SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY

SAULT STE. MARIE, ONTARIO

COURSE OUTLINE

COURSE TITLE:	MANUFACTURING PROCESSES		
CODE NO. :	MCH244	**SEMESTER:**	WINTER
PROGRAM:	MECHANICAL TECHNIQUES/TECHNICIAN		
AUTHOR:	PAUL COCCIMIGLIO		
DATE:	JAN 2011	**PREVIOUS OUTLINE DATED:**	JAN 2010
APPROVED:	"Corey Meunier" **CHAIR**		_____ **DATE**
TOTAL CREDITS:	FOUR		
PREREQUISITE(S):	NONE		
HOURS/WEEK:	THREE		

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

I. COURSE DESCRIPTION:

The general objective of this course is to give students a basic introduction to manufacturing processes, process sequences and an introduction to the 5Ms of industrial processing.

The course centers on the steel production and steel manufacturing industries, but the concepts introduced are applicable to most manufacturing environments.

II. LEARNING OUTCOMES AND ELEMENTS OF THE PERFORMANCE:

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

1. Process

Potential Elements of the Performance:

- Give the definitions of process and process sequence.
- Describe linear processes.
- Describe parallel processes.

2. The 5Ms of Manufacturing Systems

Potential Elements of the Performance:

- Describe each of the 5M elements in manufacturing processes and how they interrelate in a total quality management system.

3. Steel Production Processes

Potential Elements of the Performance:

- Describe the production flow through an integrated steel plant from incoming raw materials to shipped product.
- Describe the various steel production processes work.
- Explain how the various processes work.
- Where alternate processes are available, explain the technical and economic advantages and disadvantage of each alternate.

4. Steel Manufacturing Processes

Potential Elements of the Performance:

- Recognize and describe various manufacturing processes used for the production of goods made from steel.
- Describe the demands made on the material in each of the various processes covered.
- Explain in technical and economic terms why one process may be used as opposed to a possible alternate process.

TOPICS:

1. **Processes:**
   i. Definition
   ii. Process Sequence
   iii. Series (linear) processes

   Parallel process

2. **The 5 Ms of Manufacturing Systems:**
   i. Man
   ii. Material
   iii. Machines
   iv. Methods
   v. Measurement

   Relationship to Quality Management System

3. **Steel production processes**
   i. Cokemaking
   ii. Ironmaking
   iii. Steelmaking
   iv. Casting
   v. Hot Rolling
   vi. Pickling
   vii. Cold Rolling
   viii. Annealing

   Shipping

4. **Steel manufacturing processes** and demands made on material
   i. Cutting:
      a. Shearing
      b. Flame cutting
      c. Plasma Cutting
      d. Laser cutting
   ii. Metal forming:
      a. Punching
      b. Blanking
      c. Bending
      d. Press forming
      e. Roll forming
      f. Drawing
      g. Hydroforming
   iii. Joining:
      a. Bolting
      b. Riveting
      c. Arc welding
      d. Resistant spot welding
      e. Seam welding
      f. Friction Welding
      g. Laser welding
      h. Brazing
      i. Soldiering
   iv. Machining:
      a. Milling and Drilling
      b. Turning
      c. Grinding
   v. Casting:
      a. Sand casting
      b. Permanent mould casting
      c. Lost wax casting

IV. REQUIRED RESOURCES/TEXTS/MATERIALS:

To be provided by instructor on LMS

V. EVALUATION PROCESS/GRADING SYSTEM:

Class participation – 10%
Assignments – 35%
Test #1 - 25%
Test #2 – 30%

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.

VII. COURSE OUTLINE ADDENDUM:

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