

## FLORIDA STATE COLLEGE AT JACKSONVILLE

## COLLEGE CREDIT COURSE OUTLINE

COURSE NUMBER:	EET 1140
COURSE TITLE:	Industrial Electronics
PREREQUISITE(S):	EET 1011 and EET 1021, or EET 1084
COREQUISITE(S):	None
CREDIT HOURS:	3
CONTACT HOURS/WEEK:	4
CONTACT HOUR BREAKDOWN:	
Lecture/Discussion:	3
Laboratory:	1
Other _____:	
FACULTY WORKLOAD POINTS:	3.67
STANDARDIZED CLASS SIZE ALLOCATION:	24

## CATALOG COURSE DESCRIPTION:

This course investigates industrial systems and control techniques. Applications include industrial power supplies, vacuum tubes, magnetic amps, synchro-systems, servomotors, stepping motors, photo devices, temperature systems, motor speed control, three-phase power, digital control, and ladder diagrams with emphasis on programmable controllers for industrial control. The course begins with theory and advances to applications and designs using transistors, power transistors, operational amplifiers, and field-effect transistors (FETs). Additionally, discussions and lab experiments address linear integrated circuits such as oscillators, timers, and other specialized circuits. Emphasis is placed on biasing, troubleshooting, and testing of transistors and op-amp circuits.

SUGGESTED TEXT(S):	<u>Foundation of Electronics</u> , latest edition, by Russell L. Meade, Delmar Publishers ISBN: 0-7668-0427-5
IMPLEMENTATION DATE:	Fall Term, 2002 (20031)
REVIEW OR MODIFICATION DATE:	Fall Term, 2006 (20071)

COURSE TOPICS	<u>CONTACT HOURS PER TOPIC</u>
I. Math Review	4
A. Addition, Subtraction, Multiplication, and Division of the Following:	
B. Percentages	
C. Ratio and Proportion	
D. Algebra	
E. Trigonometry	
F. Powers of Ten	
G. Metric Measurements and Terms	
II. DC Theory Review	4
A. Ohms Law	
B. Circuit Computations	
C. Resistor Color Code	
III. AC Theory Review	6
A. Definition of Terms	
B. Inductors	
C. Capacitors	
D. RL Circuits	
E. RC Circuits	
F. RLC Circuits	
G. RL and RC Time Constants	
IV. Semi-Conductor Theory	8
A. N Type Materials	
B. P Type Materials	
C. Doping	
V. Electronic Devices	10
A. Diodes	
B. Thyristors	
C. Transistors	
VI. Power Supplies	6
A. Half-Wave	
B. Full-Wave	
C. Bridge	

COURSE TOPICS (continued)	<u>CONTACT HOURS PER TOPIC</u>
VII. Integrated Circuits	10
A. Linear	
B. Digital	
VIII. Lab Experiments	12
A. Op-Amps	
B. All Gates	
C. LEDs	
D. Diodes	
E. Bridge Rectifiers	

PROGRAM TITLE: Computer-Integrated Manufacturing Technology

COURSE TITLE: Industrial Electronics

CIP NUMBER: 0615.049901

LIST PERFORMANCE STANDARD ADDRESSED:

NUMBER(S): TITLES(S):

03.0 DEMONSTRATE PROFICIENCY IN OPERATING AND MAINTAINING MANUFACTURING EQUIPMENT FOR AUTOMATED ASSEMBLY- -The student will be able to:

- 03.01 Interpret blueprints, schematics and technical manuals.
- 03.02 Establish routine operations involving maintenance schedules.
- 03.03 Analyze system failures.
- 03.04 Perform minor repairs to CIM systems.
- 03.05 Coordinate and specify maintenance service.
- 03.06 Evaluate need for equipment replacement, overhaul and retooling.

05.0 DEMONSTRATE PROFICIENCY IN INTEGRATING PRODUCTION EQUIPMENT WITH WORKCELLS, PROGRAMMABLE LOGIC CONTROLLERS, AND AREA CONTROLLERS - The student will be able to:

- 05.01 Design analog and digital control systems along with applicable software to specific manufacturing requirements
- 05.02 Chart and analyze ladder logic diagrams for manufacturing processes
- 05.03 Develop and analyze flow charts from ladder diagrams and related process controls

09.0 DEMONSTRATE PROFICIENCY IN OPERATING AND MAINTAINING PRODUCTION TEST EQUIPMENT AND INSTRUMENTS--The student will be able to:

- 09.01 Specify, interconnect and operate instruments and test equipment.
- 09.02 Analyze normal and abnormal instrument readings and their probable causes.
- 09.03 Specify and operate Automatic Test Equipment (ATE) procedures, using required software and hardware.
- 09.04 Troubleshoot control systems mechanisms and software.
- 09.05 Repair faults in production equipment and specify external repairs or overhaul requirements.
- 09.06 Align, calibrate and maintain related ATE interfaces and circuits.
- 09.07 Prepare error probability charts and graphs.