

I. COURSE DESCRIPTION:

This course will provide the student with a working knowledge of operating principles, characteristics and limitations of common electronic test equipment and electrical wiring practices. The course introduces basic electrical/electronic components, their electrical characteristics and testing procedures, as well as electronics' shop practices, including safety and the proper use of tools.

II. LEARNING OUTCOMES AND ELEMENTS OF THE PERFORMANCE:

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

1. *Accurately identify common electronic components, their electrical characteristics and testing procedures.***Potential Elements of the Performance:**

- Correctly identify common components via their physical properties.
- Correctly identify electrical characteristics of common components.
- Accurately identify and draw the schematic symbol of common components.
- Accurately perform common testing of components.
- Recall and accurately apply the Resistor / Capacitor / Inductor Colour Code.

2. *Correctly and accurately measure AC and DC Voltage, Current and Resistance using common Test Equipment.***Potential Elements of the Performance:**

- Recall and apply basic techniques for measuring voltage, current and resistance.
- Accurately measure V, I, and R in Series Circuits, Parallel Circuits and Combination Resistive Circuits.
- Define and understand the term "Loading Effect".
- Correctly wire and test a switch, light and receptacle
- Correctly wire and test a 3-way switch and light.
- Correctly wire and test a split receptacle and a switched receptacle
- Correctly calibrate and accurately use an oscilloscope to measure amplitude and period of sinusoidal waveforms.

3. *Correctly and safely identify and use typical hand tools, soldering and de-soldering equipment to repair and maintain electronic equipment.*

Potential Elements of the Performance:

- Correctly identify common hand tools and their use.
- Correctly and safely use common hand tools.
- Correctly and safely use soldering/de-soldering equipment to make simple wire connections, cables and to remove/insert components on printed circuit boards (PCB's)

4. *Use soldering, wiring and assembly techniques to build a working DC power supply for electronic equipment.*

Potential Elements of the Performance:

- Correctly insert components on the PCB.
- Correctly solder components on the PCB.
- Connect and demonstrate the operation of the completed supply noting simple wire connections, including cabinet completion.

III. TOPICS:

1. Electronic Component Identification
2. Electronic Test and Measuring Equipment
3. Soldering / De-soldering Techniques
4. Basic wiring Techniques

IV. REQUIRED RESOURCES/TEXTS/MATERIALS:

- First Year Electronic Parts Package (including Breadboard, Components, Safety Glasses, leads etc) AVAILABLE FROM THE INSTRUCTOR NOT THE BOOKSTORE
- Basic Hand Tools (Not in Parts Package - List will be supplied by instructor)
- Two (2) Duo tang Covers
- Electronics Pocket Handbook by D. Metzger (optional reference)
- Additional resources will be outlined / distributed by the instructor

V. EVALUATION PROCESS/GRADING SYSTEM:

- 25% = Practical lab tests and quizzes
- 50% = Lab Reports
- 25% = Power Supply Project Completion

All lab reports required for submission, a passing grade on the practical test and the power supply report must be completed and handed-in or an Incomplete grade will result. Rewrites are permitted for the practical test with a maximum grade of 60% possible.

All lab reports are to be submitted in a three-tab duo tang; NOT a three-ring binder.

The following semester grades will be assigned to students:

Grade	<u>Definition</u>	<i>Grade Point Equivalent</i>
A+	90 – 100%	4.00
A	80 – 89%	3.00
B	70 - 79%	2.00
C	60 - 69%	1.00
D	50 – 59%	0.00
F (Fail)	49% and below	
CR (Credit)	Credit for diploma requirements has been awarded.	
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: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.

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.

Prior Learning Assessment:

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. Please refer to the Student Academic Calendar of Events for the deadline date by which application must be made for advance standing.

Credit for prior learning will also be given upon successful completion of a challenge exam or portfolio.

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

Disability Services:

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

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 Code of Conduct*. A professor/instructor may assign a sanction as defined below, or make recommendations to the Academic Chair for disposition of the matter. The professor/instructor may (i) issue a verbal reprimand, (ii) make an assignment of a lower grade with explanation, (iii) require additional academic assignments and issue a lower grade upon completion to the maximum grade "C", (iv) make an automatic assignment of a failing grade, (v) recommend to the Chair dismissal from the course with the assignment of a failing grade. 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.

Absence:**No re-write will be given for completed tests.**

Any student that is absent for any test or surprise quiz (maximum 5% of final grade) must contact either the Instructor, the Deans' office or the switchboard **PRIOR to the test**, and may be required to provide a doctors' note upon returning. Failing to do so will result in a grade of 0% being assigned to the missed test with no rewrite option.

Any student that is absent for any lab must contact the Instructor for a copy of the lab and to **arrange a time to complete the lab**. As these are hands-on labs, you simply **do not copy the results from your partner**. As such, the sign-in sheet provided for each lab is essential for you to sign. If a student arrives late for, or is not continuously present and actively participating at (scheduled breaks excepted), a scheduled lab class he/she will be considered absent for the entire class and will not be permitted to submit the associated lab report.

Laboratory Reports:

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). Students submitting on weekends are to call Security at 2712 from the lobby and have the assignment date stamped.

All Lab Reports must be submitted in a Duo Tang cover and must include:

- **A cover sheet with course code, student name and student number, date completed, date due**
- **All data taken in the order in which it is presented in the lab hand-out**
- **All report questions completed including theoretical calculations and written analysis regarding the correlation of the data collected vs the theoretical values.**

Safety:

Students must continuously wear all Sault College required personal protective equipment (PPE) during lab activities. Failure to do this will result in expulsion from the lab activity and a grade of zero being assigned. Students are expected to be wearing their required PPE prior to entering the lab. The instructor will advise what specific PPE is required. If a student repeatedly neglects to wear PPE as required he/she will be considered to be in violation of the Sault College Academic Code of Conduct and may be sanctioned accordingly (see Student Code of Conduct & Appeal Guidelines). For instance, first violation - verbal warning, second violation - written warning, third violation - suspension from lab activities. Students must complete a lab safety orientation prior to participating in lab activities. Successful completion of this orientation will be demonstrated by the student completing a quiz with a minimum grade of 100%.