# CMSC 435/635: Computer Graphics
## Computer Science and Electrical Engineering Department
## University of Maryland, Baltimore County
## Fall 1995

**Instructor:** Dr. David S. Ebert, 214 ECS
**Phone:** 455-3541. If busy or no answer, call 455-3000.
**email:** ebert@cs.umbc.edu.
**Office Hours:** 4:00 - 5:00 Tuesday and Thursday.

**Teaching Assistant:** Sreenivasa Kaushal, Rm ____ ECS, Phone:455-____, email: skaush1@cs.umbc.edu.

**Prerequisites:** CMSC 106, 341, Math 221, or permission of instructor.

**Description:** Introduction to display hardware, interactive techniques, 2D graphics, 2D viewing algorithms including transformations, windows, viewports, and clipping, 3D perspective graphics including hidden surface removal, shading, and illumination techniques.

**Textbook:** *Introduction to Computer Graphics*, Foley, van Dam, Feiner, Hughes, Phillips, Addison Wesley, 1993. Course notes may be purchased from the main office. Additional reading of papers from the literature may be required.

**Grading Policy:** Grades will be assigned on the basis of accumulated points. The weighting is as follows:

- Midterm Exam 25% (Tentative date Thursday, October 19, 1995 )
- Final Examination 30% (Tuesday, December 19, 6:00-8:00pm)
- Labs (6) 45%

As per University policy, incomplete will be granted only under extraordinary circumstances; students who are enrolled after November 15 (the last day to drop a class) should be prepared to receive a grade of A-F.

**Labs:** The lab assignments will require the use of UNIX and the C programming language. Lab assignments in 635 WILL vary from the 435 assignments. A tentative list of assignments is given below. Lab assignments will be due at MIDNIGHT of the due date.

| Lab | Weight | Description | Week Assigned |
|---|---|---|---|
| Lab 1 | 3% | Line/Circle Algorithm | 2 |
| Lab 2 | 7% | Clipping, Window to Viewport transformation | 4 |
| Lab 3 | 6% | To be determined | 6 |
| Lab 4 | 13% | Interactive 3D Viewing transformation | 8 |
| Lab 5 | 4% | 3D Viewing using EDGE structures | 10 |
| Lab 6 | 12% | Scanline Z-buffer Algorithm | 12 |

**Late Policy:** 10% per 24 hours late. No labs accepted after 5 days past the due date. Labs will be submitted electronically. **Labs are expected to be worked on individually. Collaboration in any form will not be tolerated.** Any form of collaboration or copying of labs will be dealt with according to university policy.

**Examination Policy:** Exams are closed book and fixed duration. Make-up exams will only be given when a student is prevented from taking the exam due to unforeseen circumstances (e.g., sickness), and formal proof will be required to prove the prevailing circumstance.

**Academic Honesty:** Cheating in any form will not be tolerated. You may discuss programming assignments with anyone. However, any help you receive *must* be documented. At the beginning of your program, you must include a comment indicating the sources you used while working on it (excluding course staff and text), and the type of help you received from them. If you received no help, say so. Failure to include this comment at the top of your program will result in your program being returned ungraded.

**Newsgroup:** There will be local newsgroups named **umbc.course.cs635, umbc.course.cs435** for this course. We will post messages to this newsgroup and assume that you will read them. You should also feel free to post your own messages to this newsgroup if you feel you have something that would be useful and appropriate to share with the rest of the class. If you do not know how to read news, you should find out by reading the man page for the *rn* command.

**Letter Grades:** The following general range will be used:

- 100-90, A
- 89-80, B
- 79-65, C
- 64-55, D
- 54-00, failing

## Tentative Syllabus

| Week | Topics | Chapter |
|---|---|---|
| 1 | Introduction: Graphics System components, | 1 |
| | graphics hardware | 4.2, 4.3 |
| 2-3 | Line and Circle Drawing | 3.3-3.3 |
| 3-4 | 2D transformations, matrices, | 5.1-5.6 |
| | 2D spaces, windows, viewports | |
| 4-5 | 2D clipping, shading, filling | 3.4-3.6, 3.8-3.11 |
| 6-7 | transformation hierarchy, graphics packages, | 7 |
| | Midterm | |
| 7-8 | 2 1/2D & 3D spaces, 3D transformations | 5.7-5.9 |
| | polygon scan conversion | |
| 8-10 | 3D viewing algorithm, perspective | 6 |
| 10-12 | 3D Clipping, hidden line & surface removal | 12, 13 |
| 12-14 | Illumination models, shading, animation | 14 |
| 15 | Intro to User Interfaces or advanced rendering | 2.2, 8, 9 |