

USD 233 – OLATHE DISTRICT SCHOOLS

Course Title: Animation & Visual Effects

Credit: ½

Grade Level: 10, 11

Course Length: 1 Semester

Course Description:

The Animation and Visual Effects course exposes students to the MAYA modules, Cloth, Fur and Paint Effects. Through hands-on tutorials students will simulate and render a huge variety of atmospheric, Pyrotechnic, viscous liquid, and open ocean effects. Students will create realistic fur, short hair and wool for their characters and grass for scenic landscapes. They will model clothing for their characters, make sails for ships, create window drapes that blow in the wind using gravity and wind turbulence attributes.

Prerequisites: Intro to Dynamics/Dynamic Effects

Instructional Materials: Textbooks-After Effects in Production, Creative After Effects 5.5. (Textbooks are subject to change without notice)

Teacher designed mini projects, web site projects/lessons, software included lessons/tutorials/projects.

Instructional Strategies: Direct instruction, demonstration, graphic organizers, application exercises, projects, cooperative groups, case studies, guest speakers, DVD(s), videos, internet.

Assessments: Daily work performance, teacher observation, rubric, checklist, classroom discussion, projects, research relevant to topic, application performance, exams, conferencing, portfolio, written response, sketchbook, journaling, self evaluation.

Course Objectives:

- Learn appropriate paint effects for specific purposes.
- Develop an understanding of fur attributes.
- Learn to animate brush strokes adding spring behavior.
- Develop animations that show control of various 2D and 3D paint effects.
- Learn to set attributes for a cloth garment to either adjust or move the solution in a predetermined way.
- Apply visual communications knowledge and skills to express ideas imaginatively.
- Use critical thinking, and problem solving to communicate ideas visually.
- Produce animations that demonstrate basic knowledge of expository and narrative communication processes and visual effects.
- Develop skill in the use of techniques, procedures and dynamic cloth simulation concepts.
- Learn appropriate use of visual effects to add impact and realism to a scene.

Course Content:

I. Introduction to Visual Effects

- Painting
- Fur and Cloth
- Fur and Cloth Technology/Development

II. Visual Effects Production Process

- Production strategies
- Production Teams
- Visual Effects Simulations
- Visual Effects Production Work Flow

III. Paint in 2D

- Display the Paint Effects canvas
- Set up the canvas
- Paint on the canvas
- Flip Tube Direction
- Erase paint from the canvas
- Smear and blur paint on the canvas
- Paint pixels
- Clear the canvas
- Zoom and track
- Create new images
- Create seamless repeating textures
- Modify textures applied to surfaces
- Paint on existing images and textures
- Save images
- Paint in 3D
- Set up to paint in 3D

IV. Paint in 3D

- Automatically paint multiple strokes on a surface
- Modify existing strokes
- Select strokes
- Delete strokes
- Attach brushes to curves
- Modify tube behavior using control curves
- Hide and show strokes and curves
- Modify stroke display quality

- Convert Paint Effects to polygons
- Optimizing Paint Effects Mesh quality

V. Paint in the Paint Effects Panel

- Switch between views
- Show and hide the Paint Effects panel toolbar
- Save a snapshot of the Paint Effects panel view
- Save depth as grayscale values
- Change the Brush Type
- Change the panel lighting
- Display RGB, luminance, or alpha channels
- Switch between a stylus and the mouse

VI. Work with Brushes

- Select preset brushes
- Define template brush settings
- Reset the template brush
- Create new brush presets
- Modify brush settings for existing strokes
- Select brushes in your scene
- Map file textures to color and opacity
- Blend preset brush settings

VII. Animate Strokes

- Add spring behavior to strokes with tubes
- Keyframe brush and stroke attributes
- Animate tube growth, gaps, twist, and textures
- Animate the stroke path
- Make tubes react to forces
- Create animated textures
- Animate textures on strokes
- Loop brush animations

VIII. Creating Effects

- Animate rain effects
- Animate a plant growing up a column
- Animate a starfield
- Create textures from painted 3D objects
- Work on an animation project
- Create long hair with Paint Effects and Cloth

