

SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY

SAULT STE. MARIE, ONTARIO



Sault College

COURSE OUTLINE

COURSE TITLE: MACHINE TECHNOLOGY

CODE NO. : MCH 257 **SEMESTER:** 2

PROGRAM: MECHANICAL PROGRAMS

AUTHOR: Dominic Valela

DATE: Jan/ 07 **PREVIOUS OUTLINE DATED:** n/a

APPROVED:

DEAN

DATE

TOTAL CREDITS: 3

PREREQUISITE(S):

HOURS/WEEK: 3

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*For additional information, please contact Colin Kirkwood, Dean
School of Technology, Skilled Trades, Natural Resources & Business
(705) 759-2554, Ext. 2688*

I. COURSE DESCRIPTION:

This course will deal with Material Handling Systems and Prime Movers. 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, turbines, with mention to fans, blowers and electric motors. Students will be required to develop assignments on assigned topics for presentation.

II. LEARNING OUTCOMES AND ELEMENTS OF THE PERFORMANCE:

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

1. Discuss Belt Conveyors.
Potential Elements of the Performance:
 - Various types of belts used for conveyors
 - Types of belt repair commonly used
 - Various parts and accessories of a conveyor system
 - Belt take-up used
 - Drive styles used
 - Belt inspections, maintenance and other repairs
2. Discuss Bucket elevators.
Potential Elements of the Performance:
 - Types of bucket elevators used
 - Bucket elevator components
3. Discuss screw conveyors.
Potential Elements of the Performance:
 - Screw conveyor components
 - Drive assemblies and shaft couplings for screw conveyors
 - Screw conveyor designations
4. Discuss Pneumatic conveyors(including fans and blowers)
Potential Elements of the Performance:
 - Vacuum conveying systems
 - Low, Medium and High Pressure conveying systems
 - Combination vacuum-pressure conveyor systems
 - Air-slide gravity conveying systems
 - Centrifugal blowers and fans
5. Discuss Roller conveyors.
Potential Elements of the Performance:
 - Gravity roller conveyors
 - Live roller conveyors
 - Roller conveyor components
6. Discuss Apron feeders and conveyors.

Potential Elements of the Performance:

- Apron conveyors with various types of supports
- Buckets for apron conveyors
- Chain for apron conveyors

7. Discuss Chain and Chain conveyors_

Potential Elements of the Performance:

- Flight and Drag conveyors
- Rivets
- Transfer tables

8. Discuss Slurry systems

Potential Elements of the Performance:

- Slurry, hoses and pipe

9. Discuss handling conveyors

Potential Elements of the Performance

- Types of belting for food handling
- Sprockets, Chain, Bearings, for food handling conveyors
- Belt carry-ways, conveyor beds
- Belt sag, take-up, and returns
- Various other types of conveyors in food handling

10. Discuss Internal combustion engines

11. Potential Elements of the Performance

- Diesel, Gas, High-compression, engines
- Four-stroke engine design
- Two-stroke engine design
- Preventive-maintenance

12. Discuss Steam turbines

Potential Elements of the Performance:

- Definition, construction, and principles of operation
- Casting and flow
- Back-pressure, and condensing turbines
- Steam engine functioning components
- Pre-start up system

13. Discuss Gas turbines

Potential Elements of the Performance:

- Principles of operation
- Types of gas turbines
- Components, controls, auxiliary systems
- Pre-start up for gas turbines

III. TOPICS:

1. Belt conveyors
2. Bucket conveyors
3. Screw conveyors
4. Pneumatic conveyors
5. Roller conveyors
6. Apron feeders and conveyors
7. Chain and Chain conveyors
8. Slurry systems
9. Handling conveyors
10. Food handling systems
11. Internal combustion engines
12. Steam turbines
13. Gas turbines

IV. REQUIRED RESOURCES/TEXTS/MATERIALS:

Millwright Manual, Computer Access, Other research materials

V. EVALUATION PROCESS/GRADING SYSTEM:

Tests- 40%

Assignments- 40%

Final Exam/Student personal performance-20%

All assignments and materials handed in must be in proper format (as per reports) and typed.

The following semester grades will be assigned to students in postsecondary courses:

| Grade | Definition | Grade Point Equivalent |
|--------------|--|-------------------------------|
| A+ | 90 – 100% | 4.00 |
| A | 80 – 89% | 3.00 |
| B | 70 - 79% | 2.00 |
| C | 60 - 69% | 1.00 |
| D | 50 – 59% | 0.00 |
| F (Fail) | 49% and below | |
| 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:

Special Needs:

If you are a student with special needs (e.g. physical limitations, visual impairments, hearing impairments, or learning disabilities), you are encouraged to discuss required accommodations with your professor and/or the Special Needs office. Visit Room E1101 or call Extension 2703 so that support services can be arranged for you.

Retention of Course Outlines:

It is the responsibility of the student to retain all course outlines for possible future use in acquiring advanced standing at other postsecondary institutions.

Plagiarism:

Students should refer to the definition of “academic dishonesty” in *Student Rights and Responsibilities*. Students who engage in “academic dishonesty” will receive an automatic failure for that submission and/or such other penalty, up to and including expulsion from the course/program, as may be decided by the professor/dean. In order to protect students from inadvertent plagiarism, to protect the copyright of the material referenced, and to credit the author of the material, it is the policy of the department to employ a documentation format for referencing source material.

Course Outline Amendments:

The professor reserves the right to change the information contained in this course outline depending on the needs of the learner and the availability of resources.

Substitute course information is available in the Registrar's office.

<include any other special notes appropriate to your course>

VII. PRIOR LEARNING ASSESSMENT:

Students who wish to apply for advanced credit in the course should consult the professor. Credit for prior learning will be given upon successful completion of a challenge exam or portfolio.

VIII. DIRECT CREDIT TRANSFERS:

Students who wish to apply for direct credit transfer (advanced standing) should obtain a direct credit transfer form from the Dean's secretary. Students will be required to provide a transcript and course outline related to the course in question.