

JAMESTOWN COMMUNITY COLLEGE
State University of New York

INSTITUTIONAL COURSE SYLLABUS

Course Title: Introduction to Solid Modeling

Course Abbreviation and Number: MCT 1380

Credit Hours: 3

Course Type: Lecture

Course Description: Students will be introduced to 3-D solid modeling software. Much of the course is spent on application of a parametric solid modeler such as Solid Works. Students will learn to create and sketch geometry and parametric solids. Students will also be introduced to detailing and assembly modeling. Emphasis is placed on establishing constraints that correctly convey the design intent.

Prerequisite or Corequisite: MCT 1240.

Student Learning Outcomes:

Students who demonstrate understanding can:

1. Describe the functioning and capabilities of a modern feature-base parametric solid modeler.
 2. Describe the history and evolution of CAD software.
 3. Demonstrate basic knowledge of current CAD trends in the industry.
 4. Create well-constructed and robust solid models of a variety of prismatic parts.
 5. Explain model constraints and parameters.
 6. Create simple solid model assemblies, demonstrating a basic understanding of assembly constraints and the ability to create assemblies with “degrees of freedom” for the purpose of modeling motion.
 7. Create simple detail drawings of models or assemblies.
 8. Demonstrate the requisite foundation for learning more advanced solid modeling techniques.
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Topics Covered:

- Introduction to Computer Aided Design (CAD) including: the history of CAD, different CAD technologies (wire-frame, surfacing, solids, hybrids), computer hardware, major vendors, and related engineering and manufacturing applications.
 - Introduction to 3D feature-base parametric solid modeling and design intent.
 - Feature sketches and sketch entities including: lines, circles, arcs, rectangles, and fillets.
 - Geometric and dimensional constraints (relations).
 - Extruded features and end conditions.
 - Revolved features.
 - Applied features including: chamfers and fillets.
 - Feature patterns including: mirroring, linear patterns, circular patterns, and sketch patterns.
 - Hole features.
 - Molded or cast part features including: shelling, neutral plane draft, parting line draft, and draft analysis.
 - Introduction to sheet metal features.
 - Introduction to detailing including: orthogonal views, projected views, sectional views, pictorial views, and dimensioning.
 - Introduction to bottom up assembly modeling including: constraints (mating), motion, and interference detection.
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Information for Students

- Expectations of Students
 - [Civility Statement](#)
 - [Student Responsibility Statement](#)
 - [Academic Integrity Statement](#)

- [Accessibility Services](#)

Students who require accommodations to complete the requirements and expectations of this course because of a disability must make their accommodation requests to the Accessibility Services Coordinator.

- [Get Help: JCC & Community Resources](#)
- [Emergency Closing Procedures](#)

- Course grade is determined by the instructor based on a combination of factors, including but not limited to, homework, quizzes, exams, projects, and participation. Final course grade can be translated into a grade point value according to the following:

A=4.0	B+=3.5	B=3	C+=2.5	C=2	D+=1.5	D=1	F=0
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- Veterans and active duty military personnel with special circumstances (e.g., upcoming deployments, drill requirements, VA appointments) are welcome and encouraged to communicate these to the instructor.

Effective Date: Fall 2021