COURSE OUTLINE: MPT0200 - AUTO FUEL/EMISSIONS

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Course Code: Title	MPT0200: AUTO ALTERNATE/CONVENT. FUEL & EMISSIONS
Program Number: Name	1120: COMMUNITY INTEGRATN 8220: ACAD CAREER ENTRANCE
Department:	C.I.C.E.
Semesters/Terms:	21F
Course Description:	This course will compare ethanol flex fuel systems to conventional gasoline fuel injection and other alternate hydrocarbon fuel systems. Emission testing will be performed, analyzed and compared to current legislated standards. Students in the CICE Program, with the assistance of a learning specialist, will use industry standard electronic and mechanical test equipment. You will have a sound understanding of fuel injection and emission systems operation, diagnosis and repair.
Total Credits:	3
Hours/Week:	6
Total Hours:	48
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 4 Apply a systematic approach to solve problems. EES 5 Use a variety of thinking skills to anticipate and solve problems. 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.
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:	The following semester grades will be assigned to students:

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.

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 Restole
Publisher: Thomson Nelson Learning Canada Edition: 4th Canadian Edition
ISBN: 9780176501679

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**
Describe the construction, operation, types, styles and application of gasoline fuel injection systems	• Describe the construction and operation of fuel delivery systems • Describe the construction and operation of multiport and direct injection systems • Describe the purpose, construction and operation of primary fuel metering input and output devices • Explain fuel metering modes of operation • Describe OBDII modes and trouble code structure
Course Outcome 2	**Learning Objectives for Course Outcome 2**
Perform diagnostic procedures on fuel delivery systems	• Identify and utilize appropriate personal protection and safety precautions when servicing automotive fuel systems • Perform testing procedures to isolate problems with fuel pumps, regulators, injectors, filters, tanks and lines • Perform injector balance testing • Perform testing procedures for water and alcohol fuel contamination
Course Outcome 3	**Learning Objectives for Course Outcome 3**
Perform diagnostic procedures on fuel injection electronic control systems	• Use scan tools and computer based diagnostic equipment to access generic OBDII functions and manufacture specific information • Read, diagnose and clear OBDII trouble codes • Access and interpret live data stream information • Access non continuously monitored test results • Use bi-directional communications to operate and test

	output devices
Course Outcome 4	**Learning Objectives for Course Outcome 4**
Identify and test emission control components	• Describe the construction and operation of emission control systems • Identify emission control devices • Use electronic test equipment to diagnose emission control system failures • Perform exhaust emissions testing • Perform catalytic convertor testing • Perform a smoke test on an evaporative emission system
Course Outcome 5	**Learning Objectives for Course Outcome 5**
Alternate fuels	• Describe fuel injection system requirements for E-85 flex fuel vehicles • Explain the difference in fuel metering requirements for ethanol fuel blends • Describe the construction and operation of propane and natural gas fueled fuel systems

Evaluation Process and Grading System:

Evaluation Type	Evaluation Weight
Assignments	10%
Employability Skills	10%
Shop	45%
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

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	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:	October 31, 2021
Addendum:	Please refer to the course outline addendum on the Learning Management System for further information.