



**I. COURSE DESCRIPTION:**

In this course, the CICE student, with assistance from a Learning Specialist, will learn about the different applications, installation, maintenance and types of pumps, valves, piping, compressors and ancillary equipment.

**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 the basic ability to:

**1. *Discuss and demonstrate knowledge in various centrifugal type pumps.***

Potential Elements of the Performance:

- Principles of non-positive displacement type pumps
- Various types of centrifugal type pumps & components
- Types of seals used in centrifugal pumps
- Assignments related to centrifugal pumps
- Installation, start-up and safety requirements
- Maintenance requirements for centrifugal pumps

**2. *Discuss and demonstrate knowledge with Positive Displacement type pumps.***

Potential Elements of the Performance:

- Principles of positive displacement type pumps
- Compare positive and non-positive displacement pumps
- Discuss various types of positive displacement pumps
- Perform assignments related to positive displacement pumps
- Installation, start-up and safety requirements
- Maintenance requirements for positive displacement pumps

**3. *Discuss various types of conductors used in the trades. (Piping, tubing, hoses, fittings, etc.)***

Potential Elements of the Performance:

- Discuss various types of uses for conductors
- Discuss various materials and uses
- Discuss sizing, and theory requirements
- Discuss fittings and sealants used with conductors
- Demonstrate installation techniques with conductors/fittings
- Perform assignments related to conductors
- Discuss safety requirements related to conductors

**4. *Discuss various types of valves used in today's mechanical field.***

Potential Elements of the Performance:

- Discuss theory requirements with various valves
- Examine specific uses for various type valves
- Examine design qualities
- Discuss installation techniques
- Discuss specific sealants used with valves
- Discuss safety and lockouts for valves

**5. Discuss various types of compressors used in today**

Potential Elements of the Performance:

- Discuss relevant theory related to compressors
- Discuss the various types and uses of compressors ( reciprocating, rotary, screw, positive, dynamic or kinetic)
- Discuss Staging and Acting Compressors
- Discuss compressor components and uses
- Discuss safety and maintenance of compressors
- Discuss troubleshooting

**III. TOPICS:**

1. Centrifugal ( non-positive displacement ) pumps
2. Positive displacement pumps
3. Conductors ( pipe, tube, hose, fittings, sealants )
4. Various Valves
5. Compressors

**IV. REQUIRED RESOURCES/TEXTS/MATERIALS:**

**Millwright Manual, Personal notes, Computer Access, Safety Wear**

**V. EVALUATION PROCESS/GRADING SYSTEM:**

- Tests ..... 40%
- Assignments..... 40%
- Final Exam 10%
- Work performance 10% ( *Will be explained in detail in class*)

***Note: 1% is deducted from final mark for every inexcusable hour missed from class ( will be discussed in first class )***

The following semester grades will be assigned to students in postsecondary courses:

<b>Grade</b>	<b><u>Definition</u></b>	<b><i>Grade Point Equivalent</i></b>
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.

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 enclosed, 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.

### **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.