

METROPOLITAN STATE COLLEGE of DENVER
Office of Academic Affairs

REGULAR COURSE SYLLABUS

School of: Professional Studies

Department: Engineering Technology

CIP Code: 15.0303

Prefix & Course Number: EET 1001

Crosslisted With*: _____

Course Title: Electronics: An Introduction

Check All That Apply: Required for Major: Required for Minor: _____ Specified Elective: _____
Required for Concentration: _____ Elective: Service Course: _____

Credit Hours: 3 (2+2)

Total Contact Hours per semester (assuming 15-16 week semester):

Lecture 30 Lab 30 Internship _____ Practicum _____ Other (please specify type and hours): _____

Schedule Type(s): B Grading Mode(s): L

Variable Topics Courses (list restrictions, including the maximum number of hours that can be earned**):

** NOTE: This information must be included in the course description.

Restrictions (Variable Topics Course): _____

Prerequisite(s): high school algebra

Corequisite(s): _____

Prerequisite(s) or Corequisite(s): _____

Banner Enforced:

Prerequisite(s): _____

Corequisite(s): _____

Prerequisite(s) or Corequisite(s): _____

Catalog Course Description:

This course introduces physical foundations of electricity, electronics, and computers, emphasizing hands-on application of theory. Engineering ethics, technology related careers and the effect of technological changes on modern society will also be discussed. Students will assemble specific electronic projects. (General Studies – Level II, Natural Science)

APPROVED: _____
Department Chair OR Program Director

1 May 08

Date

Dean OR Associate Dean

5/5/08

Date

Associate VP, Academic Affairs

12/17/08

Date

*If crosslisted, attach completed Course Crosslisting Agreement Form

Prefix and Course Number: EET 1001

Required Reading and Other Materials will be equivalent to:

Floyd, Thomas (2006), *Electronics Fundamentals* 7th edition or current edition. Upper Saddle Hill, NJ: Prentice Hall

Specific, Measurable Student Behavioral Learning Objectives:

Upon completion of this course the student should be able to:

1. Define the physical properties of conductors, insulators, and semiconductors.
2. Define basic electrical units take physical measurements, and perform computations using scientific notation.
3. Analyze basic direct and alternating current circuits using the fundamental laws of electricity.
4. Discuss social and political effects of electronics on society.
5. Demonstrate a basic understanding of electronic circuits:
 - a. Analog Amplifiers
 - b. Digital Circuits
6. Demonstrate effective use of traditional and electronic reference sources.

Detailed Outline of Course Content (Major Topics and Subtopics) or Outline of Field Experience/Internship (experience, responsibilities and supervision):

- | | |
|---|--|
| <ol style="list-style-type: none"> I. Overview <ol style="list-style-type: none"> A. Introduction to Technology Supporting the Learning Environment <ol style="list-style-type: none"> 1. Scholarly Resources B. Basic Mathematical Concepts <ol style="list-style-type: none"> 1. Algebra 2. Trigonometry 3. Quantitative Analysis C. Applications of Basic Science <ol style="list-style-type: none"> 1. Atomic Theory 2. Ionization 3. Chemical and Electrical Properties of Materials D. Overview Online Study and Math Skill Resources II. Electronics and Technology Careers III. Social and Political Effects <ol style="list-style-type: none"> A. Engineering Ethics B. Impact on Decision-Making C. Research D. Influence of Technological Change IV. Fundamentals of Electricity <ol style="list-style-type: none"> A. Basic Physical Concepts B. Electrical Units C. Measuring Instruments V. Direct Current (DC) Circuits <ol style="list-style-type: none"> A. Power B. Resistors C. Batteries D. Magnetism E. DC Circuit Analysis | <ol style="list-style-type: none"> VI. Alternating Current (AC) Circuits <ol style="list-style-type: none"> A. Power B. Resistors C. Power Sources D. Magnetism E. AC Circuit Analysis F. Inductance and Capacitance G. Inductive and Capacitive Reactance H. Impedance I. Resistor-Inductance-Capacitance Circuits J. Resonance K. Phase Shift and Oscilloscope L. Transformers VII. Semiconductors and Electronics <ol style="list-style-type: none"> A. Introduction B. Brief Overview of Molecular Properties of a Semiconductor C. Diodes, Bipolar Transistors, Field Effect Transistors D. Amplifiers, Oscillators E. Thyristors VIII. Systems <ol style="list-style-type: none"> A. Integrated Circuits B. Audio C. Wireless Communications D. Digital Logic E. Computers |
|---|--|

Evaluation of Student Performance:

