



COURSE OUTLINE: MCH257 - MACHINE TECHNOLOGY

Prepared: Howard Gray

Approved: Corey Meunier, Chair, Technology and Skilled Trades

Course Code: Title	MCH257: MACHINE TECHNOLOGY	
Program Number: Name	4039: MECH. ENG. TN-MANUFA	
Department:	MECHANICAL TECHNIQUES PS	
Semesters/Terms:	19W	
Course Description:	This course will deal with Material Handling Systems, Prime Movers Pollution control and Wind power generation. Specific Materials Handling topics covered will include, belt, bucket, screw, pneumatic, roller, chain, apron, slurry, and food handling conveyors. Specific Prime Mover topics will include various combustion engines, Gas and steam turbines, with mention to fans, blowers and electric motors. Specific pollution control will include Treatment systems for Water and Air, collectors and precipitators. Specific Wind energy topics include a breakdown of each component required to produce energy using a wind turbine. Students will be required to write reports on assignments and develop assigned topics for presentation	
Total Credits:	3	
Hours/Week:	3	
Total Hours:	45	
Prerequisites:	There are no pre-requisites for this course.	
Corequisites:	There are no co-requisites for this course.	
Course Evaluation:	Passing Grade: 50%, D	
Other Course Evaluation & Assessment Requirements:	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 W Student has withdrawn from the course without academic penalty.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 by British Columbia Publisher: Queens Printer Edition: 2nd ISBN: 0-7718-9473-2	
Course Outcomes and Learning Objectives:	Course Outcome 1	Learning Objectives for Course Outcome 1



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1. Select a Belt Conveyor for the correct application.	Potential Elements of the Performance: 1.1 Apply various types of belts used for conveyors 1.2 Apply belt repair practices commonly used 1.3 Classify various parts and accessories of a conveyor system 1.4 Select the correct style of Belt take-up to be used 1.5 Explore the various Drive styles used 1.6 Document belt inspections, maintenance and other repairs
Course Outcome 2	Learning Objectives for Course Outcome 2
2. Select a Bucket, Screw or Roller systems	Potential Elements of the Performance: 2.1 Identify the various types of bucket elevators used 2.2 Identify the bucket elevator components 2.3 Identify the various Screw conveyor components 2.4 Explore drive assemblies and shaft couplings for conveyors 2.5 Identify screw conveyor designations 2.6 Explain gravity roller conveyors 2.7 Explain live roller conveyors 2.8 Classify roller conveyor components
Course Outcome 3	Learning Objectives for Course Outcome 3
3. Select Pneumatic conveyors(including fans and blowers)	Potential Elements of the Performance: 3.1 Identify the different vacuum conveying systems 3.2 Explain Low, Medium and High Pressure conveying systems 3.3 Compare combination vacuum-pressure conveyor systems 3.4 Explain air-slide gravity conveying systems 3.5 Classify centrifugal blowers and fans
Course Outcome 4	Learning Objectives for Course Outcome 4
4. Explain Apron feeders	Potential Elements of the Performance: 4.1 Classify apron conveyors with various types of supports 4.2 Explain buckets for apron conveyors 4.3 Explain chain for apron conveyors
Course Outcome 5	Learning Objectives for Course Outcome 5
5. Select Chain and Chain conveyors.	Potential Elements of the Performance: 5.1 Identify Flight and Drag conveyors 5.2 Explain the different Rivets and their uses 5.3 Explain transfer tables
Course Outcome 6	Learning Objectives for Course Outcome 6
6. Classify food handling conveyors	Potential Elements of the Performance: 6.1 Identify belting used for food handling 6.2 Identify Sprockets, Chain, Bearings, for food handling conveyors 6.3 Explain various other types of conveyors in food handling
Course Outcome 7	Learning Objectives for Course Outcome 7
7. Analyze Internal combustion engines	Potential Elements of the Performance: 7.1 Identify Diesel, Gas and High-compression engines 7.2 Explain Four-stroke engine design 7.3 Explain Two-stroke engine design 7.4 Explore the thermodynamic cycles 7.5 Apply maintenance procedures to each style of engine



	Course Outcome 8	Learning Objectives for Course Outcome 8									
	8. Classify AC and DC motors	Potential Elements of the Performance: 8.1 Identify major motor components 8.2 Explain AC motors 8.3 Explain single and three phase 8.4 Explain DC motors 8.5 Classify various windings									
	Course Outcome 9	Learning Objectives for Course Outcome 9									
	9. Explore Steam turbines and their uses in industry, their components and principles of operation.	Potential Elements of the Performance: 9.1 Explain principle of operation 9.2 Identify various Castings and flows 9.3 Explain back-pressure, and condensing turbines 9.4 Identify and explain each functioning component 9.5 Recognize thermodynamic principles across the turbine 9.6 Analyze the need for the Pre-start up procedure									
	Course Outcome 10	Learning Objectives for Course Outcome 10									
	10. Explore Gas turbines and their uses in industry, their components and principles of operation.	Potential Elements of the Performance: 10.1 Explain principles of operation 10.2 Identify various types of gas turbines 10.3 Identify each component, control style and auxiliary system 10.4 Analyze the need for the Pre-start up procedure									
Evaluation Process and Grading System:	Course Outcome 11	Learning Objectives for Course Outcome 11									
	11. Identify the correct type of Ventilation or Pollution Control system for use in industry	Potential Elements of the Performance: 11.1 Classify treatment systems for Water 11.2 Classify treatment systems for Air 11.3 Explain Cyclone principles 11.4 Explain Collectors and their differences 11.5 Explain Precipitators and their differences									
	Course Outcome 12	Learning Objectives for Course Outcome 12									
	12. Identify major components and Explain operating principles for a wind energy turbine.	Potential Elements of the Performance: 12.1 Identify and explain each functioning component 12.2 Explain principle of operation 12.3 Explain electrical power generation from a wind turbine 12.4 Apply maintenance procedures to each style of turbine									
<table border="1"> <thead> <tr> <th>Evaluation Type</th><th>Evaluation Weight</th><th>Course Outcome Assessed</th></tr> </thead> <tbody> <tr> <td>Attendance</td><td>20%</td><td></td></tr> <tr> <td>Tests (4)</td><td>80%</td><td></td></tr> </tbody> </table>			Evaluation Type	Evaluation Weight	Course Outcome Assessed	Attendance	20%		Tests (4)	80%	
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Date:	August 28, 2018										
	Please refer to the course outline addendum on the Learning Management System for further information.										

