SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY

SAULT STE. MARIE, ONTARIO

COURSE OUTLINE

COURSE TITLE:	MACHINE TECHNOLOGY		
CODE NO. :	MCH 257	**SEMESTER:**	TWO
PROGRAM:	MECHANICAL PROGRAMS		
AUTHOR:	Howard Gray		
DATE:	JAN 2010	**PREVIOUS OUTLINE DATED:**	JAN 2009
APPROVED:	*"Corey Meunier"*		
	CHAIR		**DATE**
TOTAL CREDITS:	3		
PREREQUISITE(S):	NONE		
HOURS/WEEK:	3		

I.   COURSE DESCRIPTION:
This course will deal with Material Handling Systems, Prime Movers and Pollution control. 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. Students will be required to write reports on assignments and develop 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:
- Describe various types of belts used for conveyors
- Explain belt repair practices commonly used
- Identify various parts and accessories of a conveyor system
- Identify the various Belt take-ups used
- Identify the various Drive styles used
- Explain belt inspections, maintenance and other repairs

2.   Discuss Bucket, Screw and Roller systems

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

3.   Discuss Pneumatic conveyors(including fans and blowers)

Potential Elements of the Performance:
- Identify the different vacuum conveying systems

- Describe Low, Medium and High Pressure conveying systems
- Compare combination vacuum-pressure conveyor systems
- Explain air-slide gravity conveying systems
- Describe centrifugal blowers and fans

4. *Explain Apron feeders*

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

5. *Discuss Chain and Chain conveyors.*

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

6. *Discuss food handling conveyors*

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

7. *Explain 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
- Discuss maintenance procedures

8. *Discuss AC and DC motors*

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

- Describe various windings

9. Discuss Steam turbines

Potential Elements of the Performance:
- Describe definition, construction, and principles of operation
- Identify various Castings and flows
- Explain back-pressure, and condensing turbines
- Identify functioning components
- Explain Pre-start up system

10. Discuss Gas turbines

Potential Elements of the Performance:
- Explain principles of operation
- Identify types of gas turbines
- Describe each components, control and auxiliary systems
- Explain Pre-start up for gas turbines

11. Discuss Ventilation and Pollution Control

Potential Elements of the Performance:
- Describe treatment systems for Water
- Describe treatment systems for Air
- Explain Cyclones
- Explain Collectors
- Explain Precipitators

III. TOPICS:

1. Belt conveyors
2. Bucket , Screw and Roller systems
3. Pneumatic conveyors
4. Apron feeders
5. Chain and Chain conveyors
6. Food handling systems
7. Internal combustion engines
8. AC and DC motors
9. Steam turbines
10. Gas turbines
11. Ventilation and Pollution Control

IV.   REQUIRED RESOURCES/TEXTS/MATERIALS:
       Millwright Manual, Computer Access, Other research materials

V.   EVALUATION PROCESS/GRADING SYSTEM:
       Assignments-   90%
       Attendance-   10% (13/15)
       All assignments and materials handed in must be in proper format (as per reports template) and typed.

       The following semester grades will be assigned to students:

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.

VI. SPECIAL NOTES:

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.

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.

Prior Learning Assessment**:**
Students who wish to apply for advance credit transfer (advanced standing) should obtain an Application for Advance Credit from the program coordinator (or the course coordinator regarding a general education transfer request) or academic assistant. Students will be required to provide an unofficial transcript and course outline related to the course in question. Please refer to the Student Academic Calendar of Events for the deadline date by which application must be made for advance standing.

Credit for prior learning will also be given upon successful completion of a challenge exam or portfolio.

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

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

Communication:
The College considers *WebCT/LMS* as the primary channel of communication for each course. Regularly checking this software platform is critical as it will keep you directly connected with faculty and current course information. Success in this course may be directly related to your willingness to take advantage of the *Learning Management System* communication tool.

Plagiarism:
Students should refer to the definition of "academic dishonesty" in *Student Code of Conduct*. A professor/instructor may assign a sanction as defined below, or make recommendations to the Academic Chair for disposition of the matter. The professor/instructor may (i) issue a verbal reprimand, (ii) make an assignment of a lower grade with explanation, (iii) require additional academic assignments and issue a lower grade upon completion to the maximum grade "C", (iv) make an automatic assignment of a failing grade, (v) recommend to the Chair dismissal from the course with the assignment of a failing grade. 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.

Student Portal:
The Sault College portal allows you to view all your student information in one place. **mysaultcollege** gives you personalized access to online resources seven days a week from your home or school computer. Single log-in access allows you to see your personal and financial information, timetable, grades, records of achievement, unofficial transcript, and outstanding obligations. Announcements, news, the academic calendar of events, class cancellations, your learning management system (LMS), and much more are also accessible through the student portal. Go to https://my.saultcollege.ca.

Electronic Devices in the Classroom:
Students who wish to use electronic devices in the classroom will seek permission of the faculty member before proceeding to record instruction. With the exception of issues related to accommodations of disability, the decision to approve or refuse the request is the responsibility of the faculty member. Recorded classroom instruction will be used only for personal use and will not be used for any other purpose. Recorded classroom instruction will be destroyed at the end of the course. To ensure this, the student is required to return all copies of recorded material to the faculty member by the last day of class in the semester. Where the use of an electronic device has been approved, the student agrees that materials recorded are for his/her use only, are not for distribution, and are the sole property of the College.

Attendance:
Sault College is committed to student success. There is a direct correlation between academic performance and class attendance; therefore, for the benefit of all its constituents, all students are encouraged to attend all of their scheduled learning and evaluation sessions. This implies arriving on time and remaining for the duration of the scheduled session.