



# COURSE OUTLINE

## MPF0101

Prepared: Stephen Kent    Approved: Corey Meunier

<b>Course Code: Title</b>	MPF0101: ENGINES FOR CICE
<b>Program Number: Name</b>	1120: COMMUNITY INTEGRATN
<b>Department:</b>	C.I.C.E.
<b>Semester/Term:</b>	17F
<b>Course Description:</b>	<p><b>COURSE DESCRIPTION:</b>                      The internal combustion engine course has been designed to give the student a sound working knowledge of the construction, operating principles, testing and servicing of internal combustion engine assemblies. It will also give them the opportunity to dismantle short block assemblies for testing and inspection. Engine lubrication and cooling system construction and testing methods will also be discussed. An introduction to seals, sealant and gaskets will be given with their proper uses.</p> <p>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.</p>
<b>Total Credits:</b>	5
<b>Hours/Week:</b>	10
<b>Total Hours:</b>	80
<b>Essential Employability Skills (EES):</b>	<p>#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.                      #7. Analyze, evaluate, and apply relevant information from a variety of sources.                      #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.</p>



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<b>Course Evaluation:</b>	Passing Grade: 50%, D		
<b>Other Course Evaluation &amp; Assessment Requirements:</b>	<p>V. EVALUATION PROCESS/GRADING SYSTEM:</p> <p>The final grade for this course will be based on the results of classroom, assignments and shop evaluations weighed as indicated:  Classroom 35% of the final grade is comprised of term tests  Assignments 10% of the final grade is comprised of a number of technical reports  Shop 45% 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.</p> <p>(Student will be given notice of test and assignment dates in advance)</p> <p>NOTE: All assignments will be in typed format. NO hand written assignments will be accepted.</p> <p>The following semester grades will be assigned to students:</p> <p>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</p> <p>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.</p>		
<b>Evaluation Process and</b>	<table border="1"> <thead> <tr> <th data-bbox="488 1529 708 1571">Evaluation Type</th> <th data-bbox="708 1529 1461 1571">Evaluation Weight</th> </tr> </thead> </table>	Evaluation Type	Evaluation Weight
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### Grading System:

Assignments	10%
Employability Skills	10%
shop	45%
Theory Tests	35%

### Books and Required Resources:

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

Medium/Heavy Duty Truck Engines, Fuel and Computerized Management Systems by Bennet  
Publisher: Cengage Learning Edition: 5th edition

### Course Outcomes and Learning Objectives:

Upon successful completion of this course, the CICE student, with the assistance of a Learning Specialist will acquire varying levels of skill development relevant to the following learning outcomes:

#### Course Outcome 1.

Explain the construction, operating principles, testing and disassembly of internal combustion gasoline and diesel engines.

#### Learning Objectives 1.

Potential Elements of the Performance:

- Explain the operational cycles of two and four stroke engines
- Calculate engine displacement
- Dismantle, inspect, test and assemble engine short block assemblies
- Measure cylinders to determine taper and out-of-round.
- Explain the construction and composition of cylinder blocks, crankshafts and cylinder heads.
  - Demonstrate cylinder ridge removal and engine cleaning.
  - Measure warpage, crankshaft wear, bearing wear, camshaft wear and piston wear using manufacturer specifications and precision measuring equipment.

#### Course Outcome 2.



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Inspect and test engine lubrication systems.

### **Learning Objectives 2.**

Potential Elements of the Performance:

- Test engine oil pressure and compare to specification.
- Explain the construction and operation of crescent and gear pump
- Check engine oil levels and condition
- Change engine oil and filter as per manufactures procedure
- Reset engine oil life reminders
- Outline oil sampling and testing procedures

### **Course Outcome 3.**

Identify, test and inspect gasoline and diesel engine cooling systems.

### **Learning Objectives 3.**

Potential Elements of the Performance:

- Compare & contrast liquid cooled versus air-cooled engines.
- Explain the effects of pressure on the boiling point of water.
- Describe cleaning and flushing the cooling systems taking into account proper handling and disposal of antifreeze.
- Test coolant freeze protection.
- Test PH levels of antifreeze
- Explain the necessity of coolant additives for diesel engines
- Inspect hoses and coolant pipes
- Perform coolant system pressure tests

### **Course Outcome 4.**

Identify the proper seals, sealant and gaskets used in motive power engines.

### **Learning Objectives 4.**



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### Potential Elements of the Performance:

- Describe the proper seal, sealant and gasket selection process.
- Discuss proper removal and installation practices for seals, sealant and gaskets.
- Explain the construction and operating principles of seals, sealant and gaskets.

### Course Outcome 5.

Identify, test and inspect accessory drive belts and pulleys.

### Learning Objectives 5.

#### Potential Elements of the Performance:

- Inspect drive belts and pulleys
- Inspect belt tensioners
- Remove and install belts
- Check belt alignment
- Access belt routing diagrams

### CICE Modifications:

#### Preparation and Participation

1. A Learning Specialist will attend class with the student(s) to assist with inclusion in the class and to take notes.
2. Students will receive support in and outside of the classroom (i.e. tutoring, assistance with homework and assignments, preparation for exams, tests and quizzes.)
3. Study notes will be geared to test content and style which will match with modified learning outcomes.
4. Although the Learning Specialist may not attend all classes with the student(s), support will always be available. When the Learning Specialist does attend classes he/she will remain as inconspicuous as possible.

**A.** Further modifications may be required as needed as the semester progresses based on individual student(s) abilities and must be discussed with and agreed upon by the instructor.

#### **B. Tests may be modified in the following ways:**

1. Tests, which require essay answers, may be modified to short answers.
2. Short answer questions may be changed to multiple choice or the question may be simplified so the answer will reflect a basic understanding.
3. Tests, which use fill in the blank format, may be modified to include a few choices for each



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question, or a list of choices for all questions. This will allow the student to match or use visual clues.

4. Tests in the T/F or multiple choice format may be modified by rewording or clarifying statements into layman's or simplified terms. Multiple choice questions may have a reduced number of choices.

### **C. Tests will be written in CICE office with assistance from a Learning Specialist.**

#### ***The Learning Specialist may:***

1. Read the test question to the student.
2. Paraphrase the test question without revealing any key words or definitions.
3. Transcribe the student's verbal answer.
4. Test length may be reduced and time allowed to complete test may be increased.

### **D. Assignments may be modified in the following ways:**

1. Assignments may be modified by reducing the amount of information required while maintaining general concepts.
2. Some assignments may be eliminated depending on the number of assignments required in the particular course.

#### ***The Learning Specialist may:***

1. Use a question/answer format instead of essay/research format
2. Propose a reduction in the number of references required for an assignment
3. Assist with groups to ensure that student comprehends his/her role within the group
4. Require an extension on due dates due to the fact that some students may require additional time to process information
5. Formally summarize articles and assigned readings to isolate main points for the student
6. Use questioning techniques and paraphrasing to assist in student comprehension of an assignment

### **E. Evaluation:**

Is reflective of modified learning outcomes.

**NOTE:** Due to the possibility of documented medical issues, CICE students may require alternate methods of evaluation to be able to acquire and demonstrate the modified learning outcomes



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**Date:**

Wednesday, September 6, 2017

Please refer to the course outline addendum on the Learning Management System for further information.