University of Mary Hardin-Baylor

Contact Information

Instructor:	Dr. William G Tanner, Jr.
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Office Hours:	MW 1:00 pm – 4:00 pm
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	Other times by appointment

Description of the Course

Course Name, Number and Section: Introduction to Engineering Fundamentals, ENGR 1320.02

Term: Spring 2019

Catalog Description:
This course will provide exposure to, and practice with, problem-solving strategies for problems commonly encountered in the design and analysis of mechanical and electrical engineering systems. This course will enhance a student's ability to apply knowledge of mathematics, science, and engineering, to identify, formulate, and solve engineering problems and to use the techniques, skills, and modern engineering tools necessary for engineering practice. Prerequisites: ENGR 1310. Lab Fee.

Time/Location Course Meets: MWF 9:00 - 9:50 AM in Davidson 101

Course Objectives:
The Engineer has a variety of tools available for design and analysis, which are applicable to any industry or discipline. Many of these tools are computer based and the Engineer needs a thorough grounding in the use of these tools and the fundamentals of computer programming for the solution to engineering problems. This course will introduce the principles of structured programming, using a programmable calculator, and using industry standard software applications to solve a variety of engineering problems.

Relationship of Course to Engineering Science Program Learning Outcomes:
A successful student will strongly contribute to the CSE Learning Outcomes and will:

- be able to understand scientific principles and apply them to the practice of engineering;
- be able to communicate effectively;
- possess the problem-solving skills, background, and confidence necessary to educate themselves continually throughout their careers;
- be able to apply computers as tools for engineering;
- be able to practice engineering with ethical standards and a responsibility to society;
- be able to develop creative solutions to engineering problems.
- be able to work well as part of a team.
- be able to apply the design process to engineering problems, including the consideration of different technical alternatives while bearing in mind cost, environmental concerns, safety, and other constraints.

Credit Hour(s): This is a traditional, 3-credit hour course. Each credit hour earned in this course requires at least fifteen (15) contact hours, as well as a minimum of thirty (30) hours of student homework.

Textbooks:
Attaway, Stormy, *MATLAB: A Practical Introduction to Programming and Problem Solving*, Fifth Edition, Butterworth and Heinemann, 2019, **ISBN: 978-0-12-815479-3**
Essick, John, *Hands-on Introduction to LabVIEW*, Third Edition, Oxford University Press, 2016. **ISBN: 978-0-19-021189-9**
Planchard, David, Engineering Design with SOLIDWORKS 2017, First Edition, SDC Publications, 2017, **ISBN: 978-1-63057-065-1**

Software:
LabVIEW, Student Edition, (provided)
SOLIDWORKS, (provided)
MATLAB and Simulink, Mathworks, **ISBN: 978-0-9825838-5-2**

Academic Honesty:
The University of Mary Hardin-Baylor policy on academic integrity applies to all courses. UMHB expects the highest standards of academic integrity among all members of the campus community. All acts of plagiarism or violations of academic honesty are considered serious offenses and may result in failure of the assignment or the course.

Special Accommodations:
If you have a disability for which you are or may be requesting an accommodation, you are encouraged to contact both your professor and the Accommodation & Student Assistance Program office in the Robert & Linda Black Center for Counseling, Testing & Health Services, Mabee Student Center, Suite 310, as early as possible in the term.

Assignments and Grading:
Assignments should include everything listed below. Course Requirements follow, along with how each assignment is used and weighted to determine a grade.

Problem Sets and Quizzes (weighted equally)	20%
Three Section Examinations (worth 10% each)	30%
LabVIEW Project Report	10%
SolidWorks Design Presentation	10%
SolidWorks Design Report	10%
Final Examination	20%

Course Requirements:
1. Work assignments as they are given. Quizzes over the chapter readings and homework will be given periodically.
2. Show progress in the course through three examinations on LabVIEW.
3. Participate in in-class activities. Much of the material will be presented in the reading and then reinforced in class. Your participation in the activities during class will greatly affect your performance in this course.
4. Take and pass the cumulative final examination.
5. Participate in two team-based assignments during the semester. The first assignment is a programming assignment using LabVIEW and the second is a design project using SOLIDWORKS. Your performance on these projects will be evaluated by your team members, and unacceptable contributions to the end product will be considered in your evaluation.

