



CATALOG YEAR 2012-2013

COLLEGE/SCHOOL/SECTION: _____ College of Arts and Sciences_____

Course: Add: _____ Delete: _____ Change: X_____

(check all that apply)

Number _____ Title X SCH _____ Description X Prerequisite X_____

Response Required: New course will be part of major X minor _____ as a required _____ or elective _____ course

Revised System Engineering Courses

SENG 3380 ~~Engineering Statistics~~ *Measurements and Devices*. Three semester hours. (*)

~~Probability and distribution; statistical methods to monitor and improve product quality and reduce the manufacturing variations. Variable and attribute control charts or statistical process charts. Acceptance sample methods. Process capability indexes. Forecasts based on moving average, exponential smoothing, and regression analysis will be studied. Prerequisite: ENGR 2372.~~

Basic concepts and principles of measurement methods; characteristics of signals; signal conditioning; data acquisition and processing; transducers and sensors, analog and digital devices, voltage regulators; power supplies; measurements of temperature, pressure, velocity, flow, and strain. Prerequisites: ENGR 2305/2105; Course Fee: \$35.

Student Learning Outcomes

At successful completion of this course, students will be able to:

- demonstrate the principles of engineering measurement and modern instruments;
- demonstrate understandings of the function and operation of analog and digital devices, electrical devices, signal conditioning, sampling, and data acquisition systems;
- describe operational principles of sensors and instrumentation, and their use within measurements of physical properties (e.g. temperature, pressure, velocity, flow, and strain); and,
- install and configure data acquisition and signal conditioning running with simple computer software.

Justification

The previous SENG 3380 is replaced by ENGR 2372 and new title and description for SENG 3380 are provided above. New SENG 3380 is required in the Systems Engineering Curriculum, because the current curriculum of the systems engineering is lacking in the field of engineering measurement systems including sensors, transducers, electric devices, signal processing, and data acquisitions. This knowledge is essential to prepare the students for their career as a systems engineer and is also needed in the senior design course. The proposed course will improve

students' understandings on the principles of measurement and operations of electrical instruments. Also, a course fee of \$35 needs to be added for this course.

Justification for Adding Course Fee

A course fee of \$35 needs to be added for this course. This course requires several electronic parts such as power supplies, voltage regulator, pressure transducers, thermocouples, DAQ cards, mass flow meters, resistors, transistors, OP amps, capacitors, diodes, etc., to carryout students' course projects. These parts need to be replaced and restored, which incur the costs of the buying products after each offering. Therefore, an average cost of \$35 needs to be added as a course fee for SENG 3380 to purchase of different electronic products.

Response Required: New course will introduce ____, reinforce ____, or apply ____ concepts

If new, provide Course Prefix, Number, Title, **Measurable** Student Learning Outcomes, SCH Value, Description, prerequisite, and lecture/lab hours if applicable. If in current online catalog, provide change and attach text with changes in red and provide a brief justification.

Program: Delete: ____ Add: ____ Change: ____ Attach new/changed Program of Study description and 4-year plan. If in current online catalog, provide change and attach text with changes in red.

Minor: Add: ____ Delete: ____ Change: ____ Attach new/changed minor. If in current online catalog, provide change and attach text with changes in red.

College Introductory Pages: Add information: ____ Change information: ____ Attach new/changed information. If in current online catalog, provide change and attach text with changes in red.

Other: Add information: ____ Change information: ____ Attach new/changed information. If in current online catalog, provide change and attach text with changes in red.

Approvals:	Signature	Date
Chair Department Curriculum Committee	_____	_____
Chair Department	_____	_____
Chair College Curriculum Committee	_____	_____
Dean	_____	_____

04/2011