North Central State College

MASTER SYLLABUS
2019-2020

A. Academic Division: Business, Industry and Technology

B. Discipline: Mechanical Engineering

C. Course Number and Title: ENGR 3030 Measurement & Instrumentation

D. Course Coordinator: Mike Beebe
Assistant Dean: Toni Johnson, PhD

Instructor Information:
- Name: Click here to enter text.
- Office Location: Click here to enter text.
- Office Hours: Click here to enter text.
- Phone Number: Click here to enter text.
- E-Mail Address Click here to enter text.

E. Credit Hours: 3
Lecture: 2 hours
Laboratory: 2 hours

F. Prerequisites: MATH1130

G. Syllabus Effective Date: Fall, 2019

H. Textbook(s) Title:

Experimental Methods for Engineers
- Author: JP Homan
- Copyright Year:
- Edition: 8th Edition
- ISBN #: 9780073529301

I. Workbook(s) and/or Lab Manual: None; Class Handouts will be distributed

J. Course Description: This course presents theory and application of engineering measurement concepts including: static and dynamic measurements of temperature, pressure, acceleration, force, moments, displacement and flow sensing, calibration, statistical and uncertainty analysis, sampling, signal conditioning, dynamic response, and emphasis of computerized data acquisition.

K. College-Wide Learning Outcomes:

College-Wide Learning Outcome	Assessments - - How it is met & When it is met
Communication – Written	
Communication – Speech	
Intercultural Knowledge and Competence	

College-Wide Learning Outcome	Assessments - - How it is met & When it is met
Critical Thinking	
Information Literacy	
Quantitative Literacy	

L. Course Outcomes and Assessment Methods:

Upon successful completion of this course, the student shall:

Outcomes	Assessments – How it is met & When it is met
1. Making measurements	Lab Report, lab experiments, quiz
2. Analysis of experimental data	Lab experiments, quiz, midterm
3. Review of measurement data acquisitions	Lab work, quiz and midterm
4. Basic electrical measurements and sensing devices construction and operation	Lab, quiz, report
5. Pressure measurements	Lab, quiz, midterm, and final
6. Force, torque, and strain measurement	Lab, quiz, midterm, and final
7. Motion and vibration measurement	Lab, midterm and final exam
8. Temperature, displacement, and flow measurement	Lab, midterm and final exam

ABET Outcomes:

- *Outcome c.* Perform selection, set-up, and calibration of measurement tools/instrumentation;
- *Outcome h.* Mechanical system design;

M. Topical Timeline (Subject to Change):

Unit 1 Basic Concepts of Measurement and Report Writing, What is Test Engineering
Unit 2 Analysis of Experimental Data
Unit 3 Basic Data Acquisition Equipment, sensors, and sensor calibration
Unit 4 Displacement measurements
Unit 5 Pressure Measurements
Unit 6 Force, Torque and strain Measurements
Unit 7 Motion and Vibration Measurements
Unit 8 Temperature Measurements
Unit 9 Data Acquisition and troubleshooting

N. Course Assignments:

- Written assignments
- Lab Reports
- Quizzes
- Midterm
- Final Exam

O. Recommended Grading Scale:

NUMERIC	GRADE	POINTS	DEFINITION
93–100	A	4.00	Superior
90–92	A-	3.67	Superior

87–89	B+	3.33	Above Average
83–86	B	3.00	Above Average
80–82	B-	2.67	Above Average
77–79	C+	2.33	Average
73–76	C	2.00	Average
70-72	C-	1.67	Below Average
67–69	D+	1.33	Below Average
63-66	D	1.00	Below Average
60-62	D-	0.67	Poor
00--59	F	0.00	Failure

P. Grading and Testing Guidelines:

Click here to enter text.

Q. Examination Policy:

Click here to enter text.

R. Class Attendance and Homework Make-Up Policy:

Click here to enter text.

S. Classroom Expectations:

Click here to enter text.

T. College Procedures/Policies:

Important information regarding College Procedures and Policies can be found on the syllabus supplement located at https://sharept.ncstatecollege.edu/committees/1/curriculum/SiteAssets/SitePages/Home/SYLLABUS%20SUPPLEMENT.pdf