Grade Scale:
A = 90 to 100
B = 80 to 89
C = 70 to 79
D = 60 to 69
F = < 60

Please note grade point cut-off points. Always monitor your current performance level via MyCampus.

Late Work Policy:
Makeup examinations and quizzes will be given only under extenuating circumstances (major illness, death in the family, etc.). Students desiring a Makeup examination or quiz must make arrangements with the professor. A Makeup examination must be scheduled **before** the next scheduled examination. If a student fails to take a Makeup examination before the next scheduled examination, that student will receive a **zero** for the examination missed.

Some assignments may be eligible to be turned in late at a discounted grade. Late assignments will be discounted at the rate of one letter grade per day. After four days, the assignment will not be accepted. All assignments are due at the beginning of the class session. If they are turned in after the beginning of the class session, the score will be discounted by one letter grade.

Assignments missed due to university approved absences or specific individually documented instances (note from a doctor in the case of illness or absences due to legal or civil proceedings) are eligible for late submission. Professors/instructors should be notified prior to a university approved absence.

Academic Decorum:
The learning process involves an exchange of ideas and an exploration of concepts between faculty and students and a certain level of decorum facilitates this process.

Supportive actions include:
(1)Coming to class prepared including reading all assignments.
(2)Being attentive and responsive in class.
(3)Respecting the course instructor and fellow students (opinions and ideas).
(4)Contributing to the class by making topic-specific comments.
(5)Offering critiques and alternative ideas in a non-condescending manner.
(6)Providing a fair share of work to group projects and team activities.

Examples of disruptive behaviors to avoid include:
(1) Talking, sleeping, or otherwise distracting members of the class.
(2) Using electronic devices for personal use.
(3) Exhibiting argumentative or attention-seeking behavior.
(4) Failing to show respect or act with civility.

Attendance Policy:
Class attendance is viewed by the instructor as critically important and imperative to success in this course are expected to be present at all class meetings. If you are absent, you have a responsibility to submit work that is due for that class period by a) sending it with another person in class, or b) turning it in personally to the professor prior to the due date. The assignment must be posted as received no later than the beginning of the class time on the date it is due. Additionally, you have a responsibility to inquire of other students in class for notes, materials, and assignments from classes you

Schedule of Course Activities:

The schedule of course activities is available here and maintained on myCourses. The topics are tentative and subject to possible revision/change, should the need arise

Week	Monday	Holiday	Topic
1	1/14		**Matlab:** Chapter 1 Starting with Matlab
2	1/21	1/21 Martin Luther King, Jr. Holiday	**Matlab:** Chapter 2 Creating Arrays
3	1/28		**Matlab:** Chapter 3 Mathematical Operations with Arrays
4	2/4		**Matlab:** Chapter 4 Using Script Files and Managing Data Exam1
5	2/11		**Matlab:** Chapter 5 Two-Dimensional Plots
6	2/18		**Matlab:** Chapter 6 Programming in MATLAB
7	2/25		**Matlab:** Chapter 6 Programming in MATLAB
8	3/4		**Matlab:** Chapter 7 User-Defined Functions and Function Files Exam 2
9	3/11	3/11 – 3/15 Spring Break	
10	3/18		**LabVIEW**: Chapter 1 LabVIEW Program Development
11	3/25		**LabVIEW**: Chapter 2 While Loop Chapter 3 For Loop
12	4/1		**LabVIEW**: Chapter 4 Mathscript Node NI ELVISmx Instrument Launcher
13	4/8		**LabVIEW**: Chapter 6 Data Acquisition Using DAQ Assistant Exam 3
14	4/15	4/19 Good Friday Holiday	**SolidWorks**: Part & Assembly Tutorial
15	4/22		**SolidWorks**: Part & Assembly Practice
16	4/29		**SolidWorks**: Project Exam Review
17	5/6		Final Exam