MEMO

To:  Dr. Mark Archambault, Assistant Dean for Academics, College of Engineering and Science
From:  Dr. Barry Webster, Engineering Management Program
Date:  3 December 2018
Subject:  Change in Course Subject Identifier for SYS 4100 and SYS 4200

The Engineering Management program of the Department of Mechanical and Civil Engineering is requesting Undergraduate Curriculum Committee review and approval of the following changes:

a. Change the course subject identifier for SYS 4100 to ENM (retain course number)
b. Change the course subject identifier for SYS 4200 to ENM (retain course number)

The reason for this request is that at one point in the past, there was an initial thought to establish a B.S. program in Systems Engineering. As part of this initiative, several undergraduate courses were created to parallel courses at the graduate level, including SYS 4100 and SYS 4200. After an investigation involving both academia and industry, it was ultimately decided not to pursue the undergraduate B.S. program. However, a number of undergraduates take SYS 4100 and SYS 4200 as elective courses.

The problem is that both of the aforementioned courses are actually parallels to Engineering Management graduate courses, not Systems Engineering. The SYS designator has been causing a substantial amount of confusion for students, as well as the Registrar’s office, since preliminary schedules are sent to the Systems Engineering program rather than Engineering Management. I believe that by changing the course designator, all this confusion can be cleared up, and the course can reside with its proper program.

The proposed change in designator is the only planned change to the courses. No course content will be changed, nor will there be any changes to enrollment guidelines.
**Florida Institute of Technology**

**ADDING A NEW COURSE TO THE CURRICULUM**

This is a request for reactivation of a course in the system.

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
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| SUBJECT | E 
<table>
<thead>
<tr>
<th></th>
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<tbody>
<tr>
<td>ENM</td>
<td>COURSE NO.* (e.g., CSE) 4100</td>
</tr>
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</table>

*Justify level if 1000-level+ and no co- or prerequisites

<table>
<thead>
<tr>
<th>CLASS HOURS</th>
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<tbody>
<tr>
<td>LECTURE HOURS</td>
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<tr>
<td>SCHEDULE TYPE</td>
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<table>
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<tr>
<th>DEPARTMENT</th>
<th>Mechanical and Civil Engineering</th>
</tr>
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<tbody>
<tr>
<td>SUBFIELD</td>
<td>(e.g., Biological Sciences)</td>
</tr>
<tr>
<td>CODE</td>
<td>COLLEGE OF AERONAUTICS—23</td>
</tr>
<tr>
<td>CODE</td>
<td>COLLEGE OF ENGINEERING AND SCIENCE—30</td>
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<tr>
<td>CODE</td>
<td>COLLEGE OF PSYCHOLOGY AND LIBERAL ARTS—25</td>
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<tr>
<td>CODE</td>
<td>NATHAN M. BISK COLLEGE OF BUSINESS—24</td>
</tr>
<tr>
<td>CODE</td>
<td>EXTENDED STUDIES—90</td>
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</tbody>
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**COMPUTER TITLE**

Quality Engineering

**This course will be entered into the system as:**

- Bi-Level □
- Cross-Listed □
- Dual-Numbered □
- Full-Load □
- None of these/Standard Listing □

**DATE**

10-25-2018

**In addition, please attach a course syllabus and/or more detailed description.**

**RESTRICTIONS**

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<tbody>
<tr>
<td>COURSE PREFIX/NUMBER</td>
<td>Prerequisite ONLY □</td>
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<tr>
<td>COURSE PREFIX/NUMBER</td>
<td>Corequisite ONLY □</td>
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<tr>
<td>COURSE PREFIX/NUMBER</td>
<td>BOTH Prerequisite/Corequisite □ and □</td>
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**GRADES TO BE ISSUED**

- A, B, C, D, F
- A, B, C, D, F, CEU/Audit
- CEU
- S, U
- P, F
- Other □

**ADDITONAL RESTRICTION**

- Minimum student level - junior; Instructor approval
- Major; Class Level; Department Head Approval

**Please indicate old course information and the date/term the course may be removed from the system:**

SYS 4100; Fall 2019

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
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<tr>
<td>Will this course be used to measure program-level student learning outcomes? If yes, review and signature required.**</td>
<td></td>
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<tr>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Will this course be used to satisfy the scholarly inquiry requirement? If yes, attach &quot;Q&quot; materials for review.</td>
<td></td>
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<tr>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Will this course impact any existing programs? If yes, attach &quot;Changing Graduation Requirements&quot; form for each program impacted.</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Will this course be used to satisfy the Cross Cultural (CC) requirement? If yes, attach confirmation memo from QEP2 Committee.</td>
<td></td>
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**APPROVALS:**

On completion of description and course number verification, affix appropriate signatures as indicated, and submit to the Office of Graduate Programs, or Undergraduate Curriculum Committee Chair for placement on agenda.

