COURSE OUTLINE: MCH142 - PUMPS VALVES PIPING

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Course Code: Title	MCH142: PUMPS, VALVES, PIPING AND COMPRESSORS
Program Number: Name	4039: MECH. ENG. TN-MANUFA 4040: MACHINE SHOP 5082: MECH.TECH.IND.MAINT.
Department:	MECHANICAL TECHNIQUES PS
Academic Year:	2024-2025
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.
Total Credits:	3
Hours/Week:	3
Total Hours:	42
Prerequisites:	There are no pre-requisites for this course.
Corequisites:	There are no co-requisites for this course.
Vocational Learning Outcomes (VLO's) addressed in this course: **Please refer to program web page for a complete listing of program outcomes where applicable.**	**4039 - MECH. ENG. TN-MANUFA** VLO 1 Complete all work in compliance with current legislation, standards, regulations and guidelines. VLO 3 Comply with current health and safety legislation, as well as organizational practices and procedures. VLO 4 Apply sustainability best practices in workplaces. VLO 7 Interpret, prepare and modify mechanical engineering drawings and other related technical documents. VLO 8 Contribute to the design and the analysis of mechanical components, processes and systems applying fundamentals of mechanical engineering. VLO 9 Manufacture, assemble, maintain and repair mechanical components according to required specifications. **4040 - MACHINE SHOP** VLO 1 Complete all work in compliance with current legislation, standards, regulations and guidelines. VLO 2 Contribute to the application of quality control and quality assurance procedures to meet organizational standards and requirements. VLO 3 Comply with current health and safety legislation, as well as organizational practices and procedures. VLO 4 Support sustainability best practices in workplaces. VLO 5 Use current and emerging technologies to support the implementation of mechanical

	and manufacturing projects.
	VLO 6 Troubleshoot and solve standard mechanical problems by applying mathematics and fundamentals of mechanics.
	VLO 7 Contribute to the interpretation and preparation of mechanical drawings and other related technical documents.
	VLO 8 Perform routine technical measurements accurately using appropriate instruments and equipment.
	VLO 9 Assist in manufacturing, assembling, maintaining and repairing mechanical components according to required specifications.
	VLO 10 Select, use and maintain machinery, tools and equipment for the installation, manufacturing and repair of basic mechanical components.
	5082 - MECH.TECH.IND.MAINT.
	VLO 1 Complete all work in compliance with current legislation, standards, regulations and guidelines.
	VLO 2 Contribute to the application of quality control and quality assurance procedures to meet organizational standards and requirements.
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	VLO 10 Select, use and maintain machinery, tools and equipment for the installation, manufacturing and repair of basic mechanical components.
Essential Employability Skills (EES) addressed in this course:	EES 2 Respond to written, spoken, or visual messages in a manner that ensures effective communication.
	EES 4 Apply a systematic approach to solve problems.
	EES 5 Use a variety of thinking skills to anticipate and solve problems.
	EES 6 Locate, select, organize, and document information using appropriate technology and information systems.
	EES 7 Analyze, evaluate, and apply relevant information from a variety of sources.
	EES 8 Show respect for the diverse opinions, values, belief systems, and contributions of others.
	EES 9 Interact with others in groups or teams that contribute to effective working relationships and the achievement of goals.

	EES 10 Manage the use of time and other resources to complete projects. EES 11 Take responsibility for ones own actions, decisions, and consequences.
Course Evaluation:	Passing Grade: 50%, D A minimum program GPA of 2.0 or higher where program specific standards exist is required for graduation.
Other Course Evaluation & Assessment Requirements:	Make Up Tests if needed. 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.
Books and Required Resources:	Millwright Manual Publisher: Queen`s Printer Government Publication Services Edition: 2nd ISBN: 0-7718-9473-2 Paper Calculator Safety Equipment Millwright Manual Study Guide by Ronald A. Fournie Publisher: Ministry of Finance ISBN: 7960003066

Course Outcomes and Learning Objectives:

Course Outcome 1	Learning Objectives for Course Outcome 1
1. Discuss and demonstrate knowledge in various centrifugal type pumps.	1.1 Principles of non-positive displacement type pumps 1.2 Various types of centrifugal type pumps & components 1.3 Types of seals used in centrifugal pumps 1.4 Assignments related to centrifugal pumps 1.5 Installation, start-up and safety requirements 1.6 Maintenance requirements for centrifugal pumps
Course Outcome 2	**Learning Objectives for Course Outcome 2**
2. Discuss and demonstrate knowledge with Positive Displacement type pumps.	2.1 Principles of positive displacement type pumps 2.2 Compare positive and non-positive displacement pumps 2.3 Discuss various types of positive displacement pumps 2.4 Perform assignments related to positive displacement pumps 2.5 Installation, start-up and safety requirements

	2.6 Maintenance requirements for positive displacement pumps
Course Outcome 3	**Learning Objectives for Course Outcome 3**
3. Discuss various types of conductors used in the trades. (Piping, tubing, hoses, fittings, ect.)	3.1 Discuss various types of uses for conductors 3.2 Discuss various materials and uses 3.3 Discuss sizing, and theory requirements 3.4 Discuss fittings and sealants used with conductors 3.5 Demonstrate installation techniques with conductors/fittings 3.6 Perform assignments related to conductors 3.7 Discuss safety requirements related to conductors
Course Outcome 4	**Learning Objectives for Course Outcome 4**
4. Discuss various types of valves used in today`s mechanical field.	4.1 Discuss theory requirements with various valves 4.2 Examine specific uses for various type valves 4.3 Examine design qualities 4.4 Discuss installation techniques 4.5 Discuss specific sealants used with valves 4.6 Discuss safety and lockouts for valves
Course Outcome 5	**Learning Objectives for Course Outcome 5**
5. Discuss various types of compressors used in today`s mechanical field.	5.1 Discuss relevant theory related to compressors 5.2 Discuss the various types and uses of compressors (reciprocating, rotary, screw, positive, dynamic or kinetic) 5.3 Discuss Staging and Acting Compressors 5.4 Discuss compressor components and uses 5.5 Discuss safety and maintenance of compressors 5.6 Discuss troubleshooting

Evaluation Process and Grading System:

Evaluation Type	Evaluation Weight
Final Exam	10%
Student Performance	10%
Term Assignments	40%
Term Tests	40%

Date: August 19, 2024

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