

# ADVANCED COMPUTER GRAPHICS (İLERİ BİLGİSAYAR GRAFİKLERİ)

## Fall 2011

**Instructor:** Yrd. Doc. Dr. Ahmet Sayar

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**Office hours:** By appointment or after the classes

**Class web page:** <http://www.ahmetsayar.com/lecturenotes/>

Students should normally contact me via email. Be sure to include the name of the course in the subject. Every effort will be made to respond to email within 24 hours except for weekends and holidays. Please use your university email account.

**Day & Time:** Tuesday 14:00-16:50,

**Prerequisites:** Students are supposed know at least one of the programming languages such as C, C++ or Java.

**Aims:** This course aims students to develop understanding of the mathematics of popular geometries to rendering and then to practice graphics package to achieve high quality computer graphics.

**Course Description:** This course covers fundamental principles and algorithms underlying computer graphics, including line and circle drawing algorithms, polygon filling and rasterization, 2D and 3D geometric transformations, line-polygon clipping, hidden surface removal, illumination and shading, modeling and viewing. In addition, students will be preparing research papers about the latest technologies (such as voxelization and solid modeling) in computer graphics and present them in the class.

### Textbooks:

- Computer Graphics C Version, Donald\_Hearn, M.Pauline Baker. Prentice Hall, 2<sup>ND</sup> edition May 24, 1996.
- Not all the material we cover will be from the book, nor will the order in which we cover this material be the same as in the book. You will have to refer to the slides which will be available on the course web page and your own notes..

### Resources:

- OpenGL Red Book Online versions: <http://fly.cc.fer.hr/%7Eunreal/theredbook/>.
- Interactive Computer Graphics, by Edward Angel, 4th Edition, Addison-Wesley, 2006.

- Foley, J.D., Van Dam A., Feiner, S.K., and Hughes, Computer Graphics Principles and Practice Addison Wesley, 1990.
- F. Hill, Computer Graphics *Using Open GL*, 2nd edition, Prentice-Hall, 2000.

**Grading:**

- Midterm (15%)
- Final exam (40%)
- Project (30%)
- Assignments (15%)

**Class schedule:**

1.week: Introduction, preliminaries	9.week: Hidden Line and surface removal
2.week: Line drawing Algorithms	10.week: illumination and shading Algorithms
3.week: Line drawing 2	11.week: 3-D object representation in computers
4.week: Polygon filling, rasterizing	12.week: 3D concept and approaches
5.week: 2-D Graphics transformation	13.week: Advanced topics in computer graphics – presentation-1
6.week: 2-d Viewing	14.week: Advanced topics in computer graphics – presentation-2
7.week: Point, line and polygon clipping	15.week: Advanced topics in computer graphics – presentation-3
8.week: Midterm	16.week: Review of the topics - preparation for the exam

**Attendance**

- Regular attendance is the university requirement. Attendance will be taken in every class.
- As soon as the number of absences goes beyond 20% of the held classes a written warning will be given by the instructor.
- Late arrivals are disruptive --- plan to arrive five minutes before the start of class

**Academic Dishonesty:**

Cheating will not be tolerated and may result in serious sanctions, including immediate failure in the course. Serious incidents of academic dishonesty will also for brought to the attention of the university and may result in expulsion. All work in this class is meant to be an individual effort by the person receiving the grade. Any variation from this is considered cheating and all parties involved (giving or receiving) will be sanctioned.