



A: Division: **INSTRUCTIONAL**

Date: **May 2000**

B: Department/ **Commerce and Business**
Program Area: **Administration**

New Course

Revision

If Revision, Section(s) Revised: **F, H, L, M, N, Q, R**

Date Last Revised: **March 1997**

C: **CISY 690**

D: **Computer Graphics and Animation**

E: **3**

Subject & Course No.	Descriptive Title	Semester Credits												
<p>F: Calendar Description: This course will provide an introduction to all major aspects of computer graphics as well as an introduction to computer-based animation. Major topics will include a review of vector geometry in 2 and 3 dimensions, raster graphics, antialiasing, polygon filling, clipping, rotation, projection, hidden line and surface removal, light modeling, ray tracing, colour models, shading, material and texture rendering, curve geometry, Bézier splines, surface patches, fractals, motion.0</p>														
<p>G: Allocation of Contact Hours to Types of Instruction/Learning Settings</p> <p>Primary Methods of Instructional Delivery and/or Learning Settings:</p> <p>Lecture and Seminar</p> <p>Number of Contact Hours: (per week / semester for each descriptor)</p> <p>Lecture: 2 hours/week Seminar: 2 hours/week</p> <p>Number of Weeks per Semester:</p> <p>15 weeks</p>	<p>H: Course Prerequisites:</p> <p>(CISY 110 and CISY 210) or CIS Diploma or permission of instructor</p>													
	<p>I: Course Corequisites:</p> <p>Nil</p>													
	<p>J: Course for which this Course is a Prerequisite:</p> <p>Nil</p>													
	<p>K: Maximum Class Size:</p> <p>35</p>													
<p>L: PLEASE INDICATE:</p> <table border="0"> <tr> <td><input type="checkbox"/></td> <td>Non-Credit</td> <td></td> <td></td> </tr> <tr> <td><input type="checkbox"/></td> <td>College Credit Non-Transfer</td> <td></td> <td></td> </tr> <tr> <td><input checked="" type="checkbox"/></td> <td>College Credit Transfer:</td> <td>Requested <input type="checkbox"/></td> <td>Granted <input checked="" type="checkbox"/></td> </tr> </table>			<input type="checkbox"/>	Non-Credit			<input type="checkbox"/>	College Credit Non-Transfer			<input checked="" type="checkbox"/>	College Credit Transfer:	Requested <input type="checkbox"/>	Granted <input checked="" type="checkbox"/>
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<p>SEE BC TRANSFER GUIDE FOR TRANSFER DETAILS (www.bccat.bc.ca)</p>														

M: Course Objectives/Learning Outcomes

At the end of the course, the successful student should be able to:

1. Discuss various applications in business and industry of computer graphics and the forms of graphics appropriate to different application areas.
2. Program simple but fundamental 2D graphics techniques using a standard programming environment like Visual Basic.
3. Program simple but fundamental 3D graphics environments for the World Wide Web, using a standard definition language like VRML.
4. Show understanding of basic 2D and 3D graphics concepts and techniques.
5. Demonstrate knowledge of terminology current in the computer graphics world in relation to the sub-areas of technology in which they are used.
6. Demonstrate mastery at a basic level of the geometric and analytical models on which package graphics techniques are built
7. Discuss the basic techniques of computer animation

N: Course Content

1. Mathematical preliminaries: review of vectors, matrices, operations on these that shift, rotate and scale images in both 2D and 3D
2. Concepts of 2D graphics programming; use of a graphics package for lab use in this course
3. Two-dimensional raster graphics: scan conversion; polygon filling; clipping; antialiasing
4. Display of three-dimensional objects: projection, perspective; view specification; clipping in three dimensions, stereoscopy
5. Curve and surface representation : polygon approximations; parametric curves, including Bézier splines; parametric surfaces; fractals and their uses; texture mapping and other material modeling techniques
6. Solid modeling : representation of solids; managing complexity using octrees; hidden surfaces
7. Light modeling : black and white; halftone; colour models; shading; ray tracing; illumination models; specular and diffuse reflection, transparency; ambient light and radiosity as modeling techniques.
8. Animation: motion, modeling the "Newtonian" world in 2D and in 3D; timer events; antialiasing across time; transference of the hand-animation concept of key-frame animation to the computer-assisted model of, for example, VRML.
9. Interaction for games and virtual worlds: detecting and responding to external user actions.

O: Methods of Instruction

Concepts and techniques will be discussed in class. Small exercises will be worked in class or in the computer lab. Students will complete "hands on" assignments during supervised lab time and on their own.

P: Textbooks and Materials to be Purchased by Students

Foley, Van Dam, Feiner, Hughes, Phillips. Introduction to Computer Graphics, Latest Edition. Addison-Wesley

Q: Means of Assessment

Students will be assigned a grade based on a combination of the following instruments, weighted in the indicated ranges.

Assignments	20%-30%
Mid-term examination	25%-30%
Final examination	25%-30%
Participation	0%-10%
Quizzes	<u>10%-20%</u>
	100%

Individual students may, in consultation with the instructor, substitute for some parts of the formal assessment major project work of the nature of a Portfolio, with self-assessment.

R: Prior Learning Assessment and Recognition: specify whether course is open for PLAR

Yes

Course Designer(s): **Peter van den Bosch**

Education Council/Curriculum Committee
Representative

Dean/Director : **Jim Sator**

Registrar

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DATE: May 2000