1. Written exams
2. Assignments
3. Written lab reports

**REQUEST FOR NEW OR CONTINUED GENERAL STUDIES DESIGNATION
GENERAL STUDIES - NATURAL SCIENCE LEVEL II**

(To accompany old and new regular syllabus form and Curriculum Change Proposal forms)

Date: March 7, 2007
 School: Professional Studies
 Department: Engineering Technology

Prefix	Course Number	Credit Hours	Contact Hours	CIP Number
EET	1001	3	60	15.0303

Title: Electronics: An Introduction (2+2)

Prerequisite(s): high school algebra

Corequisite(s): _____

Prerequisite(s) and/or corequisite(s): _____

Recommended maximum enrollment per section: 20

Current Course Status (check all that apply)

- New course
 Existing General Studies course: Level II Category Natural Science

General Studies Designation

Level: II

Category: Natural Science

Criteria for Level II General Studies - Natural Science

The following criteria must be addressed for all courses seeking General Studies, Level II designation.
Please type on this form; it will expand to accommodate any length of text.

I. GENERAL CRITERIA FOR LEVEL II COURSES

A. All Level II General Studies courses must provide instruction in the:

1. knowledge and basic methods fundamental to the discipline.
 The student will understand elementary theory of electrical circuits, semiconductors, and electronic systems, electrical units and measurements.
2. origin and development of theories, concepts, and recurrent themes.

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The student will be introduced to the physical foundations of electricity, electronics and computers.

3. relationship to other disciplines.
This course will supplement other science classes by using mathematics, physics, and chemistry principles as applied to electronics. Students will use these skills in homework and tests relating to electronics. Laboratory reports will emphasize clear, precise writing.
4. influence of technological change.
Electronics is in a constant state of evolution. The effect of technological changes, and specifically changes in the electronics field, on modern society will be discussed. The positive and negative effects will be studied. The implicit (embedded) computer will be discussed. Modern society relies heavily upon electronics and computers. The hardware of a computer is electronic by its nature.
5. issue of ethics, ideals, or values.
The issue of engineering ethics and their impact on technology decision - making will be discussed.

B. All Level II courses must also provide the opportunity for students to:

1. use and improve writing and other Level I communication skills. Writing exercises for lower division Level II courses can include reactions to readings; essay test(s); and journal (8/29/88).
Students are required to submit written reports in a variety of assignments.
2. increase critical and logical thinking and problem solving skills.
Students will understand basic electrical/electronic constituents and how to solve elementary electrical and electronic circuit problems.
3. locate, organize and evaluate material independently.
Students are required to complete laboratory projects and to organize their data in a coherent manner integrating experimental data with theoretical data from other sources.

C. Upper division Level II courses must also provide the opportunity for students to:

1. use some original sources or their translations.
2. complete a paper or project with a written component involving library, empirical, or experimental research.
3. participate in a field or laboratory experience if the course is in the natural sciences.

II. CRITERIA FOR NATURAL SCIENCE COURSES

- A. In addition to meeting the basic requirements of all Level II courses, students in Natural Science courses will have the opportunity to:
1. Use and improve Level I quantitative skills.
Students will test simple electronic circuits using electronic instruments measuring electrical quantities.
 2. Evaluate the differences among fact, speculation, evidence, inference, belief, theory, law and generalization.
Students will examine common misconceptions about electricity, electronics, and systems, and why these misconceptions are false.
 3. Interpret basic natural laws related to the discipline.
Students will understand basic physics behind electrical quantities, semiconductors, and electronic systems.
 4. Experience the systematic formulation and testing of hypotheses as well as the importance of accurate observation and measurement.
Students will learn how to validate theoretical results through laboratory experimentation and measurement.
 5. Apply scientific processes to real-life situations that students might encounter.
Students will be able to perform simple troubleshooting of circuits and appliances in her/his home or workplace.
 6. Learn about the experimental basis of scientific knowledge as well as uncertainty and integrity in sciences.
Students will be performing laboratory exercises, and learning that the measurements have uncertainties and limits.

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Approvals:

Juzza Balogh 05/01/2008
Department Curriculum Committee / Date

[Signature] 1 May 08
Department Chair OR Program Director / Date

[Signature] 5/5/08
School Curriculum Committee / Date

Nathy Hays 5/5/08
Dean or Associate Dean / Date

Patricia A. Tucker 5/7/08
~~Chair, General Studies Committee / Date~~ AND/OR Faculty Senate Curriculum Committee / Date

Richard Wign 12/17/08
Associate Vice President, Academic Affairs / Date