

COURSE OUTLINE

MCH254



Prepared: Cam Pucci Approved: Corey Meunier

Course Code: Title	MCH254: PREVENTIVE/PREDICTIVE MAINTENANCE
Program Number: Name	4039: MECH. ENG. TN-MANUFA
Department:	MECHANICAL TECHNIQUES PS
Semester/Term:	18W
Course Description:	The student will learn about the various procedures and equipment used as well as processes associated with a preventive /predictive maintenance program. Other forms of maintenance programs currently being used will also be examined. Topics include the various approaches to maintenance, vibration and analysis, fluid analysis and filtering. The student will design and carry out actual maintenance programs on various mechanical equipment using practical labs and a hands on approach.
Total Credits:	2
Hours/Week:	2
Total Hours:	0
Vocational Learning Outcomes (VLO's): Please refer to program web page for a complete listing of program outcomes where applicable.	4039 - MECH. ENG. TN-MANUFA #1. Complete all work in compliance with current legislation, standards, regulations and guidelines. #3. Comply with current health and safety legislation, as well as organizational practices and procedures. #5. Use current and emerging technologies to support the implementation of mechanical engineering projects. #8. Contribute to the design and the analysis of mechanical components, processes and systems applying fundamentals of mechanical engineering. #9. Manufacture, assemble, maintain and repair mechanical components according to required specifications. #11. Contribute to the planning, implementation and evaluation of projects.
Essential Employability Skills (EES):	#1. Communicate clearly, concisely and correctly in the written, spoken, and visual form that fulfills the purpose and meets the needs of the audience. #4. Apply a systematic approach to solve problems. #5. Use a variety of thinking skills to anticipate and solve problems. #6. Locate, select, organize, and document information using appropriate technology and information systems. #7. Analyze, evaluate, and apply relevant information from a variety of sources.

	<p>#9. Interact with others in groups or teams that contribute to effective working relationships and the achievement of goals.</p> <p>#10. Manage the use of time and other resources to complete projects.</p>										
Course Evaluation:	Passing Grade: 50%, D										
Other Course Evaluation & Assessment Requirements:	<p>Assignments, Lab work, Attendance</p> <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>										
Evaluation Process and Grading System:	<table border="1"> <thead> <tr> <th>Evaluation Type</th> <th>Evaluation Weight</th> </tr> </thead> <tbody> <tr> <td>Activities and Assignments</td> <td>40%</td> </tr> <tr> <td>Attendance/Attitude</td> <td>10%</td> </tr> <tr> <td>Final Exam or Final Assignment</td> <td>10%</td> </tr> <tr> <td>Tests</td> <td>40%</td> </tr> </tbody> </table>	Evaluation Type	Evaluation Weight	Activities and Assignments	40%	Attendance/Attitude	10%	Final Exam or Final Assignment	10%	Tests	40%
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Books and Required Resources:	<p>Millwright Manual by Province of British Columbia ISBN: 0771894732 Hand outs</p>										
Course Outcomes and Learning Objectives:	<p>Course Outcome 1.</p> <p>Understand and explain Breakdown Maintenance</p> <p>Learning Objectives 1.</p> <ul style="list-style-type: none"> • Discuss the history of breakdown maintenance • Explain the disadvantages of breakdown maintenance • Understand catastrophic failures and their consequences to production • Understand the cost associated with breakdown maintenance • Explain why breakdown maintenance is used <p>Course Outcome 2.</p> <p>Understand and explain Preventative Maintenance</p>										

Learning Objectives 2.

- Discuss the history of preventative maintenance
 - Explain the advantages of preventative maintenance
 - Discuss cost savings to production using preventative maintenance
 - Understand the importance of proper planning
 - Understand problems associated with Preventative Maintenance
 - Understand the importance of using equipment files and record keeping
 - Understand the importance of training workers to use preventative maintenance practices properly
 - Understanding the importance of having trained skilled trades people
- . Design a preventative maintenance work order and carry it out using various equipment and technical tools

Course Outcome 3.

Understand and explain Predictive Maintenance

Learning Objectives 3.

- Discuss the history of Predictive Maintenance
 - Discuss the advantages of Predictive Maintenance
 - Explain and understand what “prediction” means in maintenance
 - Explain the process of designing a Predictive Maintenance system
- . Design a Predictive Maintenance work order and carry it out on equipment using various technical tools

Course Outcome 4.

Understand and explain Proactive Maintenance

Learning Objectives 4.

- Discuss the make up of a good Proactive Maintenance System
 - Discuss various equipment used in Proactive Maintenance
 - Discuss monitoring techniques used by production and maintenance
 - Discuss root causes of failures in machinery
- . Carry out assignments to enforce this learning

Course Outcome 5.

Explain and understand other maintenance systems

Learning Objectives 5.

- Discuss total productive maintenance
- Discuss preventive engineering
- Discuss reliability engineering
- Discuss productive maintenance

Course Outcome 6.

Discuss Vibration Analysis and Balancing and perform labs

Learning Objectives 6.

- Discuss and understand vibration in machinery
 - Explain terminology terms used
 - Discuss the cause of vibration
 - Discuss the tools used to determine excessive vibration
 - Discuss control methods of vibration and equipment used
 - Discuss the problems associated with excessive vibration
 - Discuss balancing procedures
- . Perform vibration lab

Course Outcome 7.

Discuss various types of inspections used on components. Perform inspections on equipment.

Learning Objectives 7.

- Discuss visual inspections
 - Discuss types of dyes used and precautions
 - Discuss Magnetic Particle Inspection
 - Discuss Current inspection
 - Discuss Ultrasonic Inspection
 - Discuss Radiographic Inspection
 - Discuss contamination control
 - Discuss Particle Analysis
- . Perform NDT labs as assigned

Course Outcome 8.

Explain and understand Laser Alignment Equipment

Learning Objectives 8.

Explain the use of laser alignment equipment
Discuss the advantages of using modern alignment techniques
Discuss the problems associated with Alignment procedures
Perform Alignment Labs on equipment

Date:

Monday, December 18, 2017

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