

SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY

SAULT STE. MARIE, ONTARIO



Sault College

COURSE OUTLINE

COURSE TITLE: POWER TRANSMISSION

CODE NO. : MCH141 **SEMESTER:** 2

PROGRAM: MECHANICAL PROGRAMS

AUTHOR: Howard Gray

DATE: Jan/ 08 **PREVIOUS OUTLINE DATED:** Jan/ 07

APPROVED:

CHAIR

DATE

TOTAL CREDITS:

PREREQUISITE(S): n/a

HOURS/WEEK: 3

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*For additional information, please contact Corey Meunier, Chair
School of the Natural Environment, Technology and Skilled Trades
(705) 759-2554, Ext. 2610*

I. COURSE DESCRIPTION: This course is designed to give the student the knowledge needed in dealing with various drive systems. The course will include Chain, Belt, and Gear drives. Discussions will include theory, design, maintenance and troubleshooting. Drives for these systems as well as accessories such as couplings and clutches will be discussed. The course includes practical assignments as well.

II. LEARNING OUTCOMES AND ELEMENTS OF THE PERFORMANCE:

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

1. Discuss and demonstrate Belt Drive Systems theory
Potential Elements of the Performance:
 - Calculate Area of Contact
 - Discuss materials of belts and pulleys
 - Calculate belt tension
 - Calculate sheave and pulley speed and ratio's
 - Be able to explain Slip and Creep in belts
2. Discuss Flat belt systems
Potential Elements of the Performance:
 - Discuss flat belt materials
 - Understand joining Flat belts
3. Discuss and demonstrate V-belts
Potential Elements of the Performance:
 - Understand the advantages of using V-belts
 - Understand V-belt construction
 - Understand V-belt design, sizes, and codes
4. Discuss Belt Drive assemblies
Potential Elements of the Performance:
 - Pulleys and Sheaves
 - Other Drive components
 - Drives and Pulleys for Flat belts
 - Drives and Sheaves for V-belts
 - Importance of proper alignment of shafts and sheaves
5. Discuss Chain Drives
Potential Elements of the Performance:
 - Links
 - Roller Chain
 - Sprockets
6. Discuss Roller Chain Drive assemblies
Potential Elements of the Performance:
 - Drive design

- Calculate sprocket ratio's and shaft speeds
 - Importance of proper alignment of shafts and sprockets
7. Discuss Chain Drive maintenance
Potential Elements of the Performance:
 - Lubrication
 - Routine Maintenance
 - Basic Troubleshooting
 8. Discuss various types of Gear Drives
Potential Elements of the Performance:
 - Gear Design
 - Gear Materials
 - Shaft arrangements
 - Gear types
 - Calculate gear ratio's and shaft speeds
 9. Understand Overdrive and Reduction units
Potential Elements of the Performance:
 - Overdrive Units
 - Reduction Units
 - Worm Gear reduction Units
 - Various type of other gear reduction units
 - Planetary Gear
 10. Discuss Installation and maintenance of gear drives
Potential Elements of the Performance:
 - styles
 - Lubrication Installation
 - Mounting
 - Basic Troubleshooting and maintenance

III. TOPICS:

1. Belt drive theory
2. Flat belts
3. V-belts
4. Belt drive assemblies
5. Chain drive theory
6. Chain drive assemblies
7. Chain drive maintenance
8. Gear drive design
9. Overdrive and reduction units
10. Installation / Maintenance / Troubleshooting of reduction units

IV. REQUIRED RESOURCES/TEXTS/MATERIALS:

Millwright Manual/ Industrial Trades Pocket Manual/Safety Wear

V. EVALUATION PROCESS/GRADING SYSTEM:*Tests 40%**Assignments 40%**Final Exam/Student personal performance 20%*

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

Grade	Definition	<i>Grade Point Equivalent</i>
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: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.