

**COURSE NAME:** MPM015 Engine Systems

---

Credit Value: 5  
Total Course Hours: 70  
Prerequisite Course(s): None  
Corequisite Course(s): None

## COURSE DESCRIPTION

---

In this course, students will learn about the mechanical aspects of the internal combustion engine. Students are given an opportunity to examine the basic operating principles of the engine and to identify the component parts. A significant portion of time is devoted to engine component assessment, with hands-on activities on sample engines. To enhance the students' understanding of engine diagnoses, live engines are used to challenge students' investigative skills.

## LAND ACKNOWLEDGEMENT

---

Canadore College resides on the traditional territory of the Anishinaabeg and within lands protected by the Robinson Huron Treaty of 1850. This land is occupied by the people of Nipissing First Nation, Treaty #10 in the Robinson Huron Treaty of 1850 since time immemorial.

## PLAR INFORMATION

---

This course is not eligible for Prior Learning Assessment and Recognition.

## COURSE LEARNING OUTCOMES

---

Upon completion of this course, the student will have reliably demonstrated the ability to:

- |  |   |
|--|---|
| <p>1.0 Define the introductory information, definitions and fundamentals of applied calculations for engines.</p> <ul style="list-style-type: none"><li>1.1 Explain work, efficiency, power and horsepower as they relate to engines.</li><li>1.2 Perform calculations dealing with inertia, force, energy, torque, horsepower ratings, clearance volume and compression ratio.</li></ul> <p>2.0 Disassemble, inspect, test and assemble basic internal combustion engine short block assemblies with the prescribed service tools and equipment.</p> <ul style="list-style-type: none"><li>2.1 Identify the major internal combustion engine stationary and moving components.</li><li>2.2 Explain the basic function, composition and construction of engine assembly components.</li><li>2.3 Explain the basic principles of operation of engine assembly components.</li></ul> <p>3.0 Disassemble, inspect, test and assemble cylinder heads and valve trains with prescribed service tools and equipment.</p> <ul style="list-style-type: none"><li>3.1 Define the function of cylinder heads and valve train assemblies.</li></ul> | <ul style="list-style-type: none"><li>3.2 Explain the principles of operation of valves, seats, guides, seals, springs, rocker arms and shafts, pushrods, lifters, camshafts, belts, gears, sprockets, chains, cylinder heads, combustion chambers, gaskets and seals.</li><li>3.3 Explain how valve timing affects engine operation.</li></ul> <p>4.0 Perform power balance, compression and cylinder leakage tests on engines.</p> <ul style="list-style-type: none"><li>4.1 Identify equipment for power balance, compression and cylinder leakage tests on engines</li><li>4.2 Ready engine and perform power balance, compression and cylinder leakage tests on engines</li><li>4.3 Analyze results of power balance, compression and cylinder leakage tests to determine condition of engine.</li></ul> |
|--|---|

## GENERAL EDUCATION

---

This is not a General Education course.

## ESSENTIAL EMPLOYABILITY SKILLS OUTCOMES

---

This course contributes to the following Ministry of Colleges and Universities approved essential employability skills (EES) outcomes:

1. Communicate clearly, concisely, and correctly in the written, spoken, and visual form that fulfils 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. Analyse, evaluate, and apply relevant information from a variety of sources.
9. Interact with others in groups or teams in ways 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 one's own actions, decisions, and consequences.

## EXTERNAL COURSE ACCREDITATIONS AND CONDITIONS

---

This course is equivalent to the following apprenticeship program reportable subjects: AST Level 1 S1222 - allCVE Level 1 S1243 - allSET/MET Level 1 S1435 - allMT Level 1 S0146 - all

## COURSE EVALUATION

---

Homework/Electures 25%/ Tests 20%/ Shop/ Job Sheets 35%/ Final Exam 20%

## PROGRAM SPECIFIC GRADING

---

Per College Grading System

### GRADING SYSTEM

---

A+:	90-100%	B+:	77-79%	C+:	65-69%	D:	50-54%	S - Satisfactory
A:	85-89%	B:	73-76%	C:	60-64%	F:	0-49%	I - Incomplete
A-:	80-84%	B-:	70-72%	D+:	55-59%			F- Repeat Course, included in GPA
								FS- Failure Supplemental
								FR- Repeat course, excluded from GPA

\*For a complete chart of grades and descriptions, please see the Grading Policy.

