

ILLINOIS VALLEY COMMUNITY COLLEGE



COURSE OUTLINE

DIVISION: Career and Technical Programs

COURSE: ELT 1200; Beginning Industrial Electronics

Date: Fall 2011

Credit Hours: 2.5

Prerequisite(s): ELT-1204 or ELE-1201

Delivery Method:

<input checked="" type="checkbox"/> Lecture	2 Contact Hours (1 contact = 1 credit hour)
<input type="checkbox"/> Seminar	0 Contact Hours (1 contact = 1 credit hour)
<input checked="" type="checkbox"/> Lab	1 Contact Hours (2 contact = 1 credit hour)
<input type="checkbox"/> Clinical	0 Contact Hours (3 contact = 1 credit hour)
<input type="checkbox"/> Online	
<input type="checkbox"/> Blended	

Offered: Fall Spring Summer

IAI Equivalent –**Only for Transfer Courses**–go to <http://www.itransfer.org>:

CATALOG DESCRIPTION:

Basic theory and construction of semiconductors and operation of transistor circuits. Converting alternating current to direct current. Introduction to integrated circuit construction and operation.

GENERAL EDUCATION GOALS ADDRESSED

[See the last page of this form for more information.]

Upon completion of the course, the student will be able:

[Choose those goals that apply to this course.]

- To apply analytical and problem solving skills to personal, social and professional issues and situations.
- To communicate orally and in writing, socially and interpersonally.
- To develop an awareness of the contributions made to civilization by the diverse cultures of the world.
- To understand and use contemporary technology effectively and to understand its impact on the individual and society.
- To work and study effectively both individually and in collaboration with others.
- To understand what it means to act ethically and responsibly as an individual in one's career and as a member of society.
- To develop and maintain a healthy lifestyle physically, mentally, and spiritually.
- To appreciate the ongoing values of learning, self-improvement, and career planning.

EXPECTED LEARNING OUTCOMES AND RELATED COMPETENCIES:

[Outcomes related to course specific goals.]

Upon completion of the course, the student will be able to:

1. Demonstrate safe electrical practices.
2. Demonstrate proper use of a digital multimeter and an oscilloscope.
3. Use the basic steps of troubleshooting.
4. Discuss printed circuit board construction and soldering techniques.
5. Discuss basic semiconductor theory.
6. Discuss the semiconductor diode and its operating specifications of current, voltage, and power.
7. Discuss the zener diode and its operating specifications of current, voltage, and power.
8. Discuss in detail: power supplies, voltage regulation, and RMS and avg. measurements.
9. Discuss the transistor, and its operating specifications of current, voltage, and power.
10. Discuss the silicon controlled rectifier and its operating specifications or current, voltage, and power.
11. Discuss integrated circuit packaging.
12. Discuss linear integrated circuits (OP amps and timers).
13. Discuss solid state transducers and fiber optics.
14. Work in small groups

COURSE TOPICS AND CONTENT REQUIREMENTS:

- I. Safety, test equipment, and troubleshooting
- II. Printed circuit boards and soldering
- III. Semiconductor theory
 - A. Diodes

- B. Zener diodes
- IV. Power supplies
 - A. Half-wave
 - B. Full-wave
 - C. Full-wave bridge
 - D. Filtering
 - E. Regulation
- V. Transistors and Applications
 - A. Switching
 - B. Amplification
- VI. Silicon controlled rectifiers
- VII. Linear integrated circuits
- VIII. Solid state transducers
- IX. LEDs/LCDs
- X. Fiber optics
- XI. Employer Expectations

INSTRUCTIONAL METHODS:

1. Laboratory work
2. Demonstrations
3. Lecture - Discussion
4. Reading assignments
5. Homework
6. Quizzes
7. Group Work
8. Think Tank Modules

INSTRUCTIONAL MATERIALS:

Solid State Fundamentals for Electricians, Gary Rockis, 3rd edition, American Technical Publishers.

STUDENT REQUIREMENTS AND METHODS OF EVALUATION:

1. The student must meet the objectives of the course stated previously.
2. Laboratory reports must be completed as directed and receive an evaluation for accuracy of 70% or more using criteria set forth in the laboratory directions.
3. Grade for the course will be based upon the following:

A.	Laboratory work	50%
B.	Written tests & quizzes	30%
C.	Attendance & attitude	10%
D.	Homework assignments	10%

OTHER REFERENCES

“This workforce solution was funded by a grant awarded by the U.S. Department of Labor’s Employment and Training Administration. The solution was created by the grantee and does not necessarily reflect the official position of the U.S. Department of Labor. The Department of Labor makes no guarantees, warranties, or assurances of any kind, express or implied, with respect to such information, including any information on linked sites and including, but not limited to, accuracy of the information or its completeness, timeliness, usefulness, adequacy, continued availability, or ownership. This solution is copyrighted by the institution that created it. Internal use, by an organization and/or personal use by an individual for non-commercial purposes, is permissible. All other uses require the prior authorization of the copyright holder.”

Course Competency/Assessment Methods Matrix

ELT 1200; Beginning Industrial Electronics	Assessment Options																																					
For each competency/outcome place an "X" below the method of assessment to be used.	Assessment of Student Learning	Article Review	Case Studies	Group Projects	Lab Work	Oral Presentations	Pre-Post Tests	Quizzes	Written Exams	Artifact Self Reflection of Growth	Capstone Projects	Comprehensive Written Exit Exam	Course Embedded Questions	Multi-Media Projects	Observation	Writing Samples	Portfolio Evaluation	Real World Projects	Reflective Journals	Applied Application (skills) Test	Oral Exit Interviews	Accreditation Reviews/Reports	Advisory Council Feedback	Employer Surveys	Graduate Surveys	Internship/Practicum /Site Supervisor Evaluation	Licensing Exam	In Class Feedback	Simulation	Interview	Written Report	Assignment						
	Direct/ Indirect	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	I	I	I	I	D	D												
Assessment Measures – Are direct or indirect as indicated. List competencies/outcomes below.	Direct/ Indirect	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	I	I	I	I	D	D													
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2. Demonstrate proper use of a digital multimeter and an oscilloscope.					X				X																													
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