Montgomery County Community College EGR 292 Engineering Research II 3-2-2

COURSE DESCRIPTION:

This course provides students with further engineering research experience, building upon experience gained in EGR 291, Engineering Research I. Students may continue their work on past or current projects or initiate new ones. Utilizing pragmatic methods, students will immerse themselves in deeper technology reviews integrating open-source materials and designs. Students will play a leadership role in the execution of deliverables and reporting of results through technical reports and presentations. Students will continue to learn best practices in experimental design, data collection, open-source product research and development, and proper 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

- EGR 291 Engineering Research I with a minimum grade of "C"

Concurrent Course Requirements None

LEARINING OUTCOMES	LEARINING ACTIVITIES	EVALUATION METHODS
Upon successful		
completion of this course,		
the student will be able to:		
1. Evaluate engineering		Notobook Doviow
concepts associated with a	Lecture	NOLEDOOK REVIEW
specific engineering open-	Engineering Notebook Entry	Process Review
	Team Project Tasks	Oral Presentation Review
source challenge		
2. Enhance the building		Notebook Review
blocks of a working model	Engineering Notebook Entry	Process Poviow
pertaining to a specific	Toom Droject Tooko	Cred Dress Review
open-source challenge	ream Project Tasks	Oral Presentation Review
3. Demonstrate proficiency		
in decision making	Lecture	Notebook Review
pertaining to the	Engineering Notebook Entry	Process Review
engineering design and	Team Project Tasks	Oral Presentation Review
development process		

LEARNING OUTCOMES	LEARNING ACTIVITIES	EVALUATION METHODS
4. Utilize effective written and oral communication when discussing research results.	Lecture Open-Source Reports Research Papers	Notebook submission Written Reports Oral Presentations
5. Function as lead member of a research and development team	Lecture Team Project Tasks	Written Reports Oral Presentations

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. Application Best Practices in Engineering Laboratory Safety
- B. Appraising Specific Open-Source Engineering Design Challenges
- C. Maintaining an Engineering Notebook Industry Rules
- D. Critical Thinking Standards and Practices
- E. Team Building and Conflict Resolution
- F. Defining the Challenge
 - a. Decision-making pertaining to engineering technologies
- G. Implementing a Deliverable Road Map
- H. Best Practices in Practical Development
 - a. Equipment Usage and on-going Maintenance
 - b. Use and Evaluation of Testing Methods
- I. Data Collection and Analysis
 - a. Collating, Organizing Data
 - b. Analyzing Data
- J. Authoring and sharing Open-Source Reports and Research Reports
- K. Leadership in Research and Development

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 Revised by: William Brownlowe VPAA/Provost Compliance Verification: Victoria L. Bastecki-Perez, Ed.D. Date: 01/03/2013 Date: 09/19/2014 Date: 10/2014 Date: 12/19/2017 Date: 1/10/2018

Revised by: Debbie Dalrymple VPAA/Provost or designee Compliance Verification:

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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.