REGULAR COURSE SYLLABUS

School of: Professional Studies
Department: Engineering Technology
Prefix & Course Number: MET 3320

Course Title: Instrumentation Laboratory
Banner course title (26 characters): Instrumentation Laboratory

Check All That Apply:  
Required for Major: ___  Required for Minor: ___  Specified Elective: ___
Required for Concentration: X  Elective: X  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. 34CFR 600.2 (11/1/2010)

Credit Hours: 3 (2+2)

Face-to-Face or Equivalent Hours per course:
Lecture 30  Lab 30  Internship ____  Practicum ____  Other (please specify type and hours):____

Additional Student Work Hours per course: 90

Schedule Type: B  Grade Mode: L

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

Specified repeatable course: No X Yes ____

APPROVED:

Department Chair OR Program Director  Date

Dean OR Associate Dean  Date

Associate VP, Academic and Student Affairs  Date

*If crosslisted, attach completed Course Crosslisting Agreement Form
Prefix and Course Number: MET 3320

Prerequisite(s): MET 3180 or MET 3185

Corequisite(s): _____

Prerequisite(s) or Corequisite(s): _____

Banner Enforced:
Prerequisite(s): MET 3180 or MET 3185
Corequisite(s): _____
Prerequisite(s) or Corequisite(s): _____

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

Catalog Course Description:
The student is introduced to standard mechanical tests and measurement techniques, e.g., installing thermocouples, strain gages, positioning static and total probes. ASME (American Society of Mechanical Engineers) and ASTM (American Standards of Testing and Measurement) test codes are studied, as are OSHA (Occupational Safety and Hazard Association) standards. Various physical property and system performance tests are set up, conducted and analyzed.

Specific Variable Topics Course Description (if applicable, umbrella course description included above):

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. Calibrate and operate laboratory equipment as found in industrial test labs.
2. Measure and assess accuracy of data using statistical methods.
3. Compare actual-to-predicted results in written and oral reports.
4. Perform static and dynamic measurements during transient and steady-state periods.
5. Perform pressure, temperature, force and torque tests and collect data.
6. Operate flow/viscosity measuring devices such as rotameters, nozzles, venture meters, and the Saybolt viscometer.

Detailed Outline of Course Content (Major Topics and Subtopics) or Outline of Field Experience/Internship (experience, responsibilities and supervision):
I. Art/Science of Measurement
   A. Experimental Error Analysis
   B. Methods/Costs
   C. Static/Dynamic Measurements

II. Pressure Measurements
   A. Pitot Tube
   B. Transducers

III. Temperature Measurements
   A. Thermocouples
   B. Thermistors

IV. Force/Torque Measurements
Prefix and Course Number: MET 3320

A. Strain Gages
B. Dynamometer
C. Rockwell Hardness
D. Charpy

V. Flow/Viscosity Measurements
A. Orifice Plates
B. Rotameter
C. Venture
D. Viscometer (Saybolt)
E. Anemometer
F. Nozzles

Evaluation of Student Performance:
1. Quizzes
2. Tests
3. Lab Reports (written and oral)
4. Project