SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY

SAULT STE. MARIE, ONTARIO

COURSE OUTLINE

COURSE TITLE:	BRAKES		
CODE NO. :	MPF122	**SEMESTER:**	TWO
PROGRAM:	MOTIVE POWER – ADVANCED REPAIR		
AUTHOR:	Dan Tregonning		
DATE:	March 2012	**PREVIOUS OUTLINE DATED:**	JAN 2011
APPROVED:	*"Corey Meunier"* **CHAIR**		_____ **DATE**
TOTAL CREDITS:	4		
PREREQUISITE(S):	MPF103		
HOURS/WEEK:	6		

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

I. COURSE DESCRIPTION:

This course deals with the study and interrelationship of essential basic fundamentals, composition, construction and operating principles of hydraulic and pneumatic brake systems. The student will also inspect and service hydraulic and pneumatic brake assemblies using manufacturer's maintenance procedures.

II. LEARNING OUTCOMES AND ELEMENTS OF THE PERFORMANCE:

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

1. Define the essential basic information and fundamentals of standard hydraulic and air brake systems.

Potential Elements of the Performance

- Pascal's Law, mechanical advantage
- Effect of heat co-efficient of friction
- Brake fluid composition
- Self –energization
- Weight transfer affecting brake designs for light and heavy-duty brakes

2. Explain the basic function, composition and construction of drum and disc brake system assemblies as applied to hydraulic and air brakes.

Potential Elements of the Performance:

- Master cylinder, drum, shoes, wheel cylinders, discs, pads, calipers, lines and hoses
- Slack adjusters
- Air brake chambers
- Control valves
- Lines and hoses

3. Explain the basic principals of operation of drum and disc brake system assemblies as applied to hydraulic and air brakes.

Potential Elements of the Performance:

- Master cylinder, drums and shoes
- Wheel cylinders, discs, pads ,caliper
- Control devices
- Air brake chambers
- Slack adjusters

4. Service drum and disc brake system assemblies as applied to hydraulic and air brakes.

Potential Elements of the Performance:

- Clean, lubricate and adjust hydraulic drum brake assemblies
- Clean, lubricate and adjust air drum brake assemblies
- Inspect disc brake assemblies
- Service caliper slides and bushings

III. TOPICS:

1. BRAKE FUNDAMENTALS
2. BRAKE COMPONENTS
3 BRAKE OPERATION
4.. SERVICE DRUM AND DISC BRAKE SYSTEM ASSEMBLIES

IV. REQUIRED RESOURCES/TEXTS/MATERIALS:

Title: Heavy Duty Truck Systems
Edition: 4th ed., 12959#
Author: Bennett
Publisher: Thomson Nelson Learning Canada
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 – 40% of the final grade is comprised of term tests.
- Assignments – 10% of the final grade is comprised of a number of technical reports or assignments.
- Shop – 50% 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:

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 par this course outline.