

CAD 2 (823) Syllabus

Instructor: Ms. Giovanardi, BS in Mechanical Engineering, MESE Technology and Engineering Certified
Email: egiovanardi@melroseschools.com

A. DESCRIPTION:

The focus of this course will be on the development of 3D parametric CAD (Computer Aided Design) skills required for entry into the work world. Topics covered include both mechanical and architectural drawings and design. The students must have already successfully completed CAD1 class. This course will help prepare students for work in an engineering or architectural field, including drafting and machining, as well as prepare students for a college major in engineering or architecture.

B. COURSE OBJECTIVE

- a. Further develop part visualization skills via orthographic drawing creation or 3D part modeling from orthographic drawings
- b. Create 3D parametric parts models using best practice with industry standard 3D modeling software, Autodesk Inventor.
- c. Create parametric architectural models using industry standard Autodesk Revit.
- d. Display and detail skills and projects through the creation of an electronic portfolio.

C. ORGANIZATION

This is a lecture-lab class in which CAD skills and topics are explained and demonstrated by the instructor. Subsequently, students develop these skills by completing exercises in a textbook. Students then must demonstrate mastery of these skills by completing the follow-on skills exercises and quizzes. Students are given sufficient time during class to complete all in-class assignments. Students are expected to maintain an organized folder of their work, both on paper and electronic copies. Neatness and organization will be a factor in their class participation grades since this is a skill necessary to all CAD users.

D. COURSE TOPICS

- a. Mechanical Engineering Skills using Autodesk Inventor
 - i. Orthographic – Isometric part visualization
 - ii. 2D Parametric sketching using best practices including dimensional and geometric constraints
 - iii. 3D Part model creation using Extrude and Revolve commands
 - iv. Additional modeling skills including pattern, work features, hole tool, fillet/chamfer, etc.
- b. Architectural Topics in AutoCAD and Autodesk Revit
 - i. Residential Layout Guidelines
 - ii. Interior and Exterior wall creation of models of multi-story residential houses in Revit
 - iii. Insertion and modification of doors, windows, & stairs into house models
 - iv. Creation of various roof types in architectural models

E. GRADING PLAN

Coursework will be weighted as follows:

- a. Class Work Assignments: 70%
- b. Quizzes and QOTD (Question of the Day): 15%

- c. Participation and behavior: 15% (Based on ClassDojo)
- d. Midterm & Final Exam: 20% of semester grade

F. ATTENDANCE

See the Student and Parent Handbook for class attendance and tardiness. Remember that being late 3 times to class equals an unexcused absence and more than 6 unexcused absences mean an automatic course failure. Keep in mind that the majority of the grade is based on in-class work since Autodesk software is required.

G. CLASSROOM RULES OF CONDUCT

- a. Electronic devices such as cell phones, iPods, and gaming devices must be put away and not actively on during class time. If any such device is being used when not specifically permitted, this device will be confiscated. If it happens repeatedly a parent will be called to pick up the device from the office.
- b. Classroom computers may never be used for entertainment, including gaming and non-class-related web surfing. These computers are for CAD and engineering purposes only
- c. No food or drink permitted in the classroom. Only water is allowed if it is in a sports bottle (no screw-off or open tops).
- d. Always act and speak in an appropriate way. No bullying or swearing.
- e. Use class time for class work only. Remember: Time in class is invaluable. Don't waste it or we'll both have to stay after school to complete your work.