**Chair, Graduate Council**

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**Chair, Undergraduate Curriculum Committee**

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<th>Registrar's Use Only</th>
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<td>SCACRSE</td>
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<td>SCARRIES</td>
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**Catalog & Curriculum Manager**

<table>
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**Florida Institute of Technology - Office of the Registrar**

150 West University Boulevard, Melbourne, FL 32901-6975 • 321-674-8114 • Fax 321-674-7827

RGR-371-818
THE FLORIDA INSTITUTE OF TECHNOLOGY

ENM 5100: QUALITY ENGINEERING / ORP 5040: QUALITY ASSURANCE / SYS 4100: QUALITY ENGINEERING
FALL SEMESTER 2018

SYLLABUS

Course (Catalog) Description: This course covers statistical methods for quality control and improvement. Aspects of engineering and management of quality systems are also emphasized. Well-established quality principles such as DMAIC, SPC, and Six Sigma are treated in detail. The course includes applications in diverse systems such as manufacturing, transportation, and healthcare, among others, in which quality is constantly monitored and improved.

Instructor: Dr. Barry Webster
306 Olin Engineering Building
(321) 674-7112
bwebster@fit.edu

Office Hours
Mondays and Fridays: 2:00pm – 5:00pm
Or by appointment

Required or Elective: Required for Engineering Management
Elective for Operations Research
Elective for undergraduates

Prerequisite Courses: None

Prerequisites by Topic:
- Basic knowledge of the mathematical foundations of probability and applied statistics
- Basic knowledge of producing and interpreting graphs
- Ability to think abstractly, using descriptions of situations to create working models of those situations
- Ability to apply logical reasoning to the workings of models and the solution of problems
# Textbook

(Required Material):

*Introduction to Statistical Quality Control, 7th ed.*

_Douglas C. Montgomery_


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### Online Simulation

Available in a “coursepack” – link to coursepack will be provided by instructor

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### References:

Additional referential materials to be used in the class or for students to consult on their own may be provided

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### Course Learning Outcomes:

By the end of the course, students should be able to:

- Apply the DMAIC process to a quality characteristic in any process (BT3)
- Apply different techniques to explore and model process quality (BT3)
- Select appropriate quality control methods based on the type of quality characteristics to be monitored (BT4)
- Apply and interpret quality control charts (BT3)
- Appraise process capability, identify assignable causes, and correctly identify sources of variability (BT5)
- Recommend quality improvement solutions based on quality control tool outputs (BT5)

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### How Outcomes are Assessed (Grading):

- Midterm exam – 30%
- Research paper – 30% (20% for undergraduates, who will do a group project in lieu of the paper)
- Online simulation – 10% (20% for undergraduates)
- Final exam – 30%

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### Topics Covered

(Required Material:

- Quality improvement process (1 class)
- Process capability and statistical tools (1 class)
- Statistical methods in quality modeling (2 classes)
- Control charts (4 classes)
- Acceptance sampling (1 class)
- Introduction to design of experiments (2 classes)
- Additional supplemental topics, (engineering process control, multivariate process monitoring), time and schedule permitting (1-4 classes)
- Midterm exam (1 class)
- Online simulation (1 class)
- Final exam (1 class)
Computer Usage: Minitab statistical software will not be specifically covered in class, but will be used for examples and may be used for development of the research paper.

Laboratory Experiences: N/A

Design Experiences: N/A

Independent Learning Experiences: Some research required for research paper

Class Schedule: Thursdays, 2:00pm – 4:40pm
118 Quad Classrooms
23 August – 6 December, except:
- 22 November (Thanksgiving Holiday)

Final exam is scheduled for Wednesday, 12 December from 3:30pm – 5:30pm in the same room as class is held

Contribution to the Professional Element:

<table>
<thead>
<tr>
<th>Element</th>
<th>Contribution</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) College-level mathematics and basic sciences</td>
<td>0 credit hours</td>
</tr>
<tr>
<td>(b) Engineering topics (science and/or design)</td>
<td>3 credit hours</td>
</tr>
<tr>
<td>(c) General education</td>
<td>0 credit hours</td>
</tr>
</tbody>
</table>
**ABET Program Outcomes Achieved:**

This course contributes to the following Program Outcomes for ENM (✓).

