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 UJTs; (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://www.bpcc.edu/catalog/current/academicpolicies.html

**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.

**Nondiscrimination Statement:** Bossier Parish Community College does not discriminate on the basis of race, color, national origin, gender, age, religion, qualified disability, marital status, veteran's status, or sexual orientation in admission to its programs, services, or activities, in access to them, in treatment of individuals, or in any aspect of its operations. Bossier Parish Community College does not discriminate in its hiring or employment practices.

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