

UNIVERSITY OF MARY WASHINGTON – PROGRAM CHANGE PROPOSAL

Electronically submit this completed form with attachments in one file to the Chair of the College Curriculum Committee.

COLLEGE (check one):	Arts and Sciences	x	Business	Education
Proposal Submitted By: Chuck Whipkey			Date Prepared: 9/20/2017	
Department /Program:	EESC (Earth and Environmental Sciences)/Environmental Sustainability Minor			

Note: for any program change entailing the addition any new courses, or revisions to existing courses, separate proposal for those course actions must also be submitted.

PROPOSAL TO CHANGE EXISTING PROGRAM (check no than one of the following)	
Revise requirements for existing major	<input type="checkbox"/>
Revise requirements for a concentration within an existing major	<input type="checkbox"/>
Revise requirements for an existing degree program	<input type="checkbox"/>
Revise requirements for existing certificate program	<input type="checkbox"/>
Revise requirements for existing minor	<input checked="" type="checkbox"/>
Implementation Date: FALL semester, year:	2018

REQUIRED ATTACHMENTS FOR CHANGES TO EXISTING PROGRAMS:

1. **Rationale statement** (Why is this program change needed? What purposes will it serve?)
2. **Impact Statement** (Provide details about the Library, space, budget, technology, and impacts created by this program change. Supporting statements from the Library, IT Department, etc. evaluating the resource impact and feasibility of the program change are required.)
3. **Catalog Copy** (Provide the *existing* Catalog Description **and** the complete statement of the *proposed* new Catalog description that reflects the program changes)

PROPOSAL TO CREATE NEW PROGRAM NOT REQUIRING STATE ACTION (check no more that one of the following)	
New concentration within existing major	Name:
New minor	Name:
New Major but NOT a new degree*	Name:
*Use ONLY for interdisciplinary majors that will be grouped as part of the "Special Majors/General Liberal Arts and Sciences" degree (CIP Code 24.0101) or reported as a BLS degree (CIP Code 24.0199)	
Implementation Date (semester and year):	

REQUIRED ATTACHMENTS FOR NEW PROGRAMS NOT REQUIRING STATE APPROVAL:

1. **Rationale statement** (Why is this additional program needed? What purposes will it serve?)
2. **Impact Statement** (Provide details about the Library, space, budget, technology, staffing and curricular impacts created by this program change. Supporting statements from the Library, IT Department, etc. evaluating the resource impact and feasibility of adding the new program are required.)
3. **Catalog Copy** (Provide the complete Catalog Description for the proposed new program)
4. Any change that impacts another Department must have a written statement (such as a copy of an email) from the Chair(s) agreeing to the change.

Department Chair Approval: _____ Jodie Hayob _____ Date: _____ 9/20/2017 _____

CCC Chair Approval: _____  _____ Date: _____ 10/05/2017 _____

Dean Approval: _____  _____ Date: _____ 10/19/2017 _____

UCC Chair Approval: _____  _____ Date: _____ 11/16/17 _____

*Provost Approval: _____ Date: _____

**Required only in cases of proposals for new concentrations, new minors, or new majors that do not involve a new degree*

This is a proposal to add EESC 340 Energy Resources and Technology (3 cr) to the elective list for the Earth and Environmental Sciences Department's Environmental Sustainability Minor.

Rationale: The Environmental Sustainability Minor is designed to encourage students from any major to analyze our natural and social worlds and to examine approaches to resolving critical resources issues for the long-term. To that end, the Minor requires a grounding in basic environmental science principles (*EESC 110: Introduction to Environmental Science*), environmental challenges (*EESC 230: Global Environmental Problems*) and the fundamentals of environmental policy (*EESC 326: Pollution Prevention Planning* or *EESC 330: Environmental Regulation Compliance*).

In addition to these essential courses, the Minor requires that the student choose at least three courses from a diverse list that involves aspects of sustainability in many different disciplines. By this means, the Minor can be tailored to meet the needs and background of students from many majors. The Earth and Environmental Sciences Department is proposing to add *EESC 340 Energy Resources and Technology* to this list of elective courses. A quote from the course syllabus summarizes the objectives of this course:

***Rationale for this course:** Most of the energy used to power our industrial civilization is derived from the fossil fuels: coal, oil (petroleum) and natural gas. Although prices of oil and gas are currently very low and supplies are abundant, some analysts predict that strong demand from newly industrializing countries will eventually create shortages and drive prices back up. Others claim that new technologies such as fracking will lead to a decades-long glut of supply. Partly because of the newly abundant supplies of natural gas, coal has been receding in importance.*

Regardless of prices or abundance many people, including most scientists, think that we must drastically reduce use of fossil fuels as soon as possible because the resulting CO₂ emissions are creating profound changes in the Earth's biosphere. Many believe these changes will get much more pronounced if we continue to burn these fuels at the present rate, let alone at vastly increased rates as large countries such as China and India industrialize. In this view, we need to replace fossil fuels with renewable energy sources on a large scale, and we need to do it now.

The energy situation is so complex that no one can hope to predict what conditions will be like five years from now, let alone ten or twenty. However, it is likely that a mix of fossil fuels and renewable sources will provide our energy in the near future. But what are the major renewable energy sources and how do they work? Will they really displace fossil fuels? If so, when?

***Objectives:** In this course, we will investigate the basic science and technology of renewable energy sources and fossil fuels. This will be a "nuts-and-bolts" class in the sense that our main concern will be to understand the nature of energy resources and how they work in the real world. Unfortunately, there are far too many renewable energy technologies for us to study each of them in detail, but we will look at the main ones, including biofuels, wind power, and solar power. When you have finished this class, you should have a greater understanding of the major sources of energy and the technologies used to tap them.*

Our department believes that this class is an appropriate elective for the Minor in that it provides a substantial overview of the major renewable energy resources that will be needed to combat anthropogenic climate change, which is arguably the most severe current threat to global environmental sustainability. In addition, this course discusses the occurrence of the major fossil fuels, the technology used to extract and process them, and the environmental impacts associated with their use. Thus, the course provides both an overview of currently dominant energy technologies and insight into the renewable technologies likely to be of overriding importance in the future, and therefore

directly addresses a central theme of this Minor: “to examine approaches to resolving critical resources issues for the long-term”.

Impact: Little or no impact is expected in our department. Because of the large number of alternative electives in the Minor, the number of additional students taking this class is expected to be manageable with current resources.

Current catalog text for the Environmental Sustainability Minor

Requirements for the Environmental Sustainability Minor

Eighteen to twenty-one (18 – 21) credits. Three required core courses: EESC 110, 230, and either 326 or 330. Three or more elective courses from the following list, totaling at least nine (9) credits: ANTH 365; EESC 210, 307, 313, 315, 323, 325, 326, 330, 355, 360, 421, 481, 499; BIOL 424, 428; COMM 354; ECON 324, 351; GEOG 245, 339, 360E; HIST 322; PHIL 330, 430; SOCG 354; SPAN 345.

Catalog text if the proposed change in this proposal is approved; change is underlined and bold:

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