

SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY

SAULT STE. MARIE, ONTARIO



**SAULT
COLLEGE**

CICE COURSE OUTLINE

COURSE TITLE: Manufacturing Processes

CODE NO. : MCH244

SEMESTER: Winter

MODIFIED CODE: MCH0244

PROGRAM: Mechanical Engineering Technician – Manufacturing
Mechanical Techniques – Millwright
Mechanical Techniques – Machine Shop

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MODIFIED BY: Kim Jefferies, Learning Specialist CICE Program

DATE: Jan/2016

PREVIOUS OUTLINE DATED: 2015

APPROVED:

“Angelique Lemay”

Jan/2016

DEAN

DATE

TOTAL CREDITS: 4

PREREQUISITE(S): none

HOURS/WEEK: 3

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For additional information, please contact the Dean, School of Community Services Interdisciplinary Studies, Curriculum & Faculty Enrichment

(705) 759-2554, Ext. 2737

I. COURSE DESCRIPTION:

CICE students, with assistance from a Learning Specialist, will participate in a job planning course covering shop organization costing, routing and scheduling, various processes as to viability and methods including foundry processes, hard mould casting, die casting, plastics and rubbers, primary metal working, welding, forging and comparisons as to quality, economics and feasibility.

II. LEARNING OUTCOMES AND ELEMENTS OF THE PERFORMANCE:

Upon successful completion of this course, the CICE student, with the assistance of a Learning Specialist will demonstrate a basic ability to:

1. ProcessPotential Elements of the Performance:

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

2. The 5Ms of Manufacturing SystemsPotential 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 ProcessesPotential 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 ProcessesPotential 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:

Assignments, Class Participation and Homework - 40%

Tests - 60%

The following semester grades will be assigned to students:

Grade	Definition	<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.	

If a faculty member determines that a student is at risk of not being successful in their academic pursuits and has exhausted all strategies available to faculty, student contact information may be confidentially provided to Student Services in an effort to offer even more assistance with options for success. Any student wishing to restrict the sharing of such information should make their wishes known to the coordinator or faculty member.

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 Phone Use

Cell phones in the classroom are to be put on Silent or Vibrate during lectures, and labs.

Ringling or texting during class will result in a deduction of 5% from the final grade per event.

During Tests, Cell Phones are to be SHUT OFF and put away, and are not to be used as a calculator.

Should your phone ring during a test you will be asked to hand your test in and immediately leave the classroom.

A Grade of 0% will be issued for that test.

VII. COURSE OUTLINE ADDENDUM:

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

Addendum:

Further modifications may be required as needed as the semester progresses based on individual student(s) abilities and must be discussed with and agreed upon by the instructor.

CICE Modifications:**Preparation and Participation**

1. A Learning Specialist will attend class with the student(s) to assist with inclusion in the class and to take notes.
2. Students will receive support in and outside of the classroom (i.e. tutoring, assistance with homework and assignments, preparation for exams, tests and quizzes.)
3. Study notes will be geared to test content and style which will match with modified learning outcomes.
4. Although the Learning Specialist may not attend all classes with the student(s), support will always be available. When the Learning Specialist does attend classes he/she will remain as inconspicuous as possible.

A. Tests may be modified in the following ways:

1. Tests, which require essay answers, may be modified to short answers.
2. Short answer questions may be changed to multiple choice or the question may be simplified so the answer will reflect a basic understanding.
3. Tests, which use fill in the blank format, may be modified to include a few choices for each question, or a list of choices for all questions. This will allow the student to match or use visual clues.
4. Tests in the T/F or multiple choice format may be modified by rewording or clarifying statements into layman's or simplified terms. Multiple choice questions may have a reduced number of choices.

B. Tests will be written in CICE office with assistance from a Learning Specialist.***The Learning Specialist may:***

1. Read the test question to the student.
2. Paraphrase the test question without revealing any key words or definitions.
3. Transcribe the student's verbal answer.
4. Test length may be reduced and time allowed to complete test may be increased.

C. Assignments may be modified in the following ways:

1. Assignments may be modified by reducing the amount of information required while maintaining general concepts.
2. Some assignments may be eliminated depending on the number of assignments required in the particular course.

The Learning Specialist may:

1. Use a question/answer format instead of essay/research format
2. Propose a reduction in the number of references required for an assignment
3. Assist with groups to ensure that student comprehends his/her role within the group
4. Require an extension on due dates due to the fact that some students may require additional time to process information
5. Formally summarize articles and assigned readings to isolate main points for the student
6. Use questioning techniques and paraphrasing to assist in student comprehension of an assignment

D. Evaluation:

Is reflective of modified learning outcomes.