Montgomery County Community College
EGR 291
Engineering Research I
3-2-2

COURSE DESCRIPTION:
This course provides the student with an introductory research experience focused on open-source product development in engineering. Utilizing pragmatic methods, students will immerse themselves in technology reviews, design and execute testing plans, collect and analyze data, integrate open-source materials and designs, and report on findings through technical reports, and publish their results to the open-source community. Students will learn the best practices in product research, development, and design, and engineering notebook maintenance. This course is subject to a course fee. Refer to http://mc3.edu/adm-fin-aid/paying/tuition/course-fees for current rates.

REQUISITES:
Previous Course Requirements
- MAT 011 Beginning Algebra or MAT 011B Beginning Algebra with Review of Arithmetic with a minimum grade of "C"

Concurrent Course Requirements
None

LEARNING OUTCOMES Upon successful completion of this course, the student will be able to:	LEARNING ACTIVITIES	EVALUATION METHODS
1. Assess engineering concepts associated with a specific engineering open-source challenge	Lecture Engineering Notebook Entry Team Project Tasks	Notebook Review Process Review Oral Presentation Review
2. Implement the building blocks of a working model pertaining to a specific open-source challenge	Lecture Engineering Notebook Entry Team Project Tasks	Notebook Review Process Review Oral Presentation Review
3. Demonstrate proficiency in evaluation methods pertaining to engineering testing	Lecture Engineering Notebook Entry Team Project Tasks	Notebook Review Process Review Oral Presentation Review
4. Utilize effective written and oral communication when sharing research data.	Lecture Engineering Notebook Entry Team Project Tasks	Notebook Review Process Review Oral Presentation Review

LEARNING OUTCOMES	LEARNING ACTIVITIES	EVALUATION METHODS
5. Function as a contributing member of a research and development team	Lecture Team Project Tasks	Notebook Review Process Review Oral Presentation Review with a grade of C or better

At the conclusion of each semester/session, assessment of the learning outcomes will be completed by course faculty using the listed evaluation method(s). Aggregated results will be submitted to the Associate Vice President of Academic Affairs. The benchmark for each learning outcome is that *70% of students will meet or exceed outcome criteria.*

SEQUENCE OF TOPICS:
Course Introduction
A. Introduction to Best Practices in Engineering Laboratory Safety
B. Introduction to Specific Open-Source Engineering Design Challenge
C. Maintaining an Engineering Notebook – General Rules
D. Defining the Challenge
    a. Technology Immersion
E. Developing a Deliverable Road Map
F. Best Practices in Practical Development
    a. Introduction to Proper Equipment Usage and Maintenance
    b. Introduction to Evaluation and Testing Methods
G. Data Collection and Analysis
    a. Parameters
    b. Data Collection
    c. Introduction to Collating, Organizing, and Analyzing Data
H. Contributing to Open-Source Reports as a team member
I. Research Presentations

LEARNING MATERIALS:
Open source material provided by instructor

Other learning materials may be required and made available directly to the student and/or via the College's Libraries and/or course management system.

COURSE APPROVAL:
Prepared by: Andrew Ippolito   Date: 01/03/2013
Revised by: William Brownlowe   Date: 09/19/2014
VPAA/Provost Compliance Verification:
            Victoria L. Bastecki-Perez, Ed.D.   Date: 10/2014

Revised by: Debbie Dalrymple   Date: 12/17/2017
VPAA/Provost or designee Compliance Verification: Date: 1/10/2018

This course is consistent with Montgomery County Community College's mission. It was developed, approved and will be delivered in full compliance with the policies and procedures established by the College.