

**PELLISSIPPI STATE COMMUNITY COLLEGE
MASTER SYLLABUS**

**ADVANCED MECHANICAL DRAWING W/LAB
MET 1220**

Lecture/Lab Hours: 3/3

Credit Hours: 4

Date Revised: Spring 2017

Catalog Course Description

An intermediate course using SolidWorks, a parametric modeling and solid modeling software. Students create intermediate parametric, feature-based, three-dimensional solid models. This covers assemblies, rendering and detailing engineering drawings.

Prerequisites

MET 1100

Co-requisites

None

Textbooks and Other Supplies

SolidWorks 2011 Part I – Advanced Techniques. Tran, Paul. SDC Publications, 2011.

Week/Topic Basis

This schedule is a guide and may vary slightly, depending on the progress of the class.

Week	Topic
1	Document Templates
2	Extrude and Revolve
3	Rib and Shell Features
4	Linear Patterns
5	Circular Patterns
6	Part Configuration
7	Modeling Threads – Threaded Insert
8	Bottom Up Assembly – Link Assembly

9	Layout Assembly
10	SolidWorks Animato
11	Assembly Drawing
12	Detailing
13	Sheet Metal Drawings
14	e-Drawings
15	Final Exam Period: Final Project

Engineering Technology General Outcomes (Educational objectives)

- I. Apply basic engineering theories and concepts creatively to analyze and solve technical problems.
- II. Utilize with a high degree of knowledge and skill equipment, instruments, software, and technical reference materials currently used in industry.
- III. Communicate effectively using developed writing, speaking, and graphics skills.
- IV. Assimilate and practice the concepts and principles of working in a team environment.
- V. Obtain employment within the discipline or matriculate to a four year program in engineering or industrial technology.

Engineering Technology Concentration Competencies

NOTE: At the program level all 6 competencies apply to roman numerals I – V of the Engineering Technology General Outcomes (Educational objectives) listed above.

Students will

- A. Apply the knowledge, techniques, skills, and modern tools for the concentration of study to specifically defined engineering technology activities.
- B. Demonstrate the knowledge of mathematics, science, engineering and technology to engineering technology problems using developed practical knowledge.
- C. Conduct and report the results of standard tests and measurements, and conduct, analyze and interpret experiment or project results.
- D. Function effectively as a member of a technical team.
- E. Identify, analyze and solve specifically defined engineering technology-based problems.
- F. Employ written, oral and visual communication in a technical environment.

Course Goals

NOTE: Capital letters after course goals reference goals of the Engineering Technology Program.

The course will

1. Expand student understanding of templates as used by SolidWorks. (A,B,E,F)
2. Enhance effective use of SolidWorks' drawing commands to create intermediate parts (A,B,F)
3. Expand student understanding of three-dimensional modeling. (A,B,F)
4. Guide students to understand sectional views (A,B,F)
5. Guide students to understand auxiliary views while working with intersections of planes and surfaces. (A,B,F)
6. Foster the ability to create production drawings from a three dimensional model. (A,B,F)
7. Enhance effective understanding of acceptable ANSI dimensioning and tolerancing practices used in production. (A,B,F)

Expected Student Learning Outcomes

NOTE: Numbers after Expected Student Learning Outcomes reference the course goals listed above.

The student will

- a. Set software and environment system options. (1)
- b. Set document properties. (1)
- c. Use fundamental SolidWorks' commands to place, modify, manipulate, and delete elements. (2)
- d. Understand element selection, fence manipulation, and view attributes. (2)
- e. Project and revolute 2D complex shapes to create 3D objects. (2)
- f. Create composite solids by using union, intersection, and difference operations. (2)
- g. Construct fillets and chamfers between surfaces. (2)
- h. Create a 3 dimensional design file. (3)
- i. Understand the design cube and 3D precision inputs. (3)
- j. Set display and active depths in the process of 3D drafting. (3)
- k. Insert, move and save sectional views. (4)
- l. Attach a sectional view. (4)
- m. Define area for sectional cut. (4)
- n. Define, rotate, move, select and save auxiliary coordinate systems. (5)
- o. Attach an auxiliary view. (5)
- p. Place text, data fields, and tags. (6)
- q. Utilize sheet views to create 2 dimensional front view from the models. (6)
- r. Fold the front view to create all other necessary views. (6)
- s. Place hidden lines for all views. (6)
- t. Reference a border and dimension within the sheet view or sheet file. (6)
- u. Utilize the model to reference individual parts to create an assembly drawing. (6)
- v. Place dimensions. (7)
- w. Understand the meaning of Geometric Dimensioning & Tolerancing (GD&T) symbols and terms. (7)
- x. Understand planar and target datums as they relate to GD&T. (7)

