



**I. COURSE DESCRIPTION:**

The Research Report is intended to demonstrate that the student can function at the Engineering Technology level. The research activity may be hardware or software development or the analysis of an industrial/technical problem provided an industrial sponsor can be found.

**II. LEARNING OUTCOMES AND ELEMENTS OF THE PERFORMANCE:**

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

**1. *Research and prepare a technical report.***Potential Elements of the Performance:

- Utilize common resources (libraries, internet...) to research technical topics/design information.
- Write a technical report to a specified format within specified deadlines.
- Appropriately document sources of information to APA (or other suitable) publication standards.
- Provide sufficient documentation to allow an Electrical Technician or Technologist to easily repeat the project.

**2. *Demonstrate proficiency in project management.***Potential Elements of the Performance:

- Select, price, order and expedite delivery of material/equipment.
- Organize and schedule construction and commissioning of a project.
- Participate in project (progress) meetings.

**3. *Construct and Demonstrate a technical project.***Potential Elements of the Performance:

- Prepare functional specifications for proposed project.
- Prepare drawings as required to construct project.
- Interpret manufacturers' drawings and specifications.
- Utilize necessary tools/equipment/materials required to construct project.
- Complete work according to a given schedule.
- Troubleshoot and revise initial design (commissioning) to produce a working project.
- Produce sufficient documentation to allow repetition of results.

**III. TOPICS:**

As approved by faculty advisor. It is preferred that the student construct a project. However, consideration will be given to 'pure research' types of projects as well.

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

The student is responsible for determining and acquiring resources necessary to complete the research project.

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

Final Report:	45%
Hardware and software construction/development:	40%
Daily Log Book / meetings	15%
<b>Total 100 marks</b>	<b>100%</b>

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%	4.00
B	70 - 79%	3.00
C	60 - 69%	2.00
D	50 - 59%	1.00
F (Fail)	49% and below	0.00
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:

### Attendance:

Sault College is committed to student success. There is a direct correlation between academic performance and class attendance; therefore, for the benefit of all its constituents, all students are encouraged to attend all of their scheduled learning and evaluation sessions. This implies arriving on time and remaining for the duration of the scheduled session.

It is the departmental policy that once the classroom door has been closed, the learning process has begun. Late arrivers will not be granted admission to the room.

### **General Information to include in course outlines**

#### **Special Accommodations:**

If you have a special learning need or issue, it works to your advantage to notify your instructor immediately if special devices or assistance will help you in this class.

#### **Classroom Etiquette:**

Pagers and cell phones should be either turned off or set to vibrate mode during class. Please show courtesy to the class by restricting conversation to in-class topics, and raise your hand to gain attention when asking a question or raising a point of discussion.

#### **Class Room Safety:**

Safety is the most important aspect in this course and any compromise in student safety by any other student will not be tolerated. Students that observe any unsafe lab condition and/or act must report it to the instructor immediately. Student safety in the Labs is the number one priority. Students are to contact the instructor before working on any live equipment that they are not familiar with or have not been instructed in the safety procedures of that particular equipment.

#### **Turning in Work:**

Be sure to include your name and the course name and section on all work to be turned in.

#### **Late Coursework:**

All assignments are to be turned in on the due date. Students may be allowed to make up any late work at the instructor's discretion.

#### **Term tests/quizzes**

With the expectation that the student will attend all classes, there will be no make up tests for missed tests. There will be no rewrites for low-test scores.

#### **Attendance**

Students' attendance and participation are required in all activities. If a student is absent from class, it is her/his responsibility to find out what was missed prior to the next class and complete any assigned work before the next class. Absence does not constitute a reason for missed work or late assignments.

**ADDITIONAL:**

Since all work must be performed on special network computer software located at the college, there will be little opportunity to work on the projects at home. The reading, review questions, and planning must be done outside of class time.

All student assignment materials that are not picked up by the student will be held for a maximum of two weeks after grading. After this time materials may be discarded or used at the professor's discretion.

Attendance may be monitored. Regular absentia may be reported to OSAP at the college's discretion.

- VII.** In order to maintain a passing grade the student must obtain a minimum 50% average in all subject sections that the course may have, such as, the Log Book, Final Project Write-ups and Final Demonstrations of Projects to Instructor.

If a student misses a meeting he/she must have a valid reason (e.g. medical or family emergency). In addition, the school must be notified before the scheduled meeting.

The student should contact the instructor involved. If the instructor cannot be reached leave a message with the Dean's office or the College switchboard. If this procedure is not followed the student will receive a mark of zero on the meeting with no re-schedule option.

