

Computer Engineering Graphics 2

.5 credits 5 days/week

Course Syllabus

Instructor: Mr. Alesi

This course is a follow up, in every aspect, to Computer Graphics 1. In the level one course you were introduced to a great deal of software and media. You will now build depth in ability, content information, and knowledge. As you build on your experiences, you will be able to determine the correct application(s) and processes to use to achieve your goals. Totally unique units in Computer Engineering Graphics 2 include: an architectural room redesign project, video game design with C# or Java language, an online web portfolio, and STEM group design challenge project, most of which will allow more integrated use of the laser engraver/cutter and 3D printers. Throughout your experience, we will continue to make connections to various fields of study including, but not limited to: Architectural Engineering, Mechanical Engineering, Industrial Design, Landscape Architecture, Web Design, Animation, Video Game Design, Video Production, Computer Science, and Graphics Design.

Course content and activities:

Projects:

1. **Autodesk Revit / 3D Studio** Floor Plan Layout – 3 weeks (200 pts.)
 - Intro to parametric architectural design
 - Draw 2d, automatic 3d
 - Developing animated architectural walk-throughs
 - Rendering concepts
2. Using Google/Trimble SketchUp for conceptual models and visualization – 1 week (100 pts.)
 - Learn modeling and design techniques to produce parts for 3D printing.
 - work with common file types needed to interact with the 3D printing process.
 - Understand tolerance and dimensioning standards.
 - Develop surface to surface and part to part interactivity.
 - Build complex objects using simple geometric construction.
 - Add basic materials for visual effect
 - Create animated scenes to give a walkthrough impression
3. Lighting techniques– **3D Studio, Unity 3D** – 1 week (50 pts.)
 - Ambient lights
 - Spots
 - Fills
4. Complete a STEM design challenge – Water Bottle Rocket -1 week (100 pts.)
 - Integration of 3D printed and laser cut parts
 - Geometric design solutions
 - Prototype build and refine
 - Group interaction
5. Advanced Modeling - Video Game Model Design and Texture - **3D Studio Max** – 2 ½ Weeks (200 pts)
 - Refresher to the Graphical User Interface (GUI)
 - Viewports and the Cartesian coordinate system
 - Unwrap texture
 - 3D print model development
6. Photo masking and image building with **Photoshop** – 2 weeks (100 pts)
 - Use of layer masks
 - Use of selection tools

- Healing tools
 - Content aware fill
 - Adjustment layers
 - Color matching
 - Layer blend modes
7. Video Game Design, Project Roll-a-Ball – **Unity3D** – 2 weeks (200 pts)
 - Programming in Java or C+ (Basic physics model interaction)
 - Working in coordinate systems (world, local)
 - Model interaction controlled by laws of physics
 - Creating Textures
 - Building a small functional game for a specific platform
 8. Video Game Design, Project Space Shooter– **Unity3D** – 2 weeks (200 pts)
 - Programming in C# (Basic physics model interaction)
 - Working in coordinate systems (world, local)
 - Model interaction controlled by laws of physics
 - Creating Textures
 - Building a small functional game for a specific platform – uploaded to Google Docs
 - Publishing an HTML game
 9. Crumble Text - Special Effects and animation with- **Adobe After Effects, Photoshop, Premiere** – 1 week (200 pts.)
 - Utilizing Photoshop layers in a composition
 - Effects and Blend modes
 - Motion paths
 - Adjustment layers
 - Sound Effects
 - Lighting Design
 - Creating compositions and Pre-compositions
 - Use of layered effects
 - Procedural effects (editable throughout a project from start to end)
 10. OnLine Portfolio development – Using wix.com – 2 week throughout the semester (150 pts.)
 - Online web sharing
 - Connect to social media sites
 - Update and maintain

The remainder of the semester will be devoted to portfolio development and presentations. There are smaller projects not represented that will serve as building blocks for these projects.

Class participation and attendance will account for *50pts. per marking period*

Relevant Class Resources:

Mr. Troy Alesi taa11@scasd.org

www.scasd.org/teched/troyalesi

<http://www.scasd.org/teched/podcasts>

[s](http://www.scasd.org/teched/podcasts)

www.students.autodesk.com (for free software, 3 year license)

www.kuler.adobe.com

www.adobe.com

www.autodesk.com

30 day trials can be downloaded for all of the Adobe programs. You could time these downloads with our units.

General Classroom Guidelines and Notes:

- Grades are posted in Home Access.
- Unit completion dates are flexible. Updates to class schedule will be posted on the teacher web page calendar.

1. No Cell phone or media device use in class, other than in class computers.
2. No food in the classroom.
3. Drinks are permitted (in a container with a lid)
4. You may use the in class printers for printing school related papers (before or after class, Color LaserJet 150).
From a Google Doc, use the option to **Print from my computer**.
5. No hats in the classroom.
6. No games played on in class computers (except free day Fridays, once a month)
7. No software loaded on in class computers (unless teacher directed and approved).