

**SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY**

**SAULT STE. MARIE, ONTARIO**



**SAULT  
COLLEGE**

**COURSE OUTLINE**

**COURSE TITLE:** Drive Train Systems

**CODE NO. :** AST614 **LEVEL:** ONE

**PROGRAM:** AUTOMOTIVE SERVICE TECHNICIAN  
APPRENTICESHIP – Level 1

**AUTHOR:** Stephen Kent

**DATE:** September 2011 **PREVIOUSLY UPDATED:** June 2010

**APPROVED:** *“Corey Meunier”*  
CHAIR **DATE**

**TOTAL CREDITS:** FOUR

**PREREQUISITE(S):** NIL

**HOURS/WEEK:** Taught in block format 36 hours

**Copyright ©2011 The Sault College of Applied Arts & Technology**  
*Reproduction of this document by any means, in whole or in part, without prior written permission of Sault College of Applied Arts & Technology is prohibited.*  
**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 be able to describe the construction, basic operating principles, servicing and testing techniques of the following drive train systems, clutch assemblies, manual transmission and manual transaxles. The student will also demonstrate their ability to disassemble, test and inspect manual transmissions / transaxles and clutches.

**II. LEARNING OUTCOMES AND ELEMENTS OF THE PERFORMANCE:**

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

**1. *Explain the construction, operating principles, testing and service techniques required to repair single and double disc dry clutch assemblies.***

Potential Elements of the Performance:

- Compare & contrast static and sliding friction.
- State the effects of centrifugal force.
- Describe the construction of single and double disc clutch assemblies.
- Test and inspect clutch assemblies with prescribed service tools and equipment.
- Perform clutch adjustments following manufactures maintenance procedures.

**2. *Demonstrate a thorough understanding of the construction, operation, testing and servicing of manual transmissions / manual transaxles.***

Potential Elements of the Performance:

- Describe the basic operating principles of various manual shift gear boxes.
- Discuss the common customer complaints related to various power train component failures.
- Dismantle and trace power flows in manual shift transmissions.
- Inspect gears and synchronizers for wear and proper operation.
- Describe manufacturers' system maintenance procedures of manual transmission lubricating fluids.

**III. TOPICS:**

1. Clutches
2. Manual Transmissions

**IV. REQUIRED RESOURCES/TEXTS/MATERIALS:**

Automotive Technology – Text & Workbook

The following items are mandatory for entrance to the Shop:

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

Pen, pencils, calculator, and 3-ring binder

**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

**Students will be given notice of  
test and assignment dates in advance**

The following semester grades will be assigned to students:

<b>Grade</b>	<b><u>Definition</u></b>	<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:

### **Attendance:**

Sault College is committed to student success. There is a direct correlation between academic performance and class attendance; therefore, for the benefit of all its constituents, all students are encouraged to attend all of their scheduled learning and evaluation sessions. This implies arriving on time and remaining for the duration of the scheduled session.

It is the departmental policy that once the classroom door has been closed, the learning process has begun. Late arrivers will not be granted admission to the room.

**Laptops or Cell phones are not allowed to be on in the classrooms or shop areas during class time.**

## VII. COURSE OUTLINE ADDENDUM:

The provisions contained in the addendum located on the portal form part of this course outline.