

CPE 361: Computer Graphics (2/63)

General Information

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<i>Class Meeting</i>	Lecture: Thu 09.30-11.20 Problem Session: Tue 11.30-12.20
<i>Credit hours</i>	3 (2-2-6)
<i>Prerequisite</i>	MTH102 Calculus II

Course Description

Basic concepts in computer graphics including the techniques for creation, storage, transformation, translation, rotation, and animation of computer models and images. The students will be introduced line and polygon drawing algorithms, the basic transformation of translation, scaling and rotation in two and three dimensional space, windowing and clipping, and parallel and perspective projection. The 3-D aspects of computer graphics will be emphasized, covering issues on what makes an image appear 3-D and the various techniques for visual realism.

Materials

- ▷ Lecture Notes, Computer Graphics Fundamentals

Handouts, slides, and assignments are posted at <http://leb2.kmutt.ac.th>. Regularly check for updates

Learning Outcomes

Students who have completed this course should be able to:

1. Explain the basic principles of computer graphics.
2. Evaluate, select and implement appropriate algorithms to efficiently solve computer graphics problems.
3. Apply computer graphics algorithms to create the corresponding programs.

Lectures 2.0 hours/week

Problem Sessions (PS) 2.0 hours/week.

To reinforce understanding of lecture material each week, students will work on related in-class small assignments (both analytical and design types). Everybody is expected to attend all problem sessions unless valid excuses are provided.

Evaluation	Midterm exam	30 %
	Final exam	30 %
	Assignments & Quizzes	20 %
	Active Learning/Projects	20 %

Course Schedule (January - May 2021)

Week	Lecture Topics	Problem Sessions
1	Introduction to Computer Graphics	
2	2D Transformations	Lab1: 2D Transformations
3	2D Viewing and Line Clipping	Lab2: 2D Line Clipping
4	2D Polygon Clipping	Lab3: 2D Polygon Clipping
1st Examination		
5	Bresenham's Line Algorithm	Lab4: Line Algorithm
6	Bresenham's Circle Algorithm	Lab5: Circle Algorithm
7	Bresenham's Ellipse Algorithm	Lab6: Ellipse Algorithm
2nd Examination		
8	3D Transformations	Lab7: 3D Transformations
9	3D Parallel and Perspective Projections	Lab8: 3D Parallel Projection
10	3D Viewing and Clipping	Lab9: 3D Perspective Projection
3rd Examination		
11	Curve Modeling I	Lab10: 3D Viewing
12	Curve Modeling II	Lab11: 3D Clipping
13	Project Presentation	Lab12: Bezier Curve
Final Examination		