

Virginia Western Community College

EGR 123

Introduction to Engineering Design

Prerequisites:
None

Course Description

Introduces the fundamental knowledge and experience needed to understand the engineering design process through the basics of electrical, computer, and mechanical systems. Includes the completion of a project in which a specific electromechanical robot kit will be analyzed, assembled, and operated.

Semester Credits: 2 Lecture Hours: 1 Lab/Recitation Hours: 2

Required Materials

Textbook:

Engineering Design and Graphics with SolidWorks 2016, 1st ed., Bethune, Peachpit Press, ISBN: 9780134507699

Course Outcomes

At the completion of this course, the student should be able to:

- Use reverse engineering to learn parametric 3D modeling software, design, test and build an autonomous robot
- Use 3D parametric CAD software to design and virtually prototype
- Make working drawings to build an autonomous robot

- Through small group activities, learn how to more effectively communicate and interact with other students, counselors, and faculty

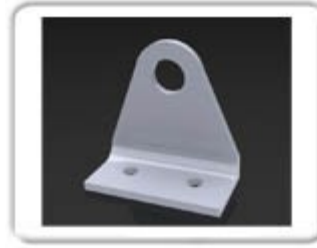
Topical Description

(Outline chapters and sections to be covered in the book – may include timeline)

Week	Topic
1	Intro to 3D Parametric Modeling
2, 3	Sketching and Modeling
4	Assembly Modeling
5	Your Boe-Bot's Brain
6	Designing Parts
7, 8	Documenting Parts
9, 10	Assemble and Test Your Bot-Bot
11, 12	Analyzing a Design
13	Documenting Assemblies
14	Robot Contest
15	Review for exam
16	Exam



Unit 1: Intro to SolidWorks



Unit 2: Building a Part



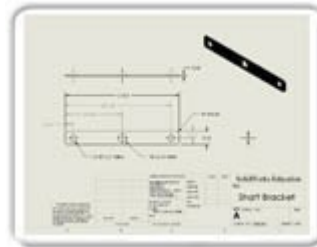
Unit 3: Assembly



Unit 4: Chassis



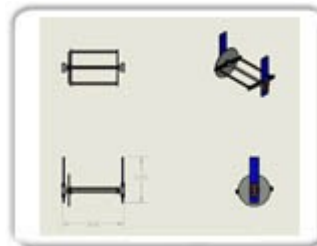
Unit 5: Mechanism



Unit 6: Manufacturing & Parts



Unit 7: Electrical



Unit 8: Teamwork Tools

Unit 9: Summary

Notes to Instructors

1. The final project is worth 20% of the final grade.