

**SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY**

**SAULT STE. MARIE, ONTARIO**



Sault College

**COURSE OUTLINE**

**COURSE TITLE:** CAD Drawings, Schematics and Blueprints  
**CODE NO. :** CAD225 **SEMESTER:** 3  
**PROGRAM:** Mechanical  
**AUTHOR:** B. Sparrow  
**DATE:** June 08 **PREVIOUS OUTLINE DATED:** June 07  
**APPROVED:** "Corey Meunier"  
CHAIR **Jul 18 08**  
**DATE**  
**TOTAL CREDITS:** 2  
**PREREQUISITE(S):** DRF105  
**HOURS/WEEK:** 2

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*For additional information, please contact C. Meunier, Chair,*  
*School of Natural Environment, Technology and Skilled Trades*  
*(705) 759-2554, Ext. 2688*

**I. COURSE DESCRIPTION:**

Sketches, schematics, diagrams and CAD drawings are all used to convey information in the mechanical fields. CAD drawings are an essential part of graphic communication and can provide precision information not available in paper based drawings and is an integral part of interfacing with CNC processes and equipment. This course is intended to enhance the students' skills in the areas of CAD and drawing assembly and interpretation.

**II. LEARNING OUTCOMES AND ELEMENTS OF THE PERFORMANCE:**

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

**1. *Understand technical information requirements and work flow.***Potential Elements of the Performance:

- discuss information needed for a mechanical project from inception to completion
- interpret sketches, flow diagrams and schematics
- read specifications and interpret construction drawings

**2. *Understand the use of CAD in graphic communication and mechanical applications***Potential Elements of the Performance:

- understand the use of CAD as a precision modeling tool
- understand the X,Y,Z coordinate system
- open and save an AutoCAD drawing
- navigate a CAD drawing using pan and zoom functions
- extract information from a CAD drawing using inquiry tools such as distance, volume and area
- setup the drawing window including toolbars
- use the limits and units functions to setup a drawing

**3. *Create an AutoCAD drawing based on a supplied schematic***Potential Elements of the Performance:

- use the draw toolbar functions, including line, polyline and spline to create a schematic layout
- create text styles and apply text to a drawing
- use the arc, circle and ellipse functions in an AutoCAD drawing
- create, save and insert symbols into drawings

**4. Recognize and apply AutoCAD setup tools**Potential Elements of the Performance:

- create and use layers for different entities
- assign colours and linetypes to layers
- use dynamic input
- use ortho, snap and polar functions

**5. Apply AutoCAD dimensioning techniques.**Potential Elements of the Performance:

- recognize and apply different dimension styles for imperial and SI units
- apply standards of accuracy and tolerance including geometric tolerancing
- understand concepts of drawing scale
- create and apply different dimension styles

**6. Edit AutoCAD drawings using the modify toolbar**Potential Elements of the Performance:

- discuss the importance of editing versus drawing
- use the erase, scale, trim, extend, fillet and chamfer commands
- apply the copy, array and mirror commands
- review commands found on the modify toolbar

**7. Create isometric drawings in AutoCAD**Potential Elements of the Performance:

- use AutoCAD to create an isometric drawing
- apply isometric grid and snap functions
- use the ellipse isocircle option to create isometric circles
- use function key toggle between isometric drawing planes

**8. Plot drawings using AutoCAD**Potential Elements of the Performance:

- understand the difference between model and layout space
- setup a drawing for plotting in layout space
- create a title block in layout space
- modify and pen settings table to control line weights when plotting
- plot an AutoCAD drawing

**III. TOPICS:**

1. AutoCAD and Graphic Communication
2. Basic Model Space Window Navigation and Inquiry
3. Drawing Standards and Interpretation
4. AutoCAD Drawing Setup and Controls
5. Using the AutoCAD drawing tools
6. Using the AutoCAD modify tools
7. Dimensioning and construction tolerances
8. Isometric Drawing in AutoCAD
9. Printing and Plotting

**IV. REQUIRED RESOURCES/TEXTS/MATERIALS:**

*No text is required. Students will be given handouts and/or be directed to online learning resources. It is recommended students have a flash memory device for retaining backups of electronic files.*

**V. EVALUATION PROCESS/GRADING SYSTEM:**

You will be assigned a final grade on successful completion of laboratories assignments, and tests, weighted as follows:

Laboratories/Assignments	50%
Two tests of equal weight	<u>50%</u>
TOTAL	100%

Late submittals receive a maximum grade of 60%. However, laboratories or assignments handed in later than one week will receive a grade of 0.

The following semester grades will be assigned to students:

<b>Grade</b>	<b><u>Definition</u></b>	<b><i>Grade Point Equivalent</i></b>
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 703 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.

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.

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.

If a student is unable to write a test on the date assigned, the following procedure is required:

- The student shall provide the Professor with advance notice preferably in writing of his/her need to miss the test.
- The student may be required to document the absence at the discretion of the Professor.
- All decisions regarding whether tests shall be re-scheduled will be at the discretion of the Professor.
- The student is responsible to make arrangements, immediately upon return to the College with his/her course Professor related to make-up of the missed test prior to the next scheduled class for the course in question.
- In the event of an emergency on the day of the test, the student may require documentation to support the absence and must telephone the College to identify the absence. The college has a 24 hour electronic voice mail system (759-2554)

Students are expected to familiarize themselves with the Sault College *Student Code of Conduct*, available through the Sault College web pages. This applies to matters of behavior, use of electronic devices, attendance and academic responsibility. Students are expected to conduct themselves in a respectful and professional manner at all times.

## **VII. 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.

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