JEFFERSON COLLEGE

COURSE SYLLABUS

ETC132

Semiconductors I

5 Credit Hours

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ETC132 Semiconductors I

I. CATALOGUE DESCRIPTION

A. Prerequisite: ETC 104 AC Circuits, and reading proficiency

B. Credit hour award: 5

C. Description: Semiconductors I is a study of basic semiconductor physics, diode applications, bipolar transistors, transistor biasing techniques, transistor amplifiers, field transistors, FET biasing techniques, FET amplifiers, and frequency analysis. (S,D)

II. EXPECTED LEARNING OUTCOMES/CORRESPONDING ASSESSMENT MEASURES

| Demonstrate the ability to identify diode schematic symbols and describe diode operating characteristics | Written exams, quizzes Observation of lab performance |
| Demonstrate the ability to identify diode limiter schematic symbols and describe diode limiter operating characteristics | Written exams, quizzes Observation of lab performance |
| Demonstrate the ability to identify transistor schematic symbols and describe transistor operating characteristics | Written exams, quizzes Observation of lab performance |
| Demonstrate the ability to identify types of transistors | Written exams, quizzes |
| Demonstrate the ability to identify the operating characteristics of common emitter, common base, and common collector amplifiers and describe the circuit operation and components’ purpose in a common emitter amplifier | Written exams, quizzes Observation of lab performance |
| Demonstrate the ability to identify half and full wave rectifier schematic circuits and describe their operating characteristics | Written exams, quizzes Observation of lab performance |
| Demonstrate ability to identify symbols of a bridge rectifier and a voltage doubler in a schematic diagram | Written exams, quizzes Observation of lab performance |
| Demonstrate ability to identify a zener diode schematic symbol, define its function and describe the zener diode operating characteristics | Written exams, quizzes Observation of lab performance |
| Demonstrate ability to identify the schematic diagram and symbols of voltage and current regulators, and describe the operating characteristics of voltage and current regulators | Written exams, quizzes Observation of lab performance |
III. OUTLINE OF TOPICS

A. Diodes and Diode Circuits
   1. Diode action
   2. Diode linuters

B. Transistor Circuits
   1. Transistor action
   2. Common emitter amplifier
   3. Common collector amplifier
   4. Common base amplifier
   5. Generator effects on amplification
   6. Transistor bias stabilization

C. Power Supplies
   1. Half/Full wave rectifiers
   2. Bridge rectifiers and voltage doublers
   3. Zener diode action
   4. Current and voltage regulators

IV. METHODS OF INSTRUCTION

A. NIDA Electronics Training Software

B. Lab Exercises

C. Class Lecture

V. REQUIRED TEXTBOOK


VI. REQUIRED MATERIALS

A. Paper

B. Pens

C. Pencils

D. Scientific Calculator
VII. SUPPLEMENTAL REFERENCES

Class Handouts

VIII. METHODS OF EVALUATION

A. Attendance
B. Exams
C. Lab Exercises
D. Homework

IX. ADA AA STATEMENT

Any student requiring special accommodations should inform the instructor and the Coordinator of Disability Support Services (Library; phone 636-797-3169).

X. ACADEMIC HONESTY STATEMENT

All students are responsible for complying with campus policies as stated in the Student Handbook (see College website http://www.jeffco.edu).

XI. ATTENDANCE STATEMENT

Regular and punctual attendance is expected of all students. Any one of these four options may result in the student being removed from the class and an administrative withdrawal being processed: (1) Student fails to begin class; (2) Student ceases participation for at least two consecutive weeks; (3) Student misses 15 percent or more of the coursework; and/or (4) Student misses 15 percent or more of the course as defined by the instructor. Students earn their financial aid by regularly attending and actively participating in their coursework. If a student does not actively participate, he/she may have to return financial aid funds. Consult the College Catalog or a Student Financial Services representative for more details.

XII. OUTSIDE OF CLASS ACADEMICALLY RELATED ACTIVITIES

The U.S. Department of Education mandates that students be made aware of expectations regarding coursework to be completed outside the classroom. Students are expected to spend substantial time outside of class meetings engaging in academically related activities such as reading, studying, and completing assignments. Specifically, time spent on academically related activities outside of class combined with time spent in class meetings is expected to be a minimum of 37.5 hours over the duration of the term for each credit hour.