PROPOSAL SCC #00-01 4/3 (2)

CURRICULUM PROPOSAL FORM 2000-2001

NON-GENERAL EDUCATION PROCESS A

***DEADLINES: Deadline dates for 2000/2001 submissions: Regular proposals: October 20, 2000 to be implemented in Fall 2001; Short-Term proposals: December 8, 2000 to be implemented in Fall, 2001; Regular proposals February 16, 2001 to be implemented in Spring, 2002; March 23, 2000 for short-term courses to be implemented in Spring 2002.**

PROPOSAL TITLE: Sustainable Design in Engineering

SPONSOR(S): Peter Mark Jansson & John L. Schmalzel

DEPARTMENT: Electrical and Computer Engineering

COLLEGE:

IF LAS CHECK ONE: ___ **History/Humanities** ___**Math/Sciences** ___**Social/Behavioral Sciences**

Check one: _X_**Undergraduate** ____**Graduate**

THE ATTACHED ***NON-GEN-ED*** PROPOSAL IS BEST DESCRIBED BY THE ITEM(S) CHECKED.

_X_New non-gen-ed course

____Short-term non-gen-ed course

____Minor curricular changes (fewer than three) to:

_____existing non-gen-ed course

_____non-gen-ed degree requirements

_____major

_____ minor, specialization, concentration, track, certificate program

DEPARTMENT
(Signature indicates approval)

Dept. Curriculum Chair / Date 12/14/-1

Dept. Chairperson / Date 13 Dec 2001

ACADEMIC DEAN

Approved ✓ Not Approved _____ Comments:

Dean's Signature/Date 2/15/01

COLLEGE CURRICULUM COMMITTEE

Date of open hearing (if necessary) ✓ Approved_____ Not Approved _____
Comments:

Signature of College Chair/Date: [signature] 03/14/01

UNIVERSITY CURRICULUM COMMITTEE

Date Received/Processed 3/30/01
Comments:

Curriculum Chair Signature [signature] Date Announced At Senate 5/22/01

EXECUTIVE VICE PRESIDENT/PROVOST

Approved ✓ Not Approved_____ If no, reasons are as follows:

Student Credit Hours_____ Faculty Load Hours_____ Equalized Credit Hours_____

Official Copy & Approval Sheet Filed (Date):_____ Executive VP/Provost Signature/Date [signature] 6/5/01

REGISTRAR

Date Approved Course Description Received _____ Hegis Taxonomy & Course Number Assigned_____

Registrar Signature/Date [signature] 6/8/01

NOTIFICATION FORWARD

✓ Senate Curriculum Committee Chairperson ✓ Academic Dean(s) 8/13/01

✓ Department Chairpersons ✓ Registrar _____ Sponsor(s)

Course Proposal

1. Details:

a) Course Title:	Sustainable Design in Engineering (0909.403)
b) Sponsor:	Peter Mark Jansson, Dr. John L. Schmalzel and Electrical Engineering Curriculum Committee
c) Credit Hours:	3 credit hours
d) Course Level:	Undergraduate Senior Elective
e) Curricular Effect:	Elective course for electrical engineering majors
f) Prerequisites:	Computer Science and Programming (0704.103)
g) Suggested Time/ Scale of Implementation	Spring 2002 One section
h) Resources	Library acquisitions will be required.

2. Rationale:

The proposed course is a revision to part of the Engineering Curriculum Proposal approved by the College Senate in December, 1994. The proposed course is consistent with the establishment of the School of Engineering approved by the Board of Trustees in February, 1995.

The impact of global industry on the finite resources of the environment is being increasingly observed in the 21st century. While sustainable development is becoming more broadly adopted globally as a unifying principle, the impact of globalisation is increasing the constraints on natural resources, energy and environmental capital. Techniques and methods exist that enable engineers to design products and services taking into consideration their lifecycle impacts. This course will introduce engineering students to methods of environmental management and sustainable design while giving them a strong foundation in the benefits of such approaches.

3. Essence of the Course:

a) Objectives:

The proposed course has a number of objectives:

Provide an overview of sustainable development issues, sustainable design concepts focusing on life cycle assessment techniques, ISO14001 and supporting computer tools.

Implementation of sustainable design on a re-engineered product using available software tools.

Analysis of renewable energy systems and their technologies as mitigation strategies in global warming.

b) Topical Outline:

Sustainable development and engineering.
Energy fundamentals (forms, fuels, conversion technologies)
Energy use and its impacts on a globalizing economy.
Life cycle assessment tools and environmental management techniques.
ISO14001 implementation in industry (US vs. European experience)
Application of sustainable engineering practice via an eco-design software tool.

c) Evaluation and Grading Procedures:

Student grades will be based on projects, examinations, homework, laboratory reports and written and oral technical communication.

d) Course Evaluation:

The proposed course will be evaluated based on student evaluations and critical review by engineering faculty.

Texts:

H. Wenzel, M. Hauschild, and L. Alting, *Environmental Assessment of Products: Volume 1*, Chapman & Hall, London, 1997

J. J. Kraushaar and R. A. Ristinen, *Energy and Problems of a Technical Society*. John Wiley & Sons: New York, 1993.

J. Ramage, *Energy: A Guidebook*. Oxford University Press: Oxford, 1997.

4. Results of Consultations:

a) Consulted Departments: N/A

b) Consultants and Consultant Statements: N/A

c) Written Consultations: N/A

5. Additional Supporting Information: N/A

6. Catalog Description:

Sustainable Design in Engineering (0909.403)

This is a senior level undergraduate elective course that covers the fundamentals of sustainable design in engineering with an emphasis on electricity and energy. Topics include energy fundamentals (forms, fuels, conversion technologies), energy use and its impacts on a globalizing economy, life cycle assessment tools and environmental management techniques, ISO14001 implementation in industry (US vs. European experience), application of sustainable engineering practice via an eco-design software tool. The student is exposed to sustainable designs in product manufacturing and energy / electricity production.

Prerequisite: Computer Science and Programming (0704.103)