

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 in each topic area.

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 DrivesPotential Elements of the Performance:

- Identify various links
- Describe components for roller Chain
- Identify various Sprockets

6. Discuss Roller Chain Drive assembliesPotential Elements of the Performance:

- Discuss Drive design
- Calculate sprocket ratio's and shaft speeds
- Express the importance of proper alignment of shafts and sprockets

7. Discuss Chain Drive maintenancePotential Elements of the Performance:

- Describe Lubrication
- Explain Routine Maintenance
- Explain Basic Troubleshooting

8. Discuss various types of Gear DrivesPotential Elements of the Performance:

- Describe Gear Design
- Explain Gear Materials
- Identify Shaft arrangements
- Identify Gear types
- Calculate gear ratio's and shaft speeds

9. Understand Overdrive and Reduction unitsPotential Elements of the Performance:

- Describe Overdrive Units
- Describe Reduction Units
- Describe Worm Gear reduction Units
- Identify various types of other gear reduction units
- Explain Planetary Gears

10. Discuss Installation and maintenance of gear drivesPotential Elements of the Performance:

- Describe various installation styles

- Explain Lubrication Installations
- Describe various Mounting styles
- Explain 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 Keyed safety lock.

V. EVALUATION PROCESS/GRADING SYSTEM:

Attendance 10% (13/15)
 Tests 60%
 Assignments 30%

The following semester grades will be assigned to students:

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

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*. 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.

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.

