



# COURSE OUTLINE

## MCH244

Prepared: Howard Gray Approved: Corey Meunier

<b>Course Code: Title</b>	MCH244: MANUFACTURING PROCESS				
<b>Program Number: Name</b>	4039: MECH. ENG. TN-MANUFA				
<b>Department:</b>	MECHANICAL TECHNIQUES PS				
<b>Semester/Term:</b>	18S				
<b>Course Description:</b>	<p>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.</p>				
<b>Total Credits:</b>	4				
<b>Hours/Week:</b>	3				
<b>Total Hours:</b>	45				
<b>Course Evaluation:</b>	Passing Grade: 50%, D				
<b>Other Course Evaluation &amp; Assessment Requirements:</b>	<p>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</p> <p>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 W Student has withdrawn from the course without academic penalty.</p>				
<b>Evaluation Process and Grading System:</b>	<table><tr><th>Evaluation Type</th><th>Evaluation Weight</th></tr><tr><td>Assignments/Reports</td><td>30%</td></tr></table>	Evaluation Type	Evaluation Weight	Assignments/Reports	30%
Evaluation Type	Evaluation Weight				
Assignments/Reports	30%				

Attendance	10%
Tests	60%

#### Books and Required Resources:

Handout provided

#### Course Outcomes and Learning Objectives:

### Course Outcome 1.

Upon successful completion of this course, the student will distinguish the various processes:

#### Learning Objectives 1.

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

### Course Outcome 2.

Upon successful completion of this course, the student will be able Explain The 5Ms of Manufacturing Systems:

#### Learning Objectives 2.

- Describe each of the 5M elements in manufacturing processes and how they interrelate in a total quality management system.
    - i. Man
    - ii. Material
    - iii. Machines
    - iv. Methods
    - v. Measurement
- Relationship to Quality Management System

### Course Outcome 3.

Upon successful completion of this course, the student will be able to describe the Steel Production processes:

#### Learning Objectives 3.

- 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
  - i. Cokemaking
  - ii. Ironmaking
  - iii. Steelmaking
  - iv. Casting
  - v. Hot Rolling

- vi. Pickling
- vii. Cold Rolling
- viii. Annealing
- Shipping

## Course Outcome 4.

Upon successful completion of this course, the student will be able to describe the Steel Manufacturing processes

## Learning Objectives 4.

- 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
- 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

**Date:**

Monday, April 23, 2018

Please refer to the course outline addendum on the Learning Management System for further information.