

PELLISSIPPI STATE COMMUNITY COLLEGE  
MASTER SYLLABUS

FUNDAMENTALS OF TECHNICAL DRAWING W/LAB  
CET 1100

**Class Hours: 3.0**

**Credit Hours: 3.0**

**Laboratory Hours: 3.0**

**Revised: Fall 2013**

**Catalog Course Description:**

A broadly focused course that introduces students to civil and architectural engineering drawings, drawing types and computer-aided drawing and design. Sketching, instrument drawing and AutoCAD are used as tools to teach the basic principles involved in the development and production of civil and architectural engineering and related drawings.

**Entry Level Standards:**

Students should be at college level reading

**Prerequisites:**

None

**Textbook(s) and Other Course Materials:**

Required Text:

*Introduction to AutoCAD 2012*. Richard/Fitzgerald. Pearson

Reference:

*Drawing Requirments Manual Y14*. PDF on local computer

Equipment:

A. Storage media

**I. Week/Unit/Topic Basis:**

<b>Week</b>	<b>Topic</b>
1	Syllabus review, CET lab policies, introduction to the CAD environment and office practices
2	Interpretation of orthographic (3 view) drawings
3	Basic CAD commands and printing
4	Identifying and sketching missing line & missing views
5	Rules and analytical processes for developing orthographic views
6	Precision drawings

- 7 Overview of engineering drawings
- 8 Geometric constructions
- 9 CAD manipulation & modification commands
- 10 Dimensioning
- 11 Sections views
- 12 Auxiliary views
- 13 3D modeling
- 14 Final exam on CAD timed drawing
- 15 Final Exam Period

## **II. 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

## **III. Engineering Technology Concentration Competencies\***

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

## **IV. Course Goals\*:**

**The course will**

1. Represent objects using orthographic projection (3-Views, isometric, sections, auxiliary) and sketches. (A,F)
2. Be familiar with basic geometry and understand geometric construction. (A,B)
3. Know fundamental mechanical dimensioning standards, lettering, graphic standards and techniques required for technical drawing. (A,F)
4. Construct 2D drawings with annotation using Computer Aided Drafting (CAD) software. (A,F,D)
5. Understand the relationship of various engineering drawing disciplines to the basic principles of engineering drawing. ( A)
6. Construct 3D model of simple machine part using AutoCAD or similar applications. (A,F)

\*Capital letters after course goals reference the competencies of the Engineering Technology concentrations listed above.

**V. Expected Student Learning Outcomes\*:**

Students will be able to:

- a. Understand how to read and use an engineering scale. (1)
- b. Demonstrate proper sketching techniques for basic drawing.(1)
- c. Understand and demonstrate appropriate engineering lettering techniques ANSI standards. (1)
- d. Demonstrate knowledge of lettering/text standards used by engineering disciplines.(1)
- e. Be familiar with and use geometric construction. (1,2)
- f. Be able to perform basic geometric constructions bisectors, perpendicular lines, tangents, etc. (2)
- g. Know terminology of geometry angles, triangles, polygons, etc. (2)
- h. Identify alphabet of lines used in engineering drawings. (5)
- i. Understand proper methods of orthographic projection to develop 2 or 3 views of a part. (1,3)
- j. Demonstrate proper spacing and placement of views. (1,3)
- k. Know fundamental ANSI standards for dimensioning. (3)
- l. Exhibit correct location of holes in circular views. (1)
- m. Develop isometric drawings of parts that include regular, inclined, and curved surfaces. (1)
- n. Understand and correctly present sectional views.(1)
- o. Demonstrate proper use of a cutting plane line. (1)

- p. Develop section drawings. (1,2)
- q. Develop an auxiliary drawings.(1,2)
- r. Understand the CAD system as a drafting tool. (4)
- s. Dimension a drawing using CAD software.(3,4)
- t. Place text using CAD software.(3,4)
- u. Use layering concepts to organize graphic elements using CAD software. (4)
- v. Produce plots from CAD software.(4)
- w. Produce accurate drawings using CAD software.(4)
- x. Produce a CAD drawing with professional quality graphic standards.(4)
- y. Produce a 3D model of simple machine part. (6)

\*Numbers after Expected Student Learning Outcomes reference the course goals listed above.

## **VI. Evaluation:**

Evaluation in this course will be based primarily on the quality of the final drawings produced. Homework, and short quizzes will be supplemental to the drawing problems given during the semester. There will be at least one individually produced, timed CAD drawing.

### A. Testing Procedures:

Quizzes will be given on comprehension of the traditional engineering views (3 views, sections, auxillary views), dimensioning, and CAD commands. Other quizzes may be given as determined by the instructor. There will be a final drawing which will be a fully annotated, 3 view, timed drawing.

### B. Laboratory Expectations:

This course is primarily a laboratory course. Lecture time will be spent explaining the various principles and standards required for professional quality graphics. The student's laboratory time will be spent applying these principles to create specific drawing. It is not intended that the time required completing projects fit within the scheduled class or lab period.

### C. Field Work:

### D. Other Evaluation Methods:

#### **Homework:**

Outside reading, drawing & research will be required. Drawing assigned during class, but not finished by the student will be considered homework to be completed by the assigned date.

### E. Grading Scale:

A	91-100
B+	86-90
B	81-85

C+	76-80
C	71-75
D	60-70
F	Below 60

## VII. Policies:

### A. 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.

### B. 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.

### C. 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 Services for Students with Disabilities (SSWD) in order to receive accommodations in this course. Services for Students with Disabilities may be contacted by sending email to [disabilityservices@pstcc.edu](mailto:disabilityservices@pstcc.edu), or visiting Goins 127, 132, 134, 135, 131. More information is available at <http://www.pstcc.edu/sswd/>.

### D. Other Policies:

#### **Safety and Equipment Abuse:**

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