Montgomery County Community College
EGR 115
Engineering Graphics
3-2-2

COURSE DESCRIPTION:
This course covers the basics of 3-Dimensional Solid Modeling design from conception through to final product production. Drawing, dimensioning, and tolerancing techniques are discussed as well as fitment and scaling. Solutions to 3D problems and spatial analysis through descriptive geometry are also analyzed. 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 100 Intermediate Algebra or MAT 100B Intermediate Algebra & Review

Concurrent Course Requirements
None

LEARNING OUTCOMES Upon successful completion of this course, the student will be able to:	LEARNING ACTIVITIES	EVALUATION METHODS
1. Apply the concept of design and use of engineering graphics as an engineering communications media.	Lecture/Discussion Demonstration and Practice Case Studies Student Projects	Demonstration Student Projects
2. Employ solid modeling and basic solid modeling functions as they relate to checking for fit and function.	Lecture/Discussion Demonstration and Practice Case Studies Student Projects	Demonstration Student Projects
3. Describe the large and varied role that graphical information plays in engineering design.	Lecture/Discussion Demonstration and Practice Case Studies Student Projects	Demonstration Student Projects

LEARNING OUTCOMES	LEARNING ACTIVITIES	EVALUATION METHODS
4. Identify the role of graphics in, and the benefits of, concurrent engineering.	Lecture/Discussion Demonstration and Practice Case Studies Student Projects	Demonstration Student Projects
5. Identify four types of factors that constrain design problems.	Lecture/Discussion Demonstration and Practice Case Studies Student Projects	Demonstration Student Projects
6. Create contour sketches using visualization in ideation and problem identification.	Lecture/Discussion Demonstration and Practice Case Studies Student Projects	Demonstration Student Projects
7. Identify symbols in schematics and locate standard drawing symbols.	Lecture/Discussion Demonstration and Practice Case Studies Student Projects	Demonstration Student Projects
8. Identify shapes that could be formed by revolution techniques and sketch their profiles.	Lecture/Discussion Demonstration and Practice Case Studies Student Projects	Demonstration Student Projects
9. Describe how a parametric modeler differs from a solid modeler.	Lecture/Discussion Demonstration and Practice Case Studies Student Projects	Demonstration Student Projects
10. Present the rationale for controlling engineering documents.	Lecture/Discussion Demonstration and Practice Case Studies Student Projects	Demonstration Student Projects

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:

1. Introduction to Engineering Graphics and SolidWorks
2. Engineering Drawings
3. Orthographic Projections
4. Pictorial Drawings

5. Dimensioning
6. Engineering Design
7. Additive Manufacturing
8. Sectioning
9. Advanced Drawing Techniques
10. Advanced Modeling Techniques
11. Tolerancing
12. Threads and Fasteners
13. Assembly Drawings
14. CSWA Exam Preparation

LEARNING MATERIALS:
Plantenberg, K. (2016). *Engineering Graphics Essentials: Text and Digital Learning* (5th Ed.), SDC Publications.

Computer Labs: software for 3-D modeling
Engineering Labs: rapid prototyping system
Instructor Handouts, text references (engineering library)

Other materials may be required and may be made available directly to the student or via the College's library reserve or its computer network.

COURSE APPROVAL:
H. Thomas Tucker, Jr. Assistant Professor of Engineering and William H. Brownlowe, Associate Professor of Engineering Date: 10/2005
VPAA/Provost or designee Compliance Verification:
John Flynn Jr, Ed.D. Date: 10/10/2005

Revised by: William H. Brownlowe Date: 9/24/2013
VPAA/Provost or designee Compliance Verification:
Victoria L. Bastecki-Perez, Ed.D. Date: 9/26/2013

Revised by: Chengyang Wang, Ph.D. Date: 12/21/2017
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.