## LEARNING RESOURCES

---

No textbooks have been identified for this course.

### Other Resources:

Required: Automotive Technology, Erjavec, Restoule, Playter current edition Fundamentals of Medium/Heavy Duty Diesel Engines by Gus Wright ISBN: 9781284067057 ARGO Modules by Electude Recommended:

Resources listed on the course outline support the achievement of learning outcomes, and may be used throughout the course to varying degrees depending on the instructor's teaching methodology and the nature of the resource.

Technology requirements - <https://www.canadorecollege.ca/BYOD>

The Harris Learning Library's staff can help you find resources to support your learning - [www.eclibrary.ca](http://www.eclibrary.ca)

## LEARNING ACTIVITIES

---

Lecture/Assignments/Homework/ARGO Modules/Activities/Shop Demonstrations/Shop Job Sheets

## DELIVERY MODE

---

This course may be delivered, in whole or in part, in a number of modalities, including in class, online, hybrid, in a synchronous or asynchronous manner or a combination thereof, as per accreditation and/or regulatory standards where appropriate.

## RECORDING GUIDELINES

---

This class may be recorded by faculty of the College. Faculty will inform students when recording of the class commences and ceases. 'Recorded' means that the audio-visual and chat portions of the class will be recorded and then be stored on the College or vendor provider server. They will be made available to students, but only for the express and sole use of those registered in this course. If you have any questions or concerns about this recording, please contact your instructor or the College's privacy officer at [privacy.officer@canadorecollege.ca](mailto:privacy.officer@canadorecollege.ca). Full recording guidelines can be found at: <https://cdn.agilitycms.com/canadore-college/academic-centre-of-excellence/Canadore%20Recording%20Guidelines.pdf>

## EXPERIENTIAL LEARNING

---

All full-time programs of study at Canadore College strive to provide students with the opportunity for experiential learning. This course provides students with an experiential learning opportunity through:

Workplace/Lab Simulation (EL)

## ACADEMIC POLICIES

---

Canadore College is committed to the highest standards of academic integrity, and expects students to adhere to these standards as part of the learning process in all environments. The College's Academic Integrity policy seeks to ensure that all students understand their rights and responsibilities in upholding academic integrity and that students receive an accurate and fair assessment of their work. Please review the Academic Integrity policy (A-18) and other academic policies found on our website:

<https://www.canadorecollege.ca/about/policies>.

## COLLEGE POLICIES

---

- Protecting human rights in support of a respectful college community

For college policies please see: <http://www.canadorecollege.ca/about-us/college-policies>.

## STUDENT SUCCESS SERVICES - Your Success Matters!

---

Student Success Services provides student-focused services to facilitate students' success in their studies. Staff provide support by reducing and/or removing educational-related barriers through individualized accommodations and supports to students with disabilities.

Please visit our webpage to learn more: <https://www.canadorecollege.ca/support/student-success-services> or look for our events on social media.

To connect with Student Success Services email [studentsuccessnow@canadorecollege.ca](mailto:studentsuccessnow@canadorecollege.ca) or call 705.474.7600 ext 5205.

## FIRST PEOPLES' CENTRE:

---

A culturally safe environment offering CONFIDENTIAL student focused services, drop in or make an appointment to access:

- One on one counselling
- Elder in residence program
- Peer tutoring
- Peer mentorship
- Lunch & learn workshops on study skills, self-care, life skills
- Learning Resource Centre

Drop by our offices at C254 College Drive, E101 Commerce Court or call 705 474 7600 Ext. 5961 College Drive / 5647 Commerce Court.

<https://www.canadorecollege.ca/experience/indigenous-student-experience>

### **WAIVER OF RESPONSIBILITY**

---

Every attempt is made to ensure the accuracy of this information as of the date of publication. The college reserves the right to modify, change, add, or delete content.

### **HISTORICAL COURSE OUTLINES**

---

Students use course outlines to support their learning. Students are responsible for retaining course outlines for future use in applications for transfer of credit to other educational institutions.