# SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY

## SAULT STE. MARIE, ONTARIO

Sault College

# COURSE OUTLINE

**COURSE TITLE:** APPLIED CAD II

**CODE NO.:** CAD222      **SEMESTER:** III

**PROGRAM:** Civil, Construction & Architectural

**AUTHOR:** Daniel Grand / Barry Sparrow

**DATE:** Aug. 03     **PREVIOUS OUTLINE DATED:** Aug 01

**APPROVED:**

_____   _____
                                 **DEAN**            **DATE**

**TOTAL CREDITS:** 3

**PREREQUISITE (S):** CAD 120

**HOURS/WEEK:** 3

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## I.    COURSE DESCRIPTION:

This course is intended to expand on the basic skills developed from other introductory formal CAD courses.  Students should have prerequisite CAD-120 or equal industrial experience.  The student will learn how use advanced AUTOCAD features such as customization of menus, write macros and integrate basic LISP programs, understand the principles of 3-D modeling wire frames, surfaces and solids.

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

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

1.
   Demonstrate familiarity with Windows and Autocad 2004 drawing editor

   Potential Elements of the Performance:
   - Setup and configure Autocad
   - Setup user folders with Windows explorer
   - Use Wordpad and Notepad to create text files

2.    Draw and Plot in Model Space and Paper Space

   Potential Elements of the Performance:
   - Recognize paper space and model space
   - Plot different scales in paper space
   - Use VPLAYER command to control layers in paper space
   - Use MVIEW command to create floating Viewports
   - Apply notes and scaled dimensions in paper space
   - Plot 3-D drawings

3.    Customize Autocad Toolbars

   Potential Elements of the Performance:
   - Identify macro codes
   - Create and edit Toolbars
   - Write and assign macros
   - Assemble toolbars

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4.    Utilize LISP in Autocad

      Potential Elements of the Performance:
      • Understand LISP in the context of Autocad
      • Analyze existing LISP routines
      • Integrate LISP routines in Autocad
      • Load routines into Autocad

5.    Manipulate the Coordinate System

      Potential Elements of the Performance:
         • Set Viewports
         • Describe UCS and WCS system
         • Manipulate UCS

6.    Create and View 3-D Wire Frame Models

      Potential Elements of the Performance:
         • Describe the XYZ coordinate system
         • Assign and change elevation and thickness
         • Draw lines using XYZ coordinates
         • Edit objects in 3-D space

7.    Create Models using Surfaces and Meshes

      Potential Elements of the Performance:
         • Make a 3-D Mesh
         • Create models using Rulesurf
         • Create models using Tabsurf
         • Create models using Edgesurf
         • Apply shading to surface models
         • Use the 3Dface command
         • Understand and apply the edge visibility

8.    Create Models using Solids

      Potential Elements of the Performance:
         • Create solids using the solids library
         • Edit solids using Union, Subtract, and Intersection
         • Create Regions and use Extrude to create solids
         • Edit objects using the Align command

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9.   Utilize Rendering tools in AutoCad

Potential Elements of the Performance:
- Use the Hide command
- Hide lines in floating viewports
- View models using the shade command
- Apply a render command
- Customize the rendering feature
- Apply materials to rendered models
- Save and export a rendered image
- Create paraline and perspective views using the Dview command

10.   Create custom Slides

Potential Elements of the Performance:
- Write script files
- Construct slides using Mslide
- View slides using Vslide

## III.   TOPICS:

1.   Review Windows operating system and AutoCad 2004
2.   Review AutoCad setup preferences
3.   Using Paper space and Model space
4.   Customizing Toolbars
5.   Using LISP
6.   The User and World Coordinate systems
7.   Creating Wire Frame Models
8.   Creating Surface Models
9.   Creating Solid models
10.  Viewing and Rendering 3-D Models
11.  Creating Slides and Slideshows
12.  Advanced editing commands

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## IV.   REQUIRED RESOURCES/TEXTS/MATERIALS:

TEXT
<u>AutoCAD and its Applications- Advanced</u>   Latest Edition
David A. Madsen
Terence M. Shumaker
Prentice Hall

Two 3.5" diskettes (to be used only for course work)

The student will be expected to supply various materials throughout the
duration of the course such as plotting media and diskettes.

## 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          40%
Three tests of equal weight       <u>60%</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%.

An average of 60% on laboratories/assignments and 60% on tests is
required for successful completion of this course.

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

| Grade | Definition | Grade Point Equivalent |
|---|---|---|
| A+ | 90 - 100% | 4.00 |
| A | 80 - 89% | 3.75 |
| B | 70 - 79% | 3.00 |
| C | 60 - 69% | 2.00 |
| F (Fail) | 59% or below | 0.00 |
| CR (Credit) | Credit for diploma requirements has been awarded. | |
| S | Satisfactory achievement in field placement or non-graded subject areas. | |
| U | Unsatisfactory achievement in field | |

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|  | placement or non-graded subject areas. |
|---|---|
| X | A temporary grade.  This is used in limited situations with extenuating circumstances giving a student additional time to complete the requirements for a course (see *Policies & Procedures Manual – Deferred Grades and Make-up*). |
| NR | Grade not reported to Registrar's office. This is used to facilitate transcript preparation when, for extenuating circumstances, it has been impossible for the faculty member to report grades. |
| 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 instructor and/or the Special Needs office.  Visit Room E1204 or call Extension 493 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 the professor may decide including expulsion from the course, as.  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.

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.

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

<u>Testing Absence</u>

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)

## VII.  PRIOR LEARNING ASSESSMENT:

Students who wish to apply for advanced credit in the course should
consult the instructor.  Credit for prior learning will be given upon
successful completion of a challenge test and 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.