

# SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY

SAULT STE. MARIE, ONTARIO



## COURSE OUTLINE

**COURSE TITLE:** Electrical / Electronics 2

**CODE NO. :** MPT 233 **SEMESTER:** FOUR

**PROGRAM:** Motive Power Technician - Advanced Repair (4044)

**AUTHOR:** Jamie Schmidt

**DATE:** Feb 2011 **PREVIOUS OUTLINE DATED:** NA

**APPROVED:**

*“Corey Meunier”*  
CHAIR

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DATE

**TOTAL CREDITS:** 4

**PREREQUISITE(S):** MPF 103 & MPT 201

**HOURS/WEEK:**

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**For additional information, please contact Corey Meunier, Chair**  
**School of Technology & Skilled Trades**  
**(705) 759-2554, Ext. 2610**

**I. COURSE DESCRIPTION:**

In this course you will diagnose and repair vehicle wiring systems using the online data systems. You will study and perform diagnostic and repair procedures on distributor less ignition systems. Restraint systems will be studied with an emphasis on safe working practices. An introduction into multiplexing systems used in buses, trucks, heavy equipment and automobiles will be provided.

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

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

**1. *Explain the principles of operation of vehicle on board computers.***

Potential Elements of the Performance:

- onboard computers
- multiplexing
- fibre optics
- data bus communication lines
- CAN bus
- central processing unit (CPU)
- random access memory (RAM)
- read only memory (ROM)

**2. *Perform data retrieval with appropriate test equipment.***

Potential Elements of the Performance:

Access and evaluate information using:

- Scan tool
- Laptop
- Ping modules

**3. *Operate electronic diagnostic test equipment.***

Potential Elements of the Performance:

Perform:

- Oscilloscope testing to analyze voltage and current wave forms
- Voltage drop testing
- Verify vehicle network integrity
- Demonstrate proficiency with a DVOM

**4. *Inspect, test and explain safe handling procedures for restraint system components.***

Potential Elements of the Performance:

- safely disable restraint systems
- perform system tests using scan tools, DVOM and specific test equipment

**5. *Identify, locate and test ignition system circuits and components.***

Potential Elements of the Performance:

Identify and test:

- Coils
- Modules
- Sensors
- Wiring
- KV meter test
- Scope testing

**III. TOPICS:**

1. Computer Fundamentals
2. Diagnostic test equipment
3. Restraint systems
4. Vehicle networking
5. Ignition Systems

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

**Title:** Heavy Duty Truck Systems

**Edition:** 4th ed., 12959#

**Author:** Bennett

**Publisher:** Thomson Nelson Learning Canada

**Title:** Automotive Technology: A Systems Approach/AST Test Prep

**Edition:** 06 ed., 17810#

**Author:** Erjavec

**Publisher:** Thomson Nelson Learning Canada

Pens, pencils, calculator, 3-ring binder

The following items are mandatory for entry to the shop:

- shop coat or coveralls
- CSA approved steel toe boots (high top)
- CSA approved safety glasses

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

The final grade for this course will be based on the results of classroom, assignments and shop evaluations weighed as indicated:

Tests	50%
Assignments/presentations	10%
Practical labs (shop)	40%

Practical lab assessment will be based on:

- Attendance
- Employability skills
- Performance

(Students will be given notice of test and assignment dates in advance)

The following semester grades will be assigned to students:

<b>Grade</b>	<b><u>Definition</u></b>	<i>Grade Point Equivalent</i>
A+	90 – 100%	4.00
A	80 – 89%	
B	70 - 79%	
C	60 - 69%	
D	50 – 59%	
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.**

**Cell phones are NOT allowed to be on  
in the classrooms or shop areas during class time.**

Eye, Face and Foot Personal Protection Equipment (P.P.E):

Students are required to wear appropriate Personal Protection Equipment (P.P.E) in designated areas at all times. The designated areas for eye and foot protection in the Motive Power areas are: C1073 (Automotive), C1000, C1010, and C1040 (Truck/Coach and Heavy Equipment) and C1120 (Marine and Small Engines). Appropriate P.P.E must also be worn when facing hazards outside of these designated areas.

Minimum Eye Protection:

All protective eye wear shall meet the requirements of:

C.S.A. - Z94.3 or A.N.S.I. - Z87.1 +.

Approved safety glasses (lens and frames) shall have side protection such as wrap around design or fixed side shields.

Minimum Foot Protection:

1. Boot height- minimum 5 ½" uppers, measured from the top of the sole.
2. CSA Green Patch rating.

**VII. COURSE OUTLINE ADDENDUM:**

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