IX. Render scenes with Paint Effects

- Prepare to render
- Render scenes with Paint Effects strokes

X. Artisan Brush Tools

- Paint strokes
- Flood paint
- Paint reflected
- Restrict an area for painting
- Map attributes
- Set stylus pressure
- Change the brush outline color
- Create an Artisan tool shelf
- Define Artisan hotkeys
- Use Artisan marking menus

XI. Paint with MEL scripts and the Script Paint Tool

- Script paint
- Script Paint Tool settings
- Script paint on restricted surface areas
- Flood surfaces
- Write MEL Scripts for the Script Paint Tool

XII. Paint Attribute Values

- Paint attributes
- Restrict an area for painting
- Flood surfaces
- Map attributes
- Set Attribute Paint Tool settings
- Make an attribute paintable
- Reset tools

XIII. Paint Renderable Attributes on 3D Objects

- Paint Textures on 3D objects
- Restrict the paint area on polygons
- Flood the surface
- Reflect paint
- Paint over existing textures
- Paint attributes not seen in hardware texturing
- Layer painted textures
- Save textures

- Paint attributes not shown in the Texture list
- Switch nodes and painted textures

XIV. Fur

- Introduction to fur
- Load Fur
- Lay out UVs
- Create fur
- Attach and detach fur
- Select which UV set to use
- Preview fur using fur feedback
- Reverse fur normals
- Offset the direction fur grows
- Change fur attributes
- Map fur attributes to animated file textures
- Make fur clump together
- Save and load fur description attributes
- Copy fur descriptions into other scenes
- Animate fur attributes
- Make fur grow
- Add movement to fur
- Create attractors
- Delete attractors and attractor sets
- Attach and detach attractor sets
- Select the surfaces an attractor set is attached to
- Display feedback for the attractor set
- Select attractors
- Add attractors to a set
- Remove attractors from a set
- Change attractor set attributes
- Manually keyframe fur movement
- Make fur move using dynamics
- Create fur shading and shadows
- Adjust the light intensity on fur
- Set up Fur Render Globals before you render
- Render scenes with fur
- Build fur files separately
- Build equalizer maps separately
- Build shadow maps and fur images separately
- Add body fur
- Add whiskers
- Add eyelashes
- Part fur
- Work on an animation project
- Create fur shadows in the alpha channel

- Put fur on subdivision surfaces
- Reference
- Nodes
- Fur Feedback Shape node
- Fur Description node (Fur > Edit Fur Description)
- Fur Attractor node (Fur > Edit Attractor Set)
- Fur Shading/Shadowing attributes
- Menus
- Fur > Paint Fur Attributes Tool
- Fur > Create Attractor
- Windows and Editors
- Fur Globals
- Advanced Fur Rendering

XV. Cloth Simulation

- Load Cloth
- Create a garment
- Model the character
- Pose the character
- Build a pattern for the garment
- Create panels
- Seam the garment
- Tailor with darts
- Adjust the garment
- Move the garment
- Set resolution
- Adjust the seams
- Model parts of a garment
- Set display options
- Create cloth objects
- Create cloth collision objects
- Adjust the collision object
- Simulate cloth
- Use the cloth solver
- Adjust the cloth solver
- Manipulate your cloth
- Fix interpenetration problems
- Apply properties to panels
- Paint properties on cloth
- Use the material library
- Sample properties
- Create the animation start pose
- Use constraints
- Connect dynamic fields to your cloth
- Manage cache files

- Fix playback and simulation problems
- Create non-overlapping texture coordinates
- Adjust texture coordinates
- Use patterns
- Use double-sided shaders
- Export and import garments
- Use multiple solvers in a scene
- Simulate cloth in batch mode

XVI. After Effects

- Basics
- The Brief
- Preferences
- Importing
- Masks
- Nesting
- Animation
- Time
- Keying
- Effects
- Tracking
- Parenting
- Expressions
- 3D
- Type

METHODS OF EVALUATION OF COMPETENCIES:

Evaluation of student mastery of course competencies will be accomplished using the following grading scale.

Grading:

- A = 90 -100%
- B = 80 - 89%
- C = 70 - 79%
- D = 60 - 69%
- F = 0 - 59%

Extra Credit: The instructor must approve project.

0-5 points is given for extra credit per approved project. Project must be finished and handed in on specified date at the beginning of class. Only four approved projects per semester allowed.