<table>
<thead>
<tr>
<th>Outcome</th>
<th>✓</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) an ability to apply knowledge of mathematics, science, and engineering</td>
<td>✓</td>
</tr>
<tr>
<td>(b) an ability to design and conduct experiments, as well as to analyze and interpret data</td>
<td>✓</td>
</tr>
<tr>
<td>(c) an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability</td>
<td>✓</td>
</tr>
<tr>
<td>(d) an ability to function on multidisciplinary teams</td>
<td>✓</td>
</tr>
<tr>
<td>(e) an ability to identify, formulate, and solve engineering problems</td>
<td>✓</td>
</tr>
<tr>
<td>(f) an understanding of professional and ethical responsibility</td>
<td>✓</td>
</tr>
<tr>
<td>(g) an ability to communicate effectively</td>
<td>✓</td>
</tr>
<tr>
<td>(h) the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context</td>
<td>✓</td>
</tr>
<tr>
<td>(i) a recognition of the need for, and an ability to engage in life-long learning</td>
<td>✓</td>
</tr>
<tr>
<td>(j) a knowledge of contemporary issues</td>
<td>✓</td>
</tr>
<tr>
<td>(k) an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice</td>
<td>✓</td>
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**ENM Program Criteria Outcomes Achieved:**

<table>
<thead>
<tr>
<th>Criteria</th>
<th>✓</th>
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<td>(a) an understanding of the engineering relationships between the management tasks of planning, organization, leadership, control, and the human element in production, research, and service organizations</td>
<td>✓</td>
</tr>
<tr>
<td>(b) an understanding of and dealing with the stochastic nature of management systems</td>
<td>✓</td>
</tr>
<tr>
<td>(c) a capability of demonstrating the integration of management systems into a series of different technological environments</td>
<td>✓</td>
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**What is Title IX?**

Title IX of the Educational Amendments Act of 1972 is the federal law prohibiting discrimination based on sex under any education program and/or activity operated by an institution receiving and/or benefiting from federal financial assistance. Behaviors that can be considered "sexual discrimination" include sexual assault, sexual harassment, stalking, relationship abuse (dating
violence and domestic violence), sexual misconduct, and gender discrimination. You are encouraged to report these behaviors.

Reporting: Florida Tech can better support students in trouble if we know about what is happening. Reporting also helps us to identify patterns that might arise – for example, if more than one complainant reports having been assaulted or harassed by the same individual.

Florida Tech is committed to providing a safe and positive learning experience. To report a violation of sexual misconduct or gender discrimination, please contact Linda Jancheson, Title IX Coordinator at 321-674-7277 or ljancheson@fit.edu.
* Please note that as your professor, I am required to report any incidents to the Title IX Coordinator. Confidential support for students is available by contacting the Student Counseling Center at 321-674-8050.
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<th>CREDIT HOURS</th>
<th>ACADEMIC YEAR TO BE ADDED TO THE FILE</th>
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<tbody>
<tr>
<td>Mechanical and Civil Engineering</td>
<td>4200</td>
<td>3</td>
<td>Fall 2019</td>
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#### REQUIREMENTS

- **CLASS HOURS**: 45/semester  
- **LECTURE HOURS**: 45/semester  
- **LAB HOURS**: 0/semester  
- **CONTACT HOURS (CEU ONLY)**: NA

#### DEPARTMENT

- **Mechanical and Civil Engineering**

#### COMPUTER TITLE

- **Engineering Project**

#### CATALOG TITLE

- **Engineering Project**

#### CATALOG DESCRIPTION OF COURSE

- **Restricted to 25 characters, including spaces**

Provides principles of project management to design and develop products and services within budget, on time and to specification. Includes work planning, organization design, requirements analysis, project control and PERT/CPM.

This description has been approved by the catalog office.  

