Prepared: Dan Tregonning Approved: Corey Meunier

Course Code: Title	MPF100: BASIC ELECTRICITY
Program Number: Name	4041: AUTOMOTIVE REPAIR
Department:	MOTIVE POWER
Semester/Term:	17F
Course Description:	COURSE DESCRIPTION: In this course, you will be introduced to the basics of electricity and how it can be applied to Heavy Equipment, Truck Coach and Automotive industry. You will be able to identify, inspect and test basic electrical circuits as well as inspect, test, service and replace batteries. You will learn to use digital multi-meters to perform basic electrical measurements and perform basic electrical repairs such as soldering, heat shrink installation and terminal installation. Students will be required to follow proper safety procedures when performing the above tasks according to both Sault College Motive Power Department Standards and Vehicle Manufacturers safety regulations and specifications.
Total Credits:	4
Hours/Week:	7
Total Hours:	49
This course is a pre-requisite for:	MPF123
Vocational Learning Outcomes (VLO's): **Please refer to program web page for a complete listing of program outcomes where applicable.**	#1. Identify basic motive power system problems by using critical thinking skills and strategies and by applying fundamental knowledge of motor vehicle operation, components, and their interrelationships. #3. Identify, inspect, and test basic electrical, electronic, and emission components and systems in compliance with manufacturers recommendations. #6. Disassemble and assemble components to required specifications by applying workshop skills and knowledge of basic shop practices. #7. Use a variety of test equipment to assess basic electronic circuits, vehicle systems, and subsystems. #9. Communicate information effectively, credibly, and accurately by producing supporting documentation to appropriate standards. #10. Use information technology and computer skills to access data concerning repair procedures and manufacturer's updates.

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Essential Employability Skills (EES):	#1. Communicate clearly, concisely and correctly in the written, spoken, and visual form that fulfills the purpose and meets the needs of the audience. #2. Respond to written, spoken, or visual messages in a manner that ensures effective communication. #3. Execute mathematical operations accurately. #4. Apply a systematic approach to solve problems. #5. Use a variety of thinking skills to anticipate and solve problems. #6. Locate, select, organize, and document information using appropriate technology and information systems. #8. Show respect for the diverse opinions, values, belief systems, and contributions of others. #9. Interact with others in groups or teams that contribute to effective working relationships and the achievement of goals. #10. Manage the use of time and other resources to complete projects. #11. Take responsibility for ones own actions, decisions, and consequences.
Course Evaluation:	Passing Grade: 50%, D
Other Course Evaluation & Assessment Requirements:	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: Classroom 45% of the final grade is comprised of term tests Assignments 10% of the final grade is comprised of a number of technical reports Shop 35% of the final grade is comprised of attendance, punctuality, preparedness, student ability, work organization and general attitude Employability Skills 10% of final grade is comprised of attendance, class participation, show ability to follow direction and being a team player. (Student will be given notice of test and assignment dates in advance) The following semester grades will be assigned to students: Grade Definition Grade Point Equivalent 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

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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.

If a faculty member determines that a student is at risk of not being successful in their academic pursuits and has exhausted all strategies available to faculty, student contact information may be confidentially provided to Student Services in an effort to offer even more assistance with options for success. Any student wishing to restrict the sharing of such information should make their wishes known to the coordinator or faculty member.

Evaluation Process and Grading System:

Evaluation Type	Evaluation Weight
Assighments	10%
Employabilty Skills	10%
Shop	35%
Tests	45%

Books and Required Resources:

Automotive Technology: A Systems Approach by Erjavec
Publisher: Thomson Nelson Learning Canada Edition: 3rd Canadian

Heavy Duty Truck Systems by Bennet
Publisher: Thomson Nelson Learning Canada Edition: 6th

Course Outcomes and Learning Objectives:

Course Outcome 1.

Define the purpose, fundamentals and principles of electricity.

Learning Objectives 1.

Potential Elements of the Performance:
Describe:

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- Atomic structure
- Conductors and insulators
- Magnetism
- Electron and conventional theories
- Sources of electricity
- Ohm's Law, Kirchhoff's Law, Watts Law
- Current flow, heat and resistance
- Systems International (S.I.) System
- Voltage
- Amperage
- resistance
- Wattage
- Series, Parallel and series parallel circuit characteristics

Course Outcome 2.

Perform basic electrical repairs.

Learning Objectives 2.

Potential Elements of the Performance:

- Cleaning
- Splicing
- Crimping
- Soldering
- Corrosion protection
- Weather proofing
- Terminal repair

Course Outcome 3.

Identify, inspect, and test basic electrical components and systems in compliance with manufacturers` recommendations.

Learning Objectives 3.

Potential Elements of the Performance:

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- Identify circuit components and test circuit protection devices
- Demonstrate the ability to measure voltage, current and resistance using a DVOM (digital volt ohm meter)
- Perform maintenance on a DVOM including testing and replacing internal circuit protection and batteries

Course Outcome 4.

Describe the construction, operation, types, styles and application of electromagnetic devices.

Learning Objectives 4.

Potential Elements of the Performance:
Describe the fundamentals of:
- power generation

- alternators
- generators

- electric motors
- solenoids
- relays
- coils
- stepper motors
- switches

Course Outcome 5.

Perform inspection and testing procedures on batteries following manufacturers' recommendations.

Learning Objectives 5.

Potential Elements of the Performance:
- Identify and use appropriate personal protection when servicing batteries.
- Perform visual inspection on batteries
- Perform cleaning of battery terminals and battery case
- Perform state of charge, high rate discharge and conductance testing

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	• Describe the construction, operation, types, styles and application of batteries • Charge batteries
Date:	Friday, September 1, 2017
	Please refer to the course outline addendum on the Learning Management System for further information.