ELEC 1216: Introduction to Solid State

A. COURSE DESCRIPTION

Credits: 6
Lecture Hours/Week: 3
Lab Hours/Week: 6
OJT Hours/Week: *.*
Prerequisites: None
Corequisites: None
MnTC Goals: None

A theoretical understanding of solid-state devices, which includes diodes, bipolar transistors, field effect transistors, SCR's, triacs, and others, and their operation in both DC and AC circuits will be covered. Analysis of these operations will be demonstrated through the lab exercises and proper use of test equipment. Understanding of waveforms, reactance, phase angles, time constants, resonant circuits, and proper biasing of solid state devices is stressed. (Prerequisites: ELEC1202, ELEC1204) (6 credits: 3 lecture/3 lab)

B. COURSE EFFECTIVE DATES: 10/14/1998 - Present

C. OUTLINE OF MAJOR CONTENT AREAS
D. LEARNING OUTCOMES (General)
   1. Analyze series capacitive circuits
   2. Analyze series resonance circuits
   3. Analyze zener diode characteristics
   4. Apply electronic lab safety
   5. Build rectifier circuit
   6. Build regulator circuit
   7. Build transistor circuit
   8. Calculate combination circuit parameters
   9. Calculate DC parameters
  10. Calculate power gain
  11. Calculate RC circuit parameters
  12. Describe an AC generator
  13. Describe bipolar junction transistor construction
  14. Describe bipolar junction transistor operation
  15. Describe capacitor characteristics
  16. Describe diode characteristics
  17. Describe diode operation
  18. Determine waveform period
  19. Determine waveform values
  20. Identify 3 terminal regulator
  21. Identify amplifier circuit
  22. Identify bridge rectifier circuit
  23. Identify diode symbol
  24. Identify FET symbol
  25. Identify full-wave rectifier circuit
  26. Identify half-wave rectifier circuit
  27. Identify transistor symbol
  28. Identify voltage doubler circuit
  29. Identify waveforms
  30. Identify zener diode regulator
  31. Identify zener diode symbol
  32. Measure transformer voltages
  33. Measure transistor biasing
  34. Operate a function generator
  35. Operate an oscilloscope
  36. Test bipolar transistor
  37. Test diode
  38. Test FET

E. Minnesota Transfer Curriculum Goal Area(s) and Competencies
   None
F. LEARNER OUTCOMES ASSESSMENT
   As noted on course syllabus

G. SPECIAL INFORMATION
   None noted