- y. Utilize flatness, straightness, circularity, and cylindricity GD&T controls to control form. (7)
- z. Utilize perpendicularity, angularity, and parallelism GD&T controls to control the orientation of parts. (7)
- aa. Understand concentricity, symmetry, runout, and profile controls and where to use them. (7).

Evaluation

Total evaluation will be based on the following point distribution.

Testing Procedures

Formal tests and quizzes will be given at the discretion of the instructor.

Laboratory Experiences 75 points

Students will be evaluated on the correctness of their drawings

Field Work 25 points

Students will be graded on a final set of working drawings of a project that includes three- dimensional solid model and all orthographic drawings as required to sufficiently describe the part/parts for manufacturing.

Other Evaluation Methods

N/A

Grading Scale

Final grade for this course will be based on the following alphabetical/numerical scale.

A	90-100
B+	85-89
B	80-84
C+	75-79
C	70-74
D	60-69
F	Below 60

Policies

Attendance Policy

Pellissippi State expects students to attend all scheduled instructional activities. As a minimum, students in all courses (excluding distance learning courses) must be present for at least 75 percent of their scheduled class and laboratory meetings in order to receive credit for the course. Individual departments/programs/disciplines, with the approval of the vice president of Academic Affairs, may have requirements that are more stringent. In

very specific circumstances, an appeal of the policy may be addressed to the head of the department in which the course was taken. If further action is warranted, the appeal may be addressed to the vice president of Academic Affairs.

Academic Dishonesty

Academic misconduct committed either directly or indirectly by an individual or group is subject to disciplinary action. Prohibited activities include but are not limited to the following practices:

- Cheating, including but not limited to unauthorized assistance from material, people, or devices when taking a test, quiz, or examination; writing papers or reports; solving problems; or completing academic assignments.
- Plagiarism, including but not limited to paraphrasing, summarizing, or directly quoting published or unpublished work of another person, including online or computerized services, without proper documentation of the original source.
- Purchasing or otherwise obtaining prewritten essays, research papers, or materials prepared by another person or agency that sells term papers or other academic materials to be presented as one's own work.
- Taking an exam for another student.
- Providing others with information and/or answers regarding exams, quizzes, homework or other classroom assignments unless explicitly authorized by the instructor.
- Any of the above occurring within the Web or distance learning environment.

Please see the Pellissippi State Policies and Procedures Manual, Policy 04:02:00 Academic/Classroom Conduct and Disciplinary Sanctions for the complete policy.

Accommodations for Disabilities

Students that need accommodations because of a disability, have emergency medical information to share, or need special arrangements in case the building must be evacuated should inform the instructor immediately, privately after class or in her or his office. Students must present a current accommodation plan from a staff member in Disability Services (DS) in order to receive accommodations in this course. [Disability Services](#) (<http://www.pstcc.edu/sswd/>) may be contacted via [Disability Services email](#) or by visiting Alexander 130.

Other Policies

Safety and Equipment Abuse

Students are expected to take utmost care when using equipment provided by Pellissippi State. No tobacco use, eating, or drinking will be allowed in labs. Students are not to load unauthorized software on the computers. Do not use flash drives for CAD drawings in any other computers other than in CID labs. Students are responsible for maintaining current copies of drawings on their flash drives. Do not

relocate computers, monitors, digitizers or keyboards without supervision by an instructor. Do not copy, delete or move files without instruction by an instructor.

Repeated safety violations will result in a reduction of final grade, at the instructor's discretion. Flagrant violations which result in equipment damage or personal injury could result in automatic failure of the course