

CUYAMACA COLLEGE
COURSE OUTLINE OF RECORD

CADD TECHNOLOGY 126 – ELECTRONIC DRAFTING

3 hours lecture, 3 units

Catalog Description

Application of electronic graphics to create all aspects of engineering support documentation. Includes all types: block diagrams, flow charts, wiring, and mechanical enclosures. Covers Schematic Capture and Printed Circuit Board (PCB) layout and design using AutoCAD. Other software may be incorporated. ASME, ANSI, military and NASA standards for engineering are discussed.

Prerequisite

“C” grade or higher or “Pass” in CADD 120 or equivalent

Entrance Skills

Without the following skills, competencies and/or knowledge, students entering this course will be highly unlikely to succeed:

- 1) Use of AutoCAD terms, concepts and techniques in engineering drafting and design.
- 2) Application of AutoCAD in 2D drawing.
- 3) Construction of 2D drawings with text and dimensions using AutoCAD.
- 4) Ability to perform AutoCAD is editing commands to make any necessary changes.
- 5) Verifying the integrity of drawing data using various inquiry commands.
- 6) Plotting and printing drawings in different scale configurations.

Course Content

- 1) Basic CAD (Computer-Aided Drafting) skills application review
- 2) Mechanical packaging and component selection
- 3) Schematic Capture: electronic and electromechanical circuit drawings
- 4) Wiring diagrams
- 5) Schematic diagrams
- 6) Logic diagrams
- 7) Introduction to PCB design and manufacturing
- 8) ASME, ANSI and military standards in engineering practices

Course Objectives

Students will be able to:

- 1) Use appropriate software to correctly draw component symbols used in conventional graphical representations of an electrical circuit.
- 2) Describe and apply electronic graphics and symbols to create basic engineering drawings.
- 3) Develop documentation for block diagrams, flow charts and wiring to describe the details of the diagram.
- 4) Prepare drawings for mechanical enclosures to represent the mechanical parts of the drawing.
- 5) Create Schematic Capture and PCB layout and design to capture an electronic circuit created by a designer.
- 6) Use major concepts of ASME, ANSI and military standards in engineering practices in creating schematic captures of electronic circuits.

Method of Evaluation

A grading system will be established by the instructor and implemented uniformly. Grades will be based on demonstrated proficiency in subject matter determined by multiple measurements for evaluation, one of which must be essay exams, skills demonstration or, where appropriate, the symbol system.

- 1) Group and classroom activities that measure students' ability to articulate the fundamentals of electronic CAD.
- 2) Midterm exam that measures students' ability to describe and apply the fundamentals of drafting concepts, terminology, and techniques used in electronics.
- 3) Final exam that measures students' ability to apply the skills and competencies required of an electronics drafter.
- 4) Classroom project that measures students' ability to apply the skills and competencies required in CAD for electronics applications.

Special Materials Required of Student

Electronic storage media

Minimum Instructional Facilities

CAD computer lab

Method of Instruction

- 1) Lecture and lab demonstration
- 2) Lab work
- 3) Films and industrial examples

Out-of-Class Assignments

- 1) Bi-weekly drawing projects
- 2) Two group projects

Texts and References

- 1) Required (representative example): Frostad, John. *Electronics Drafting*. Goodheart-Willcox, 2021.
- 2) Supplemental: None

Exit Skills

Students having successfully completed this course exit with the following skills, competencies and/or knowledge:

- 1) Create a set of electro-mechanical drawings with the latest version of AutoCAD.
- 2) Understand printed circuit board layout and manufacturing capabilities.
- 3) Create interconnection diagrams and schematics with use of CAD.
- 4) Create block/flow/single line diagrams.
- 5) Define and identify component footprints and their symbols and component selection for specifically defined parameter.
- 6) Distinguish between interconnection diagrams, schematics, and block/flow/single line diagrams.
- 7) Create a working electronic model with CAD drawings.

Student Learning Outcomes

Upon successful completion of this course, students will be able to:

- 1) Apply electronic graphics and symbols to create basic engineering drawings.
- 2) Develop documentation for block diagrams, flow charts and wiring to describe the details of the diagram.
- 3) Prepare drawings for mechanical enclosures to represent the mechanical parts of the drawing
- 4) Create Schematic Capture and Printed Circuit Board (PCB) layout and design to capture an electronic circuit created by a designer.