Slot (Tu 5-6, W 12-1, F 5-6) Room IIA-201 (Bharti Building)

Exams:
- 2 Minors (30%-35%), 1 Major (30%) Quiz (5-10%)

Assignments:
- 3-4 Programming Assignments (35%-40%)

TA(s):
- Garvit Jain (Garvit.Jain.cs513@cse.iitd.ac.in)

Web Page
http://www.cse.iitd.ac.in/~pkalra/col781
Books/Material

- Advanced Animation and Rendering Techniques (Theory and Practice)
Contents

• Introduction/Preliminaries
• Raster Graphics
• Clipping
• Transformations
• Curves and Surfaces
• Rendering
• Animation
Computer Graphics is the use of computer to define, store, manipulate, interrogate, and present pictorial output. A picture is 10,000 worth words!

Scope:
- Industry
- Art
- Entertainment
- Education
- Medicine
Basic Elements

- **Modeling**
  - Shape (geometry)

- **Rendering**
  - Display (shading, illumination, color, texture…)

- **Animation**
  - Movement (dynamics)
Basic Elements

• Modeling
Basic Elements

- Modeling
Modeling

Modeling as reverse engineering

Scanner

3D Geometry

Rendering

Courtesy Dr. Niloy Mitra
Basic Elements

• Rendering
Basic Elements

• Rendering
Basic Elements

- Animation
History

- 1963: Sutherland First Graphics Workstation
- 1969: First SIGGRAPH (ACM)
- Early 1970’s: Raster Graphics, Shading, Illumination
- Late 1970’s: Texture Mapping, Ray Tracing
- Early 1980’s: Realism in Rendering
- Late 1980’s: Physically Based Animation
- 1989: Tin Toy (Pixar) wins Academy Award
- 1990’s: Interaction, Scientific Visualization, Virtual Reality, Augmented Reality, Multimedia, etc.
- 2000’s: Real-time Visualization of Large Data Sets, Data Compression, Vision and Graphics, etc.
Applications

- Engineering
Applications

• Design

Architectural Design

Google Earth
Applications

- Medical
- Bio-graphics
Applications

- Entertainment
Representation

3D object representation

By: Chris Woodward
Rendering is the conversion of a scene into an image.