COURSE OUTLINE

MCH257

Prepared: Howard Gray   Approved: Corey Meunier

Course Code: Title	MCH257: MACHINE TECHNOLOGY
Program Number: Name	4039: MECH. ENG. TN-MANUFA
Department:	MECHANICAL TECHNIQUES PS
Semester/Term:	18W
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
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 W Student has withdrawn from the course without academic penalty.

Evaluation Process and Grading System:	Evaluation Type	Evaluation Weight
	Attendance	20%
	Tests (4)	80%

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.

Upon successful completion of this course, the student will demonstrate the ability to:

Learning Objectives 1.

Select a Belt Conveyor for the correct application.

Potential Elements of the Performance:
- Apply various types of belts used for conveyors
- Apply belt repair practices commonly used
- Classify various parts and accessories of a conveyor system
- Select the correct style of Belt take-up to be used
- Explore the various Drive styles used
- Document belt inspections, maintenance and other repairs

Course Outcome 2.

Upon successful completion of this course, the student will demonstrate the ability to:

Learning Objectives 2.

Select a Bucket, Screw or Roller systems

Potential Elements of the Performance:
- Identify the various types of bucket elevators used
- Identify the bucket elevator components
- Identify the various Screw conveyor components
- Explore drive assemblies and shaft couplings for conveyors
- Identify screw conveyor designations
- Explain gravity roller conveyors
- Explain live roller conveyors
- Classify roller conveyor components

Course Outcome 3.

Upon successful completion of this course, the student will demonstrate the ability to:

Learning Objectives 3.

Select Pneumatic conveyors(including fans and blowers)

Potential Elements of the Performance:
- Identify the different vacuum conveying systems
- Explain Low, Medium and High Pressure conveying systems
- Compare combination vacuum-pressure conveyor systems
- Explain air-slide gravity conveying systems
- Classify centrifugal blowers and fans

Course Outcome 4.

Upon successful completion of this course, the student will demonstrate the ability to:

Learning Objectives 4.

Explain Apron feeders

Potential Elements of the Performance:
- Classify apron conveyors with various types of supports
- Explain buckets for apron conveyors
- Explain chain for apron conveyors

Course Outcome 5.

Upon successful completion of this course, the student will demonstrate the ability to:

Learning Objectives 5.

Select Chain and Chain conveyors.

Potential Elements of the Performance:
- Identify Flight and Drag conveyors
- Explain the different Rivets and their uses
- Explain transfer tables

Course Outcome 6.

Upon successful completion of this course, the student will demonstrate the ability to:

Learning Objectives 6.

Classify food handling conveyors

Potential Elements of the Performance:
- Identify belting used for food handling
- Identify Sprockets, Chain, Bearings, for food handling conveyors
- Explain various other types of conveyors in food handling

Course Outcome 7.

Upon successful completion of this course, the student will demonstrate the ability to:

Learning Objectives 7.

Analyze Internal combustion engines

Potential Elements of the Performance:
- Identify Diesel, Gas and High-compression engines
- Explain Four-stroke engine design
- Explain Two-stroke engine design
- Explore the thermodynamic cycles
- Apply maintenance procedures to each style of engine

Course Outcome 8.

Upon successful completion of this course, the student will demonstrate the ability to:

Learning Objectives 8.

Classify AC and DC motors

Potential Elements of the Performance:
- Identify major motor components
- Explain AC motors
- Explain single and three phase
- Explain DC motors
- Classify various windings

Course Outcome 9.

Upon successful completion of this course, the student will demonstrate the ability to:

Learning Objectives 9.

Explore Steam turbines and their uses in industry, their components and principles of operation.

Potential Elements of the Performance:
- Explain principle of operation
- Identify various Castings and flows
- Explain back-pressure, and condensing turbines
- Identify and explain each functioning component
- Recognize thermodynamic principles across the turbine
- Analyze the need for the Pre-start up procedure

Course Outcome 10.

Upon successful completion of this course, the student will demonstrate the ability to:

Learning Objectives 10.

Explore Gas turbines and their uses in industry, their components and principles of operation.

Potential Elements of the Performance:

- Explain principles of operation
- Identify various types of gas turbines
- Identify each component, control style and auxiliary system
- Analyze the need for the Pre-start up procedure

Course Outcome 11.

Upon successful completion of this course, the student will demonstrate the ability to:

Learning Objectives 11.

Identify the correct type of Ventilation or Pollution Control system for use in industry

Potential Elements of the Performance:
- Classify treatment systems for Water
- Classify treatment systems for Air
- Explain Cyclone principles
- Explain Collectors and their differences
- Explain Precipitators and their differences

Course Outcome 12.

Upon successful completion of this course, the student will demonstrate the ability to:

Learning Objectives 12.

Identify major components and Explain operating principles for a wind energy turbine.

Potential Elements of the Performance:
- Identify and explain each functioning component
- Explain principle of operation
- Explain electrical power generation from a wind turbine
- Apply maintenance procedures to each style of turbine

Date: Monday, December 18, 2017

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