SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY

SAULT STE. MARIE, ONTARIO

Sault College

COURSE OUTLINE

COURSE TITLE: GEARTRAINS I

CODE NO. : ASM115 **SEMESTER:** 2

PROGRAM: MOTIVE POWER FUNDAMENTALS – PARTS & COUNTER PERSONAL

AUTHOR: DAN TREGONNING

DATE: MARCH 07 **PREVIOUS OUTLINE DATED:** FEB. 06

APPROVED:

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DEAN **DATE**

TOTAL CREDITS: 2

PREREQUISITE(S): ASM101 – BASIC AUTOMOTIVE SKILLS

LENGTH OF COURSE: TAUGHT IN BLOCK FORMAT

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 gear train systems, clutch assemblies, manual transmission, differentials and drive shafts. The student will also demonstrate their ability to disassemble, test and inspect manual transmissions, differentials and drivelines including gear patterns, driveline angle measurement and phasing.

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 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 rear wheel drive manual transmissions.
   Potential Elements of the Performance:
   - Describe the basic operating principles of various manual shift gear boxes.
   - Discuss the common customer complaints related to various powertrain component failures.
   - Dismantle and trace powerflows in manual shift transmissions.
   - Inspect gears and synchronizers for wear and proper operation.
   - Describe manufacturers system maintenance procedures of manual transmission lubricating fluids.

3. Describe the function, composition and construction of differentials and drive shafts.
   Potential Elements of the Performance:
   - Identify the differential and drive axle assemblies employed within the motive power field.
   - Describe the function and interrelationship of the components of differentials and drive axle assemblies.
   - Measure driveline angle and phasing using prescribed tools and equipment.
   - Compare and contrast gears used in motive power drivelines (e.g.) bevel gear, spur gear, helical and hypoid.

III. TOPICS:

1. Clutches
2. Manual Transmissions
3. Differentials & Driveshafts

IV. REQUIRED RESOURCES/TEXTS/MATERIALS:

Automotive Technology – Text & Workbook
Pen, pencils, calculator, and 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:

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 703 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.

Plagiarism:
Students should refer to the definition of “academic dishonesty” in *Student Rights and Responsibilities*. 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.

<*include any other special notes appropriate to your course*>

VII. PRIOR LEARNING ASSESSMENT:

Students who wish to apply for advanced credit in the course should consult the professor. Credit for prior learning will be given upon successful completion of a challenge exam or portfolio.

VIII. DIRECT CREDIT TRANSFERS:

Students who wish to apply for direct credit transfer (advanced standing) should obtain a direct credit transfer form from the Dean’s secretary. Students will be required to provide a transcript and course outline related to the course in question.