COURSE OUTLINE: MPT0203 - INT.COMBUST ENGINE 2

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Course Code: Title	MPT0203: INTERNAL COMBUSTION ENGINES 2
Program Number: Name	1120: COMMUNITY INTEGRATN
Department:	C.I.C.E.
Semesters/Terms:	21F
Course Description:	In this course, The CICE student with the assistance of a Learning Specialist, will be exposed to common machine shop and reconditioning operations for engine crankshafts, connecting rods, cylinder block and cylinder heads. You will have a sound understanding of engine lubrication and cooling system diagnosis. Emphasis will be placed on students acquiring practical skills for internal and external engine repair procedures such as: engine timing component replacement, valve train service, cylinder head and gasket repairs, cooling and lubrication system repair and engine accessory component diagnosis. 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:	8
Total Hours:	64
Prerequisites:	There are no pre-requisites for this course.
Corequisites:	There are no co-requisites for this course.
Essential Employability Skills (EES) addressed in this course:	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. EES 2 Respond to written, spoken, or visual messages in a manner that ensures effective communication. EES 3 Execute mathematical operations accurately. EES 4 Apply a systematic approach to solve problems. EES 5 Use a variety of thinking skills to anticipate and solve problems. EES 6 Locate, select, organize, and document information using appropriate technology and information systems. EES 7 Analyze, evaluate, and apply relevant information from a variety of sources. EES 8 Show respect for the diverse opinions, values, belief systems, and contributions of others. EES 9 Interact with others in groups or teams that contribute to effective working relationships and the achievement of goals. EES 10 Manage the use of time and other resources to complete projects. EES 11 Take responsibility for ones own actions, decisions, and consequences.

In response to public health requirements pertaining to the COVID19 pandemic, course delivery and assessment traditionally delivered in-class, may occur remotely either in whole or in part in the 2021-2022 academic year.

Course Evaluation:	Passing Grade: 50%, D A minimum program GPA of 2.0 or higher where program specific standards exist is required for graduation.
Other Course Evaluation & Assessment Requirements:	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: 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. (Student will be given notice of test and assignment dates in advance) NOTE: All assignments will be in typed format. NO hand written assignments will be accepted. 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 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.
Books and Required Resources:	Automotive Technology: A Systems Approach by Erjavec Publisher: Thomson Nelson Learning Canada Edition: 4th Canadian Edition Medium/Heavy Duty Truck Engines, Fuel and Computerized Management Systems by Bennet Publisher: Cengage Learning Edition: 6th 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	**Learning Objectives for Course Outcome 1**
Discuss the purpose and	• Define valve lead, lag, overlap, and duration

fundamentals of camshaft and valve train assemblies.	• Explain the relationship of valves to position of pistons • Draw and interpret a valve timing events diagram • Describe lifters, solid, hydraulic and roller design • Outline rocker arms and push rods • Compare and contrast overhead valve to overhead camshaft design engines
Course Outcome 2	**Learning Objectives for Course Outcome 2**
Describe the types styles and application of valve trains.	• Outline different types of drive mechanisms chains, belts, gears and sprockets • Explain purpose of manufacturing engines with overhead camshafts • Describe in block camshaft engine operation including push rods, lifters and rocker arms
Course Outcome 3	**Learning Objectives for Course Outcome 3**
Perform recommended service operations.	• Remove and install timing belts and chains • Perform valve adjustment on a variety of styles • Compression test • Cylinder leakage test. • Measure valve lift and duration • Vacuum test • Check gear and pump timing on Diesel engines
Course Outcome 4	**Learning Objectives for Course Outcome 4**
Describe common engine machine shop reconditioning equipment and procedures.	• Inspect component gasket surfaces for nicks, burrs and warping • Outline proper gasket sealing techniques used in the motive power engine repair industry • Observe the reconditioning operations for: o cylinder blocks o crankshafts o connecting rods o cylinder heads
Course Outcome 5	**Learning Objectives for Course Outcome 5**
Diagnose cooling systems.	• Perform a leak test • Test thermostat for opening temperature • Test PH and freeze point • Flush system • Check for combustion signs in cooling system • Test and service SCAs in Diesel engines cooling systems • Have a clear understanding of the importance of testing PH & SCAs
Course Outcome 6	**Learning Objectives for Course Outcome 6**
Diagnose lubrication systems.	• Test oil pressure • Check for oil contamination • Check for leaks • Describe proper leak testing techniques • Replace oil and filters • Outline oil requirements, API ratings

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Evaluation Process and Grading System:

Evaluation Type	Evaluation Weight
Assignments	10%
Employability Skills	10%
shop	45%
Theory Tests	35%

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 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
Date:	August 29, 2021
Addendum:	Please refer to the course outline addendum on the Learning Management System for further information.