![Signature](signature)

**Catalog & Curriculum Manager**

**Date**: 10-25-2018

#### RESTRICTIONS

- **MTH 2201**
  - Prerequisite ONLY
  - Corequisite ONLY
  - BOTH Prerequisite/Corequisite and or
  - GRADES TO BE ISSUED
    - A, B, C, D, F  
    - A, B, C, D, F, CEU/Audit  
    - CEU  
    - S, U  
    - P, F  
    - Other

#### ADDITIONAL RESTRICTION

- Minimum student level - junior; Instructor approval

Please indicate old course information and the date/term the course may be removed from the system:

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**Chair, Graduate Council**:  

**Date**: 12/18/18

**Chair, Undergraduate Curriculum Committee**:  

**Date**: 12/18/18

**Chair, Academic Programs Assessment Committee**:  

**Date**: 12/18/18

**Registrar’s Use Only**

- SCACSE  
- SCADET  
- SCAPREQ  
- SCABASE  
- ACALOG  
- SCARRS  
- CIP Code  
- Operator Init.  
- Date  

**Catalog & Curriculum Manager**:  

**Date**: 12/18/18

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**Florida Institute of Technology**  
**Office of the Registrar**

150 West University Boulevard, Melbourne, FL 32901-6975  
321-674-8114  
Fax 321-674-7827

RGR-371-818
Instructor: Dr. Mark Rahmes  
Email: mrahmes@fit.edu; Phone: 321-984-5577  
Class Times: Wednesdays 5:00PM-7:40 PM, Link Building, Room 256  
Advisement Hours: Wednesdays 4:30PM – 5:00PM (or by appointment)  

**Course Description:** Introduces principles of project management to design and develop products and services within budget, on time and to specification. Focuses on work planning, organization design, requirements analysis, project control, and PERT / CPM. Presents project management as an emerging management style that is evolving as the most effective approach to leading engineering teams. Popular management topics concerning, team organization, project planning and project control are combined with systems engineering topics such as requirements analysis, risk management, quality, and overall decision-making. Projects are presented as a lifecycle beginning with creative problem solving through project operations and ending with project auditing and termination. Students develop semester long project involving development and application of acquired project engineering skills.  

**Grading:**  
A: 90-100  
B: 80-89  
C: 70-79  
D: 60-69  
F: ≤59  
Homework 10%  
Quiz 10%  
Midterm Exam 25%  
Final Project 25%  
Final Exam 30%  

Attendance and punctuality are expected. Last day to drop a class with full tuition refund and without receiving a grade of W is 31 Aug. Last day to withdraw from a class with a final grade of W is 26 Oct. Undergraduate students taking SYS 4200 will be responsible for the same course elements as those students taking ENM 5200, but will be assessed at a different level appropriate for undergraduate students (i.e. grading standards for quizzes and exams, amount of detail required for homework and the final project).  

**Final Project:** Students are expected to complete a team project. Teams will be established at beginning of or during semester. Each team will be responsible for planning a project chosen by team and obtaining approval from instructor. Projects may be related to your academic program, personal or work experience, or an area of interest related to engineering/technology. The goal of project is to investigate issues discussed in course and display a good understanding of course objectives as they apply to project.  
Minimum requirements: Develop description and scope; Create Charter with customer requirements; Develop project plan; Create work breakdown structure (WBS); Develop budget and schedule; Create an MS Project File with resource loading and clear milestones; Prepare a conference style presentation.  

**Preliminary Schedule**  
22 Aug: Chapter 1 What is Project Management?  
29 Aug: Chapter 2 Systems Approach and Systems Engineering  
5 Sep: Chapter 3 Systems Development Cycle and Project Conception  
12 Sep: Chapter 4 Project and System Definition  
19 Sep: Chapter 5 Planning Fundamentals  
26 Sep: Chapter 6 Project Time Planning and Networks  
3 Oct: Chapter 7 Advanced Project Network Analyses and Scheduling  
10 Oct: Midterm Exam, Chapters 1-7  
17 Oct: Chapter 8 Cost Estimating and Budgeting  
24 Oct: Chapter 9 Project Quality Management  
31 Oct: Chapter 10 Managing Risks in Projects  
7 Nov: Chapter 11 Project Execution and Control  
14 Nov: Chapter 12 Project Evaluation, Communication, Implementation, and Closeout  
21 Nov: Thanksgiving Break
28 Nov: Project Presentations
5 Dec: Review
12 Dec: Final Exam

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