



COURSE OUTLINE

MPT0231

Prepared: Stephen Kent Approved: Corey Meunier

Course Code: Title	MPT0231: AUTOMOTIVE DRIVE TRAINS
Program Number: Name	1120: COMMUNITY INTEGRATN
Department:	C.I.C.E.
Semester/Term:	18W
Course Description:	<p>In this course, you will be introduced to manual transaxles and front wheel drive axle assemblies. You will also disassemble and reassemble manual transaxles and CV shafts. Automatic transmissions will be introduced focusing on pump types, valves, torque converters, driving and holding devices and planetary gear sets both simple and compound. You will disassemble and trace power flows through an automatic transmission and perform pressure tests. You will also be introduced to four wheel drive and all wheel drive systems focusing on construction and operation.</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>
Total Credits:	3
Hours/Week:	6
Total Hours:	48
Essential Employability Skills (EES):	<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.</p> <p>#2. Respond to written, spoken, or visual messages in a manner that ensures effective communication.</p> <p>#3. Execute mathematical operations accurately.</p> <p>#4. Apply a systematic approach to solve problems.</p> <p>#5. Use a variety of thinking skills to anticipate and solve problems.</p> <p>#6. Locate, select, organize, and document information using appropriate technology and information systems.</p> <p>#7. Analyze, evaluate, and apply relevant information from a variety of sources.</p> <p>#8. Show respect for the diverse opinions, values, belief systems, and contributions of others.</p> <p>#9. Interact with others in groups or teams that contribute to effective working relationships and the achievement of goals.</p> <p>#10. Manage the use of time and other resources to complete projects.</p> <p>#11. Take responsibility for ones own actions, decisions, and consequences.</p>



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Course Evaluation:	Passing Grade: 50%, D										
Other Course Evaluation & Assessment Requirements:	<p>The final grade for this course will be based on the results of classroom, assignments and shop evaluations weighed as indicated:</p> <p>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>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>										
Evaluation Process and Grading System:	<table border="1"> <thead> <tr> <th>Evaluation Type</th> <th>Evaluation Weight</th> </tr> </thead> <tbody> <tr> <td>Assignments</td> <td>10%</td> </tr> <tr> <td>Employability Skills</td> <td>10%</td> </tr> <tr> <td>Shop</td> <td>45%</td> </tr> <tr> <td>Theory Tests</td> <td>35%</td> </tr> </tbody> </table>	Evaluation Type	Evaluation Weight	Assignments	10%	Employability Skills	10%	Shop	45%	Theory Tests	35%
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Books and Required Resources:	<p>Heavy Duty Truck Systems by Bennett Publisher: Thomson Nelson Learning Canada Edition: 6th ed</p>										



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

Describe the functions, construction, types, styles and application of front wheel drive axle assemblies.

Learning Objectives 1.

Potential Elements of the Performance:

Describe the following:

- front wheel drive axles
- half shafts
- constant velocity
- bearings
- constant velocity (CV) boots
- vibration damper
- front wheel drive axles
- torque steer
- inner and outer constant velocity joints
- vibration damper operation

Course Outcome 2.

Describe the construction and operation of manual transaxles.

Learning Objectives 2.

Potential Elements of the Performance:

- Compare and contrast front wheel drive vs. rear wheel drive.



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- Trace power flows through a transaxle.
- Explain operation of the synchronizer hub assembly.
- Outline shift mechanisms.
- Disassemble and inspect a transaxle and perform assigned operations to determine gear ratio and final drive ratio.

Course Outcome 3.

Explain front wheel drive axle construction and operation.

Learning Objectives 3.

Potential Elements of the Performance:

- State the difference between a plunge and a fixed CV joint.
- Remove and install axle assemblies from vehicles.
- Perform assigned operations to remove CV boots and joints from the half shafts.
- Explain the diagnostic sequence used to determine CV joint failure.

Course Outcome 4.

Explain the construction and operating principles of automatic transmissions.

Learning Objectives 4.

Potential Elements of the Performance:

- Describe clutch pack and band operation.
- List three types of pumps.
- Outline control devices.
- Describe a compound planetary gear set.
- Explain torque converter operation.

Course Outcome 5.

Describe special tools required for servicing and repairing automatic transmission equipped vehicles.



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Learning Objectives 5.

Potential Elements of the Performance:

- Identify tools used for transmission repair.
- Explain how clutch packs are disassembled.

Course Outcome 6.

Describe the construction, types, styles and application of transfer case assemblies.

Learning Objectives 6.

Potential Elements of the Performance:

- Outline shifting
- Describe ranges
- Explain internal operation of manual and automatic four wheel drive transfer cases.

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.