REGULAR COURSE SYLLABUS

College of: Professional Studies
Department: Engineering and Engineering Technology
Prefix & Course Number: SSE 1040  Crosslisted With*: ______

Course Title: Life Cycle and Systems Engineering – An Introduction

Check All That Apply:  Required for Major: X  Required for Minor: _____  Specified Elective: _____
Required for Concentration: _____  Elective: Service Course: ______

To receive Title IV financial aid funds, all institutions of higher education must comply with the federal definition of a credit hour. The Higher Learning Commission requires institutions to maintain policies and procedures for verifying compliance with this definition.

**Federal Credit Hour Definition:** A credit hour is an amount of work represented in intended learning outcomes and verified by evidence of student achievement that is an institutionally-established equivalency that reasonably approximates not less than:
(1) one hour of classroom or direct faculty instruction and a minimum of two hours of out-of-class student work each week for approximately fifteen weeks for one semester or trimester hour of credit, or ten to twelve weeks for one quarter hour of credit, or the equivalent amount of work over a different amount of time; or (2) at least an equivalent amount of work as required in paragraph (1) of this definition for other activities as established by an institution, including laboratory work, internships, practica, studio work, and other academic work leading toward to the award of credit hours. 34 CFR 600.2 (11/1/2010)

Credit Hours: 3 (3+0)  Schedule Type: ______  Grade Mode: L

Face-to-Face or Equivalent Hours per course:
Lecture 45  Lab 0  Internship 0  Practicum 0  Other (please specify type and hours): ______

Additional Student Work Hours per course: 90

Variable topics umbrella course: No X Yes _____  If Yes, number of credit hours allowed _____

Specified repeatable course: No X Yes _____

APPROVED: [Signature]  10/12/2015

Department Chair OR Program Director  Date

Dean OR Associate Dean [Signature]  10-14-15  Date

Associate VP, Academic and Student Affairs [Signature]  1/25/16  Date

*If crosslisted, attach completed Course Crosslisting Agreement Form
Prefix and Course Number: SSE 1040

Prerequisite(s):

Corequisite(s):

Prerequisite(s) or Corequisite(s):

Transcript Enforced:

Prerequisite(s):

Corequisite(s):

Prerequisite(s) or Corequisite(s):

Registration restrictions: Level _____ Class _____ Program/Major _____ Student attribute _____

Catalog Course Description:
Students in this course are introduced to life cycle analysis and systems engineering using principles and applications of systems analysis, life cycle cost analysis and basic quantitative methods. Classical and modern decision analysis techniques are employed for evaluating case studies in sustainable systems of mechanical, civil and electrical engineering.

Required Reading and Other Materials will be equivalent to:


Specific, Measurable Student Behavioral Learning Objectives:
Upon completion of this course the student should be able to:

1. Recall the definition of a system and a life cycle
2. Define a system and its components
   a. Identify modern societal systems, both renewable and non-renewable
   b. Recognize, formulate and predict system behavior to optimize decision-making at the project level
3. Employ Life Cycle Analysis techniques to determine project outcomes
4. Examine system computer models
5. Demonstrate understanding of impacts from engineering solutions for systems in economic, environmental, and societal domains

Detailed Outline of Course Content:

I. Overview of Systems Thinking, Sustainability and Resiliency
   A. Definition of System
   B. Definition of sustainability and sustainable systems
   C. Overview of Sustainable vs. Resilient Systems
   D. Systems modeling
   E. Case studies in systems engineering

II. Life Cycle Engineering of Sustainable Systems
Prefix and Course Number: SSE 1040

A. Overview of Life Cycle Concepts
B. Life cycle analysis with engineering applications
C. LCA by economic Input-Output analysis

III. Climate Change and Sustainable Systems
   A. Employing LCCA to predict sustainability outcomes

IV. Basics of Industrial Ecology and Materials Flow Analysis
V. Overview of Basic Quantitative Analysis
   A. Intro to probability distributions
   B. Objective vs. subjective probability

VI. Case studies in life cycle analysis
VII. Human & Behavioral Components of Systems Analysis and LCA

Evaluation of Student Performance:
1. Examinations
2. Assignments
3. Class projects and/or presentations and/or reports