COURSE OUTLINE

Revision: Loc Nguyen - Date: February 2009

DEPARTMENT: Engineering & Engineering Technology

CURRICULUM: COMPUTER-AIDED DRAFTING/DESIGN TECHNOLOGY

COURSE TITLE: CAD - Electrical

COURSE NUMBER: TDR 169

TYPE OF COURSE: Vocational Preparatory

COURSE LENGTH: 1 quarter

CREDIT HOURS: 4

LECTURE HOURS: 22

LAB HOURS: 44

CLASS SIZE: 18

PREREQUISITES: TDR 123 / 133

COURSE DESCRIPTION:

This course prepares the CAD drafter with a solid foundation in drafting styles used in creating electrical plans, such as power stations, industrial and house wiring. The student becomes adept in utilizing layout symbols for electric power systems, plot plans, and residential / commercial electrical plans. Emphasis is placed on real world applications to engineering problems. In addition, the course will develop basic skills in electronic schematic drafting, including schematics, printed circuit design and layout, and electronic pictorial drawings utilizing 3D CAD capabilities.

STUDENT LEARNING OUTCOMES ADDRESSED:

1) Computation – Apply basic math and calculator operations in the construction of technical drawings.
2) Critical thinking and Problem Solving – Identify problems and evaluate alternative solutions, and apply appropriate analytical methods to develop optional solutions.

STUDENT LEARNING OUTCOMES ADDRESSED: (cont.)

3) Technology – Demonstrate basic understanding of computer systems and use of AutoCAD software to create engineering drawings.
4) Information Literacy – Access and use information from a variety of resources and data.
5) Personal Responsibility – Take pride and value in one's own work.

PROGRAM OUTCOMES ADDRESSED

1 Ability to apply knowledge of mathematics and scientific principles to technical engineering/drafting problems.
2 Ability to analyze and interpret data.
3 Ability to think critically in evaluating information, solving problems, and making decisions.
4 Ability to function on diverse, multi-disciplinary teams.
5 Ability to access and evaluate information from a variety of sources, including the Internet.
6 Understand professional and ethical responsibility.
7 Ability to communicate effectively with written, oral, and visual means.
8 Recognize the need for and ability to engage in life-long learning.
9 Ability to use modern technical engineering techniques, skills, and technology, including computing tools necessary for technical engineering/drafting practice.

GENERAL COURSE OBJECTIVES:

At the successful completion of the course the student will be able to:

1) Define the fundamental types of electrical diagrams; pictorials, schematic, one-line, highway and cable.
2) Understand and utilize the ANSI standard electrical symbols drawn from original concepts or applied from symbol libraries.
3) Prepare basic drawings of electrical facilities by which power is distributed by public and private utilities.
4) Create architectural layout plans of electrical installations for residential and small commercial facilities.
5) Understand basic electronic components and drafting symbols and prepare electronic pictorial and schematic drawings.
6) Work with rough engineering sketches or a marked print of an existing facility or electronic device to develop a new or revised plan.

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	TOPICAL OUTLINE:	APPROX. HOURS
I.	The fundamentals of electrical diagrams	6
II.	Electrical generation, transmission & distribution	6
III.	Residential and commercial electrical plans	6
IV.	Professional perspective & CAD problem	12
V.	The fundamentals of electronic diagrams	12
VI.	Basic electronic symbols and symbol libraries	12
VII.	Printed circuit technology, artwork and drafting	6
VIII.	Pictorial drawings and 3-D applications	6
IX.	Engineering problem – CAD project	6
	Total	66

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