

SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY

SAULT STE. MARIE, ONTARIO



Sault College

COURSE OUTLINE

COURSE TITLE: Engines

CODE NO. : AST702 **LEVEL:** 2

PROGRAM: AUTOMOTIVE SERVICE TECHNICIAN
APPRENTICESHIP (6068)

AUTHOR: Dan Tregonning

DATE: June 08 **PREVIOUS OUTLINE DATED:**

APPROVED:

“Corey Meunier”
CHAIR

DATE

TOTAL CREDITS:

PREREQUISITE(S):

HOURS/WEEK:

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For additional information, please contact Corey Meunier, Chair
School of Technology & Skilled Trades
(705) 759-2554, Ext. 2610

I. COURSE DESCRIPTION:

In this course the student will demonstrate a working knowledge of the purpose, construction and principals of operation of cylinder block assemblies. The student will also perform inspection and testing on cylinder blocks and components. This course will also cover the purpose, construction and testing of camshafts and crankshafts

II. LEARNING OUTCOMES AND ELEMENTS OF THE PERFORMANCE:

Upon successful completion of this course, the student will demonstrate the ability to:

1. Define the purpose and fundamentals of cylinder block components
Potential Elements of the Performance:
 - dismantle, inspect, test and assemble engine short block assemblies
2. Perform inspection and testing procedures on cylinder block and components following manufactures recommendations
Potential Elements of the Performance:
 - demonstrate cylinder ridge removal and engine cleaning
 - explain the effects of carbon buildup on pistons
 - measure cylinders to determine taper and out of round
 - measure warpage, crankshaft wear, bearing wear, piston wear using manufactures specs and precision measuring equipment
3. Describe the functions, construction, types, styles and application of engine crankshafts and bearings
Potential Elements of the Performance:
 - visually inspect the crankshaft
 - verify the disassembly procedure
 - measure crankshaft endplay
 - test crankshaft for warpage and alignment
 - check crankshaft bearing wear and clearance
4. Discuss the purpose and fundamentals of camshaft and valve train assemblies
Potential Elements of the Performance:
 - define valve lead, lag, overlap, and duration
 - explain the relationship of valves to position of pistons

5. Describe the types styles and application of valve trains
Potential Elements of the Performance:
 - remove and replace camshafts from engine blocks
 - inspect camshaft bearings for wear
 - verify different types of drive mechanisms chains, belts, gears and sprockets
 - perform valve lash adjustments on a variety of styles

III. TOPICS:

1. Cylinder Block Assemblies Theory
2. Cylinder Block Applications
3. Crankshafts Assemblies
4. Camshaft Assemblies
5. Valve Train Components and Drives

IV. REQUIRED RESOURCES/TEXTS/MATERIALS:

Automotive Technology – Text & Workbook

Pens, pencils, calculator, 3-ring binder

Items mandatory for Shop:

- shop coat or coveralls
- CSA approved steel toe boots (high top)
- CSA approved safety glasses

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 – 60% of the final grade is comprised of term tests
- Assignments – 10% of the final grade is comprised of a number of technical reports
- Shop – 30% of the final grade is comprised of attendance, punctuality, preparedness, student ability, work organization and general attitude

(Student will be given notice of test and assignment dates in advance)

The following semester grades will be assigned to students:

Grade	<u>Definition</u>	<i>Grade Point Equivalent</i>
A+	90 – 100%	4.00
A	80 – 89%	3.00
B	70 - 79%	2.00
C	60 - 69%	1.00
D	50 – 59%	0.00
F (Fail)	49% and below	
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.	

VI. SPECIAL NOTES:

Special Needs:

If you are a student with special needs (e.g. physical limitations, visual impairments, hearing impairments, or learning disabilities), you are encouraged to discuss required accommodations with your professor and/or the Special Needs office. Visit Room E1101 or call Extension 2703 so that support services can be arranged for you.

Retention of Course Outlines:

It is the responsibility of the student to retain all course outlines for possible future use in acquiring advanced standing at other postsecondary institutions.

Communication:

The College considers **WebCT/LMS** as the primary channel of communication for each course. Regularly checking this software platform is critical as it will keep you directly connected with faculty and current course information. Success in this course may be directly related to your willingness to take advantage of the **Learning Management System** communication tool.

Plagiarism:

Students should refer to the definition of “academic dishonesty” in *Student Code of Conduct*. Students who engage in academic dishonesty will receive an automatic failure for that submission and/or such other penalty, up to and including expulsion from the course/program, as may be decided by the professor/dean. In order to protect students from inadvertent plagiarism, to protect the copyright of the material referenced, and to credit the author of the material, it is the policy of the department to employ a documentation format for referencing source material.

Course Outline Amendments:

The professor reserves the right to change the information contained in this course outline depending on the needs of the learner and the availability of resources.

Substitute course information is available in the Registrar's office.

VII. PRIOR LEARNING ASSESSMENT:

Credit for prior learning will be given upon successful completion of a challenge exam or portfolio.

VIII. ADVANCE CREDIT TRANSFER:

Students who wish to apply for advance credit transfer (advanced standing) should obtain an Application for Advance Credit from the program coordinator (or the course coordinator regarding a general education transfer request) or academic assistant. Students will be required to provide an unofficial transcript and course outline related to the course in question.