SAULT COLLEGE OF APPLIED ARTS & TECHNOLOGY

SAULT STE. MARIE, ONTARIO

COURSE OUTLINE

Course Title: COMPUTER GRAPHICS APPLICATIONS

Code No.: CET201-5   Semester: 3

Program: COMPUTER ENGINEERING TECHNOLOGY

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Date: MAY, 1993   Previous Outline Dated: SEPT, 1991

APPROVED: _L.C. Argueth_   93-04-13

               Dean   Date

TOTAL CREDIT HOURS: 80

PREREQUISITES: CET209 is a recommended co-requisite.

I.   PHILOSOPHY/GOALS:

This course develops an understanding of the graphics environment from several points of view. As a major component of this course students develop skills in the use of AutoCAD, a computer-aided drafting system. Besides developing specific skills in this important engineering tool, the study of AutoCAD will develop an appreciation for the requirements of an effective graphics application.

The degree to which the advanced features of Autocad are covered in the course will vary. It should be understood that a thorough study of AutoCAD is beyond the mandate of this course but an introduction to its advanced features such as AutoLisp and 3-D will be included.

A second major component provides an overview of the graphics environment from the hardware point of view. A study of video fundamentals incorporating video signal standards, display adapter standards and CRT circuits and operations are included in this component. In addition, graphic input devices, standards and file formats will be investigated.

New directions in graphics applications will be discussed with possible areas including Desktop Publishing, fractals, animation, commercial drawing software packages, and X Windows.

II. STUDENT PERFORMANCE OBJECTIVES:

Upon successful completion of this course the student will:

1.   Be able to produce Autocad drawings to required specifications.

2.   Be able to write AUTOLISP programs and create menus to automate
     the Autocad drawing environment.

3.   Understand graphics applications and standards, trends and
     hardware requirements to support typical graphics environments.

4.   Understand the characteristics of video display standards and the
     operation of CRT circuits.

III. TOPICS TO BE COVERED:

1.   Graphics applications, standards and trends.

2.   The use of AutoCAD commands and menus to generate and plot
     drawings.

3.   Graphics hardware and display devices and their standards.

4.   The Autolisp programming environment.

IV.   LEARNING ACTIVITIES

REQUIRED RESOURCES

TEXT:

NOTE**   The learning objectives will not
            necessarily be covered in the order
            shown below. Some activities may
            not be covered due to time
            constraints.

"AutoCAD and
its
Applications"

by T. Shumaker
and D. Madsen

BLOCK 1   INTRODUCTION TO CAD

(Goodheart-
Willcox Co.)

1.   Describe CAD terminology and principles
     and the role of CAD in industry.

2.   Describe the requirements of CAD
     software and hardware.

3.   Describe the advantages and
     disadvantages of using AutoCAD.

CHAP. 2,3,4,15

4.   Describe the appropriate computer
     drafting procedures required for the
     efficient production of drawings.

5.   Describe and use effectively the AutoCAD
     menu structure and the drawing
     environment.

6.   Be able to describe the function of
     AutoCAD commands and use them   CHAP. 5-11
     effectively in producing, editing and
     plotting two dimensional drawings: CHAP. 12-14
                                               CHAP. 15
     -Drawing and editing basic shapes, and
     plotting drawings
     -Advanced drawing and editing using   CHAP.17,18
     rotate, scale, trim, break, extend, and
     change commands. The use of array and
     pline.
     -Layers and dimensioning.

CHAP. 21

BLOCK 2   ADVANCED AUTOCAD FEATURES

CHAP. 25

1.   Learn to create shapes and symbols for
     multiple use.   instructor
                                               notes.

2.   Learn three-dimensional drawing features
     in AutoCAD.

BLOCK 3   INTRODUCTION TO COMPUTER GRAPHICS

		Course notes supplied by the instructor.

1. Describe the characteristics of graphics input and output devices.

2. Identify major graphics applications, trends, and environments.

CHAP. 31 and instructors notes.

