

SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY

SAULT STE. MARIE, ONTARIO



**SAULT
COLLEGE**

COURSE OUTLINE

COURSE TITLE: WORK PRACTICES

CODE NO. : AST611 **LEVEL:** ONE

PROGRAM: AUTOMOTIVE SERVICE TECHNICIAN
APPRENTICESHIP – Level 1

AUTHOR: STEPHEN KENT

DATE: September 2011 **PREVIOUS OUTLINE DATED:** Sept. 2010

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

TOTAL CREDITS: FOUR

PREREQUISITE(S): NIL

HOURS/WEEK: Taught in block format 30 hrs.

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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 the ability to identify types and purpose of fasteners including tightening procedures. The student will be introduced to bearings, seals and sealants and the purpose of each. The student will demonstrate a working knowledge of the purpose, construction, principles of operation, and calibration of precision and non-precision measuring tools. They will also show their ability to properly lift and support vehicles using hoists and lifting equipment. Oxyacetylene, heating and cutting will also be performed as well as producing word documents and accessing trade related information from computer based software.

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 fasteners and tightening procedures*

Potential Elements of the Performance:

- identify fastener grades and applications
- demonstrate the ability to identify SAE vrs SI
- explain tensile, yield, shear strength and how they differ
- choose the proper grade pitch threads per inch for the job being performed
- explain the factors that affect torque such as thread condition, lubrication, temperature and fastener composition

2. *Describe the construction, types, styles and application of the following fasteners*

Potential Elements of the Performance:

- choose the proper nut and bolt for the task to be performed
- identify the proper application of studs
- use thread sealants ,adhesives and other locking devices
- demonstrate the proper application of a helicoil

3. *Explain the principals of operation of fasteners and tightening procedures*

Potential Elements of the Performance:

- explain the purpose of torque to yield bolts and cap screws
- identify the effects on torque with wet, dry and clean threads
- demonstrate helicoil repair procedures

- 4. *Perform installation and removal procedures for fasteners following manufactures recommendations***
Potential Elements of the Performance:

 - verify thread strengths and torque requirements for wet and dry
 - install helicoils and locking devices
 - perform metal work practices including drilling, tapping, hack sawing and filing

- 5. *Demonstrate the purpose, construction, principals of operation, inspection and testing of bearings, seals and sealants***
Potential Elements of the Performance

 - define the purpose and fundamentals of bearings, seals and sealants
 - describe the construction, composition, types, styles and application of bearings, seals and sealants
 - explain the principals of operation of bearings, seals and sealants
 - perform inspection and testing procedures of bearings seals and sealants

- 6. *Demonstrate a working knowledge of the purpose, construction, principals of operation, and calibration of precision and non-precision measuring tools***
Potential Elements of the Performance:

 - metric and imperial measurements and conversions
 - demonstrate use of micrometers (inside, outside, depth)
 - use of small hole gauges, calipers. Verniers and telescoping gauges
 - apply torque wrenches to the trade (click, dial, and beam)

- 7. *Apply a working knowledge and safe operating principals for the use of oxyacetylene when cutting and heating***
Potential Elements of the Performance

 - be aware of protection devices for eyes, face, hands, and clothing
 - demonstrate setup and shut down sequence as well as cylinder handling
 - explain fire prevention and use of butane lighters
 - beware of the dangers in welding on flammable containers

- 8. *Demonstrate a working knowledge of the use of a personal computer.***
Potential Elements of the Performance

 - define the introduction to the personal computer

- identify components device names and designations
- perform hard and floppy data retention
- create a word processed document
- access trade related information
- access internet including browsing and file downloading

9. *Demonstrate the use of proper jacking and lifting equipment used in the motive power industry.*

Potential Elements of the Performance

Demonstrate the proper method of raising and lowering vehicles using hoists, jacks, blocking and safety stands.

- Use safety stands and jacks
- Perform vehicle placement and movement
- Find the lifting points
- Outline equipment maintenance
- State lifting capacities of hoisting equipment
- Use adaptors & extensions
- Describe types of hoists and lifting equipment
- Operate safety locks and releases
- Position vehicle / wheel chocks
- Check overhead environment
- Verify correct engagement of lift points
- Verify balance
- Verify correct use of safety locks

III. TOPICS:

1. Fasteners and Tightening Procedures
2. Construction and application of Fasteners
3. Tightening Procedures of Fasteners
4. Removal of broken Fasteners
5. Seals and Sealants
6. Measuring Tools
7. Oxyacetylene Heating and Cutting
8. Applied Computer Skills
9. Hoisting and Lifting

IV. REQUIRED RESOURCES/TEXTS/MATERIALS:

Automotive Technology Second Canadian Edition – Text

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

Pens, pencils, calculator, 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:

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:

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.