	SUSTAINABLE BUILDING PRACTICE	
ECON 2337	ECONOMICS OF SOCIAL ISSUES	
EE 3302	FUNDAMENTALS OF POWER SYSTEMS	
EE 4314	CONTROL SYSTEMS	
IE 3315	OPERATIONS RESEARCH I	
IE 4345	DECISION ANALYSIS IN SYSTEM DESIGN	
IE 4351	SYSTEMS ENGINEERING	
MAE 4324	POWER PLANT ENGINEERING	
MAE 4382	RESEARCH TRENDS IN RENEWABLE ENERGY TECHNOLOGIES	
MAE 4386	WIND & OCEAN CURRENT ENERGY HARVESTING FUNDAMENTALS	
GEOL 1301	EARTH SYSTEMS	
GEOL 1330	GLOBAL WARMING	
GEOL 2406	NATURAL RESOURCES & SUSTAINABILITY	
GEOL 4323	ISSUES IN ENVIRONMENTAL HEALTH	
GEOL 4356	ENVIRONMENTAL RISK ASSESSMENT	
GEOL 4455	ENVIRONMENTAL DATA SCIENCE	
PHYS 1351	ENERGY AND ENVIRONMENT	
Total Hours		**18**