

**SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY**

**SAULT STE. MARIE, ONTARIO**



Sault College

**COURSE OUTLINE**

**COURSE TITLE:** Electronic Circuits 2

**CODE NO. :** ELN-213                      **SEMESTER:** Three

**PROGRAM:** Electrical / Electronic / Instrumentation Technician

**AUTHOR:** Edward Sowka

**DATE:** 09 / 2004      **PREVIOUS OUTLINE DATED:** 09 / 2003

**APPROVED:**

	_____	_____
	<b>DEAN</b>	<b>DATE</b>

**TOTAL CREDITS:** 5

**PREREQUISITE(S):** ELN -109 and ELR-109

**HOURS/WEEK:** 4

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*For additional information, please contact Colin Kirkwood, Dean*  
*School of Technology, Skilled Trades & Natural Resources*  
*(705) 759-2554, Ext. 688*

**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 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.
- 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 and timing circuits.
2. Operational amplifier applications
3. SCR characteristics and applications
4. Other thyristor devices and applications

**IV. REQUIRED RESOURCES/TEXTS/MATERIALS:**

- Industrial Electronics Parts Package
- Thyristor Data Book on CD ROM
- 1<sup>st</sup> year parts package
- 1<sup>st</sup> year Electronics Text book
- Course notes

**V. EVALUATION PROCESS/GRADING SYSTEM:**

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

50% = Theory ( Consisting of 2 tests and several quizzes)  
 45% = Lab Activities ( Lab Reports and Practical Tests )  
 5% = 1<sup>st</sup> Year Review Test

- **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 E1204 or call Extension 493, 717, or 491 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.

### 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.

- 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 Lab missed**, 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 theory hour missed**, will be imposed.
- Any student that is absent for a 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.
- 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.

**Laboratory Reports** shall be subject to the handout given at the start of the semester. All Lab Reports are due at the start of the following weeks Lab Class unless otherwise stipulated by the instructor. A **penalty of 10% per day** will be assessed for late submissions ( Weekends included).

**All Lab Reports must be submitted in a Duo-Tang cover**

All other required submissions will be assessed a late penalty of **5% per day** ( Weekends included).

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. DIRECT CREDIT TRANSFERS:**

Students who wish to apply for direct credit transfer (advanced standing) should obtain a direct credit transfer form from the Dean's secretary. Students will be required to provide a transcript and course outline related to the course in question.