

FLORIDA STATE COLLEGE AT JACKSONVILLE

COLLEGE CREDIT COURSE OUTLINE

COURSE NUMBER: EST 2112

COURSE TITLE: Electrical-Electronic Control Systems

PREREQUISITE(S): EET 2147 and CET 1114

COREQUISITE(S): None

CREDIT HOURS: 3

CONTACT HOURS/WEEK: 4

CONTACT HOUR BREAKDOWN:

 Lecture/Discussion: 3

 Laboratory: 1

 Other _____:

FACULTY WORKLOAD POINTS: 3.5

STANDARDIZED CLASS SIZE ALLOCATION: 20

CATALOG COURSE DESCRIPTION:

This course consists of the study of the operation and control of industrial equipment and processes including motors and controlling systems involved in their operation and protection.

SUGGESTED TEXT(S): Industrial Solid-State Electronics. Timothy Maloney. Prentice-Hall, 1979.

IMPLEMENTATION DATE: Fall Term, 1990 (911)

REVIEW OR MODIFICATION DATE: Fall Term, 1994 (951)
Fall Term, 2002 (20031)

COURSE TOPICS	<u>CONTACT HOURS PER TOPIC</u>
I. Transistor Switches	6
II. Logic Function and Transistor Switches	6
III. Solid-State Switches for Counting	6
IV. The Silicon Controlled Rectifier	6
V. Unijunction Transistors	6
VI. Triac and Thyristors	5
VII. Motors	5
VIII. Motor Control Systems	5

Laboratory Experiments

The following are required laboratory experiences for ETE 2527. These experiments must be completed as part of minimum course requirements. A laboratory manual will be provided by the instructor.

COURSE TOPICS	<u>CONTACT HOURS PER TOPIC</u>
I. Transistor Switch	2
II. Silicon Controlled Rectifier	3
A. Simple Phase Control Circuit	
B. Phase Control with Extended Firing Angle	
C. SCR Firing Characteristics	
III. Injunction	3
A. Injunction Characteristics	
B. Injunction Timing Circuits	
C. An SCR Phase Control Circuit with Injunction Trigger	
IV. DIAC Characteristics	2
V. TRIAC Power Control Circuit with DIAC Trigger	2
VI. DC Motor Control	2

Learning Objectives

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

<u>Description</u>	<u>HOURS</u>
A. A knowledge of the transistor switch and simple applications	5
B. A knowledge of basic logic gates and their application to control logic	5
C. A knowledge of common logic integrated circuit families	5
D. The ability to demonstrate the use of logic circuitry in control systems	5
E. A knowledge of the SCR and its application to control circuits	5
F. A knowledge of the operation of the in junction transistor and its application as a switching device	5
G. A knowledge of the Triac and its application as a power control device	5
H. A knowledge of feedback systems and servo-mechanisms	5
I. An understanding of devices used as final correcting devices	5
J. A knowledge of common measuring devices in industrial control	5
K. A knowledge of closed-loop industrial control systems	5
L. An elementary knowledge of motor speed control systems	5