

Bossier Parish Community College
Master Syllabus

Course Prefix and Number: TEED 102

Credit Hours: 4-3-3

Course Title: Fundamentals of Electricity and Lab II

Course Prerequisite: TEED 101

Textbook(s): C. A. Schuler. Electronics: Principles and Applications, 9th edition. McGraw-Hill, 2018. ISBN: 978-0073373836.

Solid State Fundamentals. Energy Concepts, 2012. ISBN: 1557560048

Course Description: Lecture and Lab in semiconductor theory, diode and transistor operation, rectification, switching, amplification, power supplies, variable frequency drives, and use of related electronic test equipment and circuits.

Learning Outcomes:

At the end of this course, the student will:

- A. analyze AC circuits to determine current, voltage, reactance, impedance, phase angle and power;
- B. determine and interpret basic physics concepts associated with PN semiconductor junctions;
- C. determine semiconductor circuit functional analysis based on characteristic curves provided by semiconductor manufacturers;
- D. perform amplifier circuit analysis to determine load line operating points and input/output characteristics;
- E. determine power handling characteristics of semiconductor power devices; and
- F. determine configuration and functionality of operational amplifier circuits.

To achieve the learning outcomes, the student will or will be able to:

(The letter designations at the end of each statement refer to the learning outcome(s).)

1. calculate in as circuits current, voltage, reactance, impedance, phase angle and power; (A)
2. classify common materials used in electronics as conductors or semiconductors; (B, C)
3. identify the majority and minority carriers in semiconductors; (B, C)
4. predict the conductivity of junction diodes under the conditions of forward and reverse bias; (C, D, E)
5. list several diodes types and applications; (E)
6. recognize common rectifier configurations and list their characteristics; (C, D, E)
7. measure and calculate power-supply ripple percentage and voltage regulation; (C, D, E)
8. correctly identify schematic symbols for NPN and PNP transistors, JFETs, MOSFETs, and UJT; (C, D, E)

9. describe the general concept of amplification; (D)
10. calculate Beta from given data; (C, D, E)
11. calculate amplifier gain; (C, D)
12. identify and list characteristics for CB, CE, and CC amplifiers configurations; (C, D, E)
13. identify the common-signal coupling methods and lists the characteristics and applications for each; (C, D, E)
14. calculate the impedance ratio of a transformer; (C, D, E)
15. for each class amplifier operation, identify an deficiency, conduction angle, relative distortion, bias, and applications; (D, E)
16. calculate voltage gain for inverting and noninverting op-amp; (D, E)
17. properly identify symptoms in malfunctioning amplifier; (C, D, E)
18. explain the operation of a SCR; (D, E) and
19. identify the schematic symbols for SCRs, triacs, and diacs. (D, E, F).

Course Requirements: Complete all homework assignments, lecture tests, lab assignments and final exam.

Course Grading Scale:

- 90 – 100 = A
- 80 – 89 = B
- 70 – 79 = C
- 60 – 69 = D
- 0 – 59 = F

Attendance Policy: The college attendance policy is available at <http://catalog.bpcc.edu/content.php?catoid=5&navoid=369>

Course Fees: This course is accompanied with an additional non-refundable fee for supplemental materials, laboratory supplies, software licenses, certification exams, and/or clinical fees.

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