

I. COURSE DESCRIPTION:

This course will introduce several electronic devices and circuits used in industry, with concentration on the Thyristor family of devices. The student will study the devices, their electrical characteristics, and typical industrial applications. Emphasis is placed on the analysis and troubleshooting of circuits, as well as some simplified design. This course prepares the students for analyzing and troubleshooting circuits and systems.

II. LEARNING OUTCOMES AND ELEMENTS OF THE PERFORMANCE:

Upon successful completion of this course, the student will demonstrate the ability to:

1. Correctly select and test electronic devices based on electrical operating characteristics.

Potential Elements of the Performance:

- Understand the operation of typical timing circuits.
- Understand the operation of DC Relays.
- Understand the operation of various semiconductor and thyristor devices.
- Correctly select / replace devices in applications
- Perform In / Out circuit testing to determine component functionality.

2. Analyze, test and troubleshoot electronic circuits.

Potential Elements of the Performance:

- Accurately analyze the operation of typical industrial circuits.
- Perform AC and/or DC calculations of common circuits.
- Correctly test circuits for functionality, using common and specialized test equipment.
- Correctly and accurately troubleshoot malfunctioning circuits.

3. Design and modify simple industrial circuits.

Potential Elements of the Performance:

- Design simple industrial control circuits.

- Correctly modify existing circuits for changing operating characteristics.

III. TOPICS:

1. Transistor switching, DC Relays and timing circuits.
2. Operational amplifier industrial applications
3. SCR characteristics and applications
4. Other thyristor devices and applications

IV. REQUIRED RESOURCES/TEXTS/MATERIALS:

- 2nd Year Electronics 2 Parts Package
- Thyristor Data Book on CD ROM
- 1st year parts package
- 1st year Electronics Text book
- Course notes

V. EVALUATION PROCESS/GRADING SYSTEM:

The final grade will be a combination of theory and practical tests.

45% = Theory (Consisting of 2 tests and several quizzes)

50% = Lab Activities (Lab Reports and Practical Tests)

5% = 1st Year Review Test

NOTE: You must obtain a minimum mark of 50% individually in the Theory and Lab in order to pass. Obtaining an individual mark less than 50% in either the Theory or Lab marks will result in an overall "F" Grade.

- **See Special Notes Section VI for further details affecting final grade.**

The following semester grades will be assigned to students in postsecondary courses:

<u>Grade</u>	<u>Definition</u>	<u>Grade Point Equivalent</u>
A+	90 - 100%	4.00
A	80 - 89%	
B	70 - 79%	3.00
C	60 - 69%	2.00

D	50 – 59%	1.00
F (Fail)	49% and below	0.00
S	Satisfactory achievement in field /clinical placement or non-graded subject area.	
U	Unsatisfactory achievement in field/clinical placement or non-graded subject area.	
X	A temporary grade limited to situations with extenuating circumstances giving a student additional time to complete the requirements for a course.	
NR	Grade not reported to Registrar's office.	
W	Student has withdrawn from the course without academic penalty.	

VI. SPECIAL NOTES:

Special Needs:

If you are a student with special needs (e.g. physical limitations, visual impairments, hearing impairments, or learning disabilities), you are encouraged to discuss required accommodations with your instructor and/or the Special Needs office. Visit Room E1101 or call Extension 2703 so that support services can be arranged for you.

Retention of course outlines:

It is the responsibility of the student to retain all course outlines for possible future use in acquiring advanced standing at other postsecondary institutions.

Communication:

The College considers **WebCT/LMS** as the primary channel of communication for each course. Regularly checking this software platform is critical as it will keep you directly connected with faculty and current course information. Success in this course may be directly related to your willingness to take advantage of the **Learning Management System** communication tool.

Plagiarism:

Students should refer to the definition of “academic dishonesty” in *Student Rights and Responsibilities*. Students who engage in “academic dishonesty” will receive an automatic failure for that submission and/or such other penalty, up to and including expulsion from the course/program, as may be decided by the professor/dean. In order to protect students from inadvertent plagiarism, to protect the copyright of the material referenced, and to credit the author of the material, it is the policy of the department to employ a documentation format for referencing source material.

Course outline amendments:

The Professor reserves the right to change the information contained in this course outline depending on the needs of the learner and the availability of resources.

Substitute course information is available in the Registrar's office.

Additional Criteria:

- Attendance to lab activities is compulsory, unless discussed with the instructor in advance of the absence and the absence is for a medical or family emergency. A **deduction of 2% per missed Lab Hour** will be imposed on the final lab mark.
- Your attendance to all classes, and your final grade are directly related. A **deduction of 1% per missed theory hour** will be imposed on the final theory mark.
- Any student that is absent for any test will be required to provide a doctors' note immediately upon returning. Failing to do so will result in a grade of 0% being assigned to the missed test. It is the students' responsibility to contact the instructor upon returning.
- Tests, quizzes and other activities, will not be scheduled on an individual basis, unless it is for a medical or family emergency.
- Disruptions to theory classes, such as lateness, are not acceptable and will be dealt with on an individual basis. Students exhibiting chronic lateness, disruptiveness or absenteeism will be required to meet with the Dean, and will be placed on academic probation.
- The use of Electronic Recording Devices is prohibited unless individual permission is obtained from the instructor. The use of Cell Phones during scheduled classes is prohibited. Turn off all Cell Phones prior to attending class.

Laboratory Reports shall be subject to the handout and/or criteria presented at the start of the semester. All Lab Reports are due **before** the start of the following weeks Lab Class unless otherwise stipulated by the instructor. **Labs/Assignments submitted after the specified deadline will be graded 0%.**

Lab Reports are graded based on the following:

1) Ability to follow instructions, 2) Ability to follow specific procedures,) Ability to use test equipment to obtain data, 3) Accuracy of data, 4) Ability to use required software, 5) Ability to adhere to established deadlines, 6) Ability to draw conclusions based on objectives, 7) Ability to produce a technical report as specified.

All Lab Reports must be submitted in a Duo-Tang cover. No loose papers will be accepted and as such will be graded 0%.

Any submissions that are incomplete will be returned to the student and will not be graded until such a time as they are completed. The maximum mark that can be obtained for incomplete labs re-submitted will be 50%. Incomplete reports handed in after the last scheduled class, will be graded 0%.

Theory Tests will not be returned. Students will be given the opportunity to review / correct the test material.

VII. PRIOR LEARNING ASSESSMENT:

Students who wish to apply for advanced credit in the course should consult the professor. Credit for prior learning will be given upon successful completion of a challenge exam or portfolio.

VIII. ADVANCE CREDIT TRANSFER:

Students who wish to apply for advance credit transfer (advanced standing) should obtain an Application for Advance Credit from the program coordinator (or the course coordinator regarding a general education transfer request) or academic assistant. Students will be required to provide an unofficial transcript and course outline related to the course in question.