SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY

SAULT STE. MARIE, ONTARIO

SAULT
COLLEGE

COURSE OUTLINE

COURSE TITLE: GEAR TRAINS III

CODE NO. : AST804 **SEMESTER:** LEVEL 3

PROGRAM: AUTOMOTIVE SERVICE TECHNICIAN

AUTHOR: STEPHEN KENT

DATE: JAN 2011 **PREVIOUS OUTLINE DATED:** N/A

APPROVED:

"Corey Meunier"
CHAIR

TOTAL CREDITS:

PREREQUISITE(S):

HOURS/WEEK:

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

I. COURSE DESCRIPTION: This course has been designed to show the students the manufactures maintenance and repair procedures for automatic transmissions and torque converters. Systematic diagnosis procedures will be outlined so the student can test and diagnose transmission control systems, pumps, gear sets, driving and holding devices. Students will trace power flows through an automatic transmission and perform pressure tests. They will also study all-wheel drive systems and state the benefits over 4 wheel drive.

II. LEARNING OUTCOMES AND ELEMENTS OF THE PERFORMANCE:

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

1. Describe the manufactures maintenance and repair procedures for automatic transmissions.

Potential Elements of the Performance:

- Explain the need for transmission fluid and filter replacement.
- Outline band adjustment.
- Describe the necessary steps required to overhaul an automatic transmission.

2. Explain the diagnostic tests used to verify proper component operation or failure.

Potential Elements of the Performance:

- Explain a stall test.
- Outline the use of a scan tool to diagnose transmission operation.
- Describe transmission pressure testing.

3. Disassemble automatic transmissions and trace power flows using manufacturers service information.

Potential Elements of the Performance:

- Disassemble an automatic transmission.
- Follow power flow diagrams and apply to the transmission disassembled.
- Explain how the holding devices make the desired gear ratios for proper operation.

4. Perform transmission preventative maintenance and pressure tests.

Potential Elements of the Performance:

- Change transmission fluid and filter.
- Check fluid condition and level.

- Perform a stall test.
- Perform a transmission pump pressure test and compare to manufacturers specifications.

5. Demonstrate a working knowledge of the fundamentals and principles of operation of all-wheel drive systems.

Potential Elements of the Performance:

- Define the fundamentals of all-wheel drive systems.
- Explain the operation of all-wheel drive systems.
- Outline all-wheel drive components and variations
- Describe viscous drive couplings.

6. Demonstrate a working knowledge of the fundamentals, construction, principles of operation, inspection and testing procedures for lockup torque converters.

Potential Elements of the Performance:

- Explain the purpose of lock-up torque convertors.
- Describe lock-up operation
- Monitor lock-up status with scan tools.
- Verify proper operation.

III. TOPICS:

1. DESCRIBE THE MANUFACTURES MAINTENANCE AND REPAIR PROCEDURES FOR AUTOMATIC TRANSMISSIONS.
2. EXPLAIN THE DIAGNOSTIC TESTS USED TO VERIFY PROPER COMPONENT OPERATION OR FAILURE.
3. DISASSEMBLE AUTOMATIC TRANSMISSIONS AND TRACE POWER FLOWS USING MANUFACTURERS SERVICE INFORMATION.
4. PERFORM TRANSMISSION PREVENTATIVE MAINTENANCE AND PRESSURE TESTS.
5. ALL-WHEEL DRIVE SYSTEMS
6. LOCK UP TORQUE CONVERTORS

IV.

REQUIRED RESOURCES/TEXTS/MATERIALS:

Title: Automotive Technology: A Systems Approach/AST Test Prep
Edition: 06 ed., 17810#
Author: Erjavec
Publisher: Thomson Nelson Learning Canada
Pens, pencils, calculator, 3-ring binder

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

*these items mandatory for shop

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	**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.

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.

Cell phones are not allowed to be on in the classrooms or shop areas.

VII. COURSE OUTLINE ADDENDUM:

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