The Instructor, if time permits, will summarize the main points of this course outline in the first Scheduled class time. Student's questions related to the course outline will be addressed at that time. The Instructor through out the course may also expand on particular items related to the course outline and the course requirements.

It is the responsibility of the student to read the course outlines and be aware of the course requirements.

**Students are expected to maintain an active Sault College email account. They are required to check this email account daily. The instructor may announce details of lab and test requirements and scheduling through the Sault College email system (as well as sharing other important information).**

**VII. COURSE OUTLINE ADDENDUM:**

The provisions contained in the addendum located on the portal form part of this course outline.

# ELR 311

## TABLE OF CONTENTS EQUIPMENT

6	SLC 500, 2-504, 3-503, 1-502
4	analog in and out
3	panel mates
5	input and output sets
1	scanner card
1	DMC card
6	Link couplers RS 485
3	1336
2	1336 plus
2	1305
4	G2 Interfacing Cards
5	Powerfex 70 AC Drives
3	smc with 2 interfaces discrete
1	smc remote I/O
1	SMC with built in discrete interface
10	AB 5 Family Processors and Rack with 24 VDC Discrete I/O
6	Analog In and also Out Cards for the AB 5 Processors
10	PLC 5000 and associated hardware and software

**Note: May include any other Hardware and or Software that instructor will discuss or assign that is not mentioned above.**

**Such as but not limited to**

- 1) Sault College Windmill
- 2) Sault College Water Plant
- 3) Etc.

# **General Lab Requirement for Write Ups**

## **ALL Projects require write ups as outlined below**

- 1) All Projects assignments must be turned in on hard copy and on computer disk before or no later than the last class of the semester. The disk will contain all programs, drawing in AutoCAD and word processor work.
- 2) Each Student's Final Project may have specific requirements.
- 3) If the student is not clear on any of the requirements, it is his/her responsibility to ask the instructor for clarification.
- 4) Project reports are to include all procedures, diagrams and observation etc required in this course outline for the project write-up to be complete. The projects are to be placed in binder or other suitable binding (project book), and in the exact order and numbered to match the project demonstration sheet.
- 5) One submission per group of a Project Book containing all project reports. Maximum 2 students per group.
- 6) Project reports submitted with grammatical and/or spelling errors will receive a grade of 0. Word processors have spell check, it is expected students will use it
- 7) Students must sign and provide the instructor with a copy of this page before being permitted to work in the lab. No project will be marked until this document is read by the student and signed by the student. If there are any questions related to this document, please ask the instructor prior to signing and turning in this sheet. When the instructor receives this signed sheet, the instructor will accept this as conformation that the student understands all of the requirements of this course as stated in this document and course outline.

## **Note: Specific Project Requirement for Write Ups will be given by the instructor in the beginning of the semester**

This course will require the student to **work independently** and / or in groups during class times. The student will also be required to work independently on assigned work outside of class time and access information from help files, manuals, and internet as necessary to complete final project requirements. This is to prepare the student for job related tasks.

## STUDENT COURSE AGREEMENT (Please print)

I, \_\_\_\_\_ with regards to the course known as ELR 311 Research Report have read and understand the course outline along with course content, and expectations which clearly states the following:

- 1- Absolutely no extensions will be granted with the exceptions of personal illness or death of an immediate family member both requiring written verification.
- 2- The student must be able to work in groups and or independently and resource all necessary information required to complete the projects. Resources can be internet, manuals etc.
- 3- Project Write-up must be handed in by the due date or a grade of 0 will be awarded.
- 4- Meeting attendance is compulsory. Any notes, Project assignment information etc. missed at the meetings will become the student's responsibility to retrieve from another student.
- 5- Project must be completed during assigned Lab times unless prior approval is obtained from the instructor.
- 6- Students must be able to demonstrate Projects that are assigned by the instructor on or before the due date. Each student must be sure that he / she can duplicate the Project that they turned in on or before the due date. If the student cannot duplicate the Project to the satisfaction of the instructor, a grade of 0% will be assessed to that particular Project. Demonstration request will be at the discretion of the instructor.
- 7- In order to maintain a passing grade the student must obtain a minimum 50% average in all subject sections that the course may have, such as, the Project Write-up section, meeting section, and Demonstrations of Projects to Instructor section
- 8- Students are not permitted to work on live equipment outside of regular class time.
- 9- Students must supply their own hand tools, meters and safety glasses. Students will not be permitted in the lab without safety glasses and the student must wear the safety glasses whenever working on live equipment. Students must never work alone in the lab. Unsafe work habits, improper behavior will not be tolerated.

I have read and understand the requirements outlined in this document and in the course outline.

**Name (print):** \_\_\_\_\_

**Signature:** \_\_\_\_\_

**Date:** \_\_\_\_\_