3. Identify important graphics standards and file formats and where they are used.

4. Describe the operating principles of video display devices:

   "Microcomputer Servicing" Text CHAP. 8

   a) Operating principles of monochrome and colour CRT's

   b) Raster-scan and vector refresh CRT's

   Notes supplied by instructor.

   c) CRT circuit operating principles including deflection, flyback, high voltage and synchronization circuits.

   d) Other display devices.

   Notes supplied by the instructor.

5. Describe the 6845 CRT Controller Registers and their use.

6. Describe video display adapter standards in the PC environment and video memory organization.

   Notes supplied by the instructor.

Time permitting...

7. Describe the nature and use of Fractals in graphics.

8. Describe the nature and capabilities of Desktop Publishing software.

9. Describe the basic nature of the X Windows environment.

BLOCK 4   AUTOLISP PROGRAMMING AND MENU'S   CHAP 32, 33, 34

instructor
notes.

1.   Be able to create, edit and execute
      Autolisp programs from within the
      Autocad environment.

2.   Become familiar with Autolisp syntax,
      commands, functions and language
      constructs.

3.   Be able to extend the functionality of
      Autocad commands with Autolisp programs.

4.   Understand and modify the existing
      Autocad Menu structure.

5.   Be able to create, edit and implement
      customized menus utilizing popup and bar
      menus.

6.   Automate and customize the Autocad
      environment by combining menus with
      Autolisp programs.

V.   METHOD OF EVALUATION:

                                               PERCENT OF FINAL MARK

        4 THEORY TESTS (2 at 15% each)   30%
                       (2 at 10% each)   20%

        AUTOCAD PROJECTS   30%

        AUTOLISP ASSIGNMENTS   15%

        QUIZZES   5%

        (The percentages shown above may vary slightly where
        circumstances warrant.)

GRADING SCHEME

A+	90	–	100%
A	80	–	89%
B	70	–	79%
C	55	–	69%
I	Incomplete		
R	Repeat		

UPGRADING OF INCOMPLETES

When a student's course work is incomplete or final grade is
below 55%, there is the possibility of upgrading to a pass when
a student meets the following criteria:

1.   The students attendance has been satisfactory.
2.   An overall average of at least 40% has been achieved.
3.   The student has not had a failing grade in all of the
     theory tests taken.
4.   The student has made reasonable efforts to participate in
     class and complete assignments.

ASSIGNMENTS

Assignments not completed by the assigned due-date will be
penalized. The amount of penalty will be announced before
assignments are due. All assignments must be completed
satisfactorily to complete the course.

ATTENDANCE

Attendance will be taken in this course. It is especially
important that students take full advantage of all available lab
time, as access to the AutoCAD lab is limited and the required
time to complete and plot assigned drawings requires full use of
the assigned time.

Absenteeism will affect a student's ability to succeed in this
course. Absences due to medical or other unavoidable
circumstances should be discussed with the instructor, so that
remedial activities can be scheduled. Absences from tests must
be reported ahead of time and fully justified or a zero grade
will be assigned.

VI. REQUIRED STUDENT RESOURCES:

TEXT BOOKS:

"AutoCAD and its Applications"   by T. Shumaker and
                                              D. Madsen
(Goodheart-Willcox Co.)

Notes supplied by the Instructor.

VII. ADDITIONAL RESOURCE MATERIALS AVAILABLE:

1. "AutoCAD Reference Manual", Autodesk, Inc

2. "Microcomputer Servicing", by Asser, Stigliano and
    Bahrenburg, Merril Pub.

VIII. SPECIAL NOTES:

Students with special needs (eg. physical limitations, visual or
hearing impairments, or learning disabilities) are encouraged to
discuss any required accommodations confidentially with the
instructor.

Your instructor reserves the right to modify the course as
deemed necessary to meet the needs of students or take advantage
of new or different learning opportunities.