



**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 drives, Belt drives and Gear drives. Discussions will include theory, design, maintenance and troubleshooting. Drives for these systems as well as accessories such as couplings 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
- 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

**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
- 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

**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 10%**Student personal performance 10% (Will be explained in detail in class)***Note: 1% of final mark deducted for every inexcusable missed hour of class.**

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

| <b>Grade</b> | <b><u>Definition</u></b>   | <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:**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.

**VII. COURSE OUTLINE ADDENDUM:**

**The provisions contained in the addendum located on the portal form part of this course outline.**