

SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY

SAULT STE. MARIE, ONTARIO



**SAULT
COLLEGE**

COURSE OUTLINE

COURSE TITLE:	PUMPS, VALVES, PIPING, COMPRESSORS		
CODE NO. :	MCH142	SEMESTER:	TWO
PROGRAM:	Mechanical Engineering Programs		
AUTHOR:	Cam Pucci – cam.pucci@saultcollege.ca		
DATE:	Jan 2017	PREVIOUS OUTLINE DATED:	January 2016
APPROVED:	<i>“Corey Meunier”</i> CHAIR		April 2017 DATE
TOTAL CREDITS:	3		
PREREQUISITE(S):	N/A		
HOURS/WEEK:	3		

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

I. COURSE DESCRIPTION:

In this course, the student will learn about the different applications, installation, maintenance and types of pumps, valves, piping, compressors and ancillary equipment. Along with class instruction, knowledge will be gained through theory and practical assignments.

II. LEARNING OUTCOMES AND ELEMENTS OF THE PERFORMANCE:

Upon successful completion of this course, the student will demonstrate the 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 todayPotential 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..... 35%
- Final Exam 10%
- Work performance 15% (12/15) **see special notes** (*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:

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