

USD 233 – OLATHE DISTRICT SCHOOLS

Course Title: Animation II

Credit: ½

Grade Level: 10, 11

Course Length: 1 Semester

Course Description:

Students will continue to refine their skills in a variety of animation media. The computer and cutting –edge software will become an increasingly important tool in creating storyboards, 2D, and 3D animations. More principles and elements of animation will be introduced to create ever-more realistic, believable, and engaging stories. Continued focus on the importance of plot, character development, and artistic skill will push students into realms of endless creativity and imagination.

Prerequisites: Digital Works.

Instructional Materials: MAYA Character Animation, 3D Creature Workshop, Digital Texturing & Painting, Digital Lighting & Rendering. (Text books subject to change).
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:

- Communicate ideas and stories with a variety of advanced animations processes, techniques, and media.
- Apply visual communications knowledge and skills to express ideas imaginatively.
- Use critical thinking, and problem solving to communicate ideas visually
- Select appropriate animation media, techniques, and processes for specific purposes
- Produce flipbooks, stop-motion and computer animations that demonstrate advanced control of a variety of media, techniques, and processes in traditional and emerging technology.
- Produce storyboards and animations that demonstrate basic knowledge of expository and narrative communication processes and animation theory.

Course Content:

I. Introduction to Animation II: Advanced Traditional Animation/3D Animation.

- Animation Terminology
- Animation Technology/Development
- Visual Milestones
- 2D/3D Animation

II. Digital Production Process

- Production strategies
- Digital Computer Animation Studio
- Creative and Production Teams
- Computer Animation Process
- 2D/3D Animation

III. Key Principles of Animation

- Straight-Ahead Action vs. Pose-to Pose Action
- Slow-In and Slow-Out
- Squash and Stretch
- Arcs
- Anticipation
- Staging
- Secondary Actions
- Timing
- Follow-Through and Overlapping Action

IV. Advanced Cartoon Animation

- Cartoon Form
- Exposure Sheet
- Line of Action
- Line of Action in Animation
- Rhythm and Design
- Movement of Body Masses
- Principles of Animation
- Movements of the Two-Legged Figure
- Movements of the Four Legged Figure

V. Advanced Stop - Motion Animation/Figure & Clay

- Figure Articulation
- Armature Construction
- Still Frame Animation
- Action Poses
- Background Plates
- Foreground Plates
- Compositing
- Color Correction

VI. Advanced Subdivision & Polygon Modeling

- **Polygon menu**
- Create Polygon Tool
- Append to Polygon Tool
- Combine
- Split Polygon Tool
- Extrude Face
- Extrude Edge
- Split Vertex Tool
- **Subdivision Surface Menu**
- Polygons to Subdivision
- Subdivision to Polygons
- Full Crease and Partial Crease Edge Vertex
- Uncrease Edge Vertex
- Mirror
- Attach
- Match Topology
- Clean Topology
- Collapse Standard
- Standard Mode and Polygon Proxy Mode
- Convert Selection to Face
- Refine Selected Components
- Expand Selected Components
- Component Display Level
- Component Display Filter
- Display Subdivision Surface Components
- Portraying Detail in Another Level
- Defining the Smooth Value for the Subdivision Surface

VII. Advanced Polygon, Subdivision Surface Mapping

- **Polygon Mapping**
- Assign Shader to Each Projection
- Create UV
- Editing UVs
- **Subdivision Surface Mapping**
- Planner Mapping
- Automatic Mapping
- Layout UVs
- **UV Texture Editor**
- UV Snapshot
- Subdivision Menu
- View
- Select Image

VIII. Advanced Subdivision Surface Character Modeling

- **Making the Basic Face**
- **UV Setting of Subdivision Surface**
- Convert to Polygons
- Using Cylindrical Mapping
- UV Editing
- **Transforming the Basic Face for Face Modeling**
- Import Image Plan
- Editing Subdivision Surface Model
- Dividing Levels for Details
- Mirror Copy and Attach
- **Hand Modeling**
- Modeling and Mapping in Parallel
- Using Subdivision Surface Mapping after Modeling
- Modeling Clothes

IX. Advanced NURBS Modeling

- **Understanding the Basic Menu**
- Curve Menu
- Surface Menu
- Rebuild Surface
- Stitch Edge Tool
- Global Stitch Tool
- **One Patch Modeling**
- Face Modeling
- Modeling the Eyes
- Modeling the Ears
- Matching Surface Curvature in Mapping

- **Multi-Patch Modeling**
- Face Modeling
- Body Modeling
- Muscle Man
- Modeling Hands

X. Facial Expressions

- Using Skeletons
- Modeling Blend Shapes
- Understanding the Muscular Structure of the face
- Modeling Teeth and Tongue

XI. Binding a Character

Rigid Bind

- Draw skeleton
- Bind Skin
- Edit Membership/CV and Point Weights
- Flexors

Smooth Bind

- Smooth Bind Options
- Edit Smooth Skin
- Add Influences
- Remove Influence
- Set Max Influence
- Paint Skin Weight Tool
- Export Skin Weight Tool
- Import Skin Weight Tool
- Mirror Skin Weight
- Copy Skin Weight
- Reset Weight
- Prune Weight

XII. Character Setup

- Forward Kinematics and Inverse Kinematics
- Forward Kinematics
- Inverse Kinematics
- Switching Forward and Inverse Kinematics

XIII. Advanced Character Setup

- Using Extra Joint
- Leg Control
- Arm Control
- Using IK Spline Handle
- Using Constraint and Cluster
- Setup Facial Expressions

XIV. Nonlinear Animation

- Create Character Set
- Create Sub-Character Set
- Attribute Editor
- Add to Character Set
- Remove From Character Set
- Merge Character Set
- Select Character Set
- Select Character Set Members
- Set Current Character Set

XV. Trax Editor

- Making the Clip
- Manipulating the Clip
- Editing Clip Attributes
- Cutting, Copying, and Pasting Clips
- Duplicate Clip
- Instancing Clips
- Slicing Clips
- Merge Clip
- Blend Clip
- Editing the Animation Curve of a Clip
- Modifying the Original Animation Curve of the Clip
- Enable/Disable Clip
- Adding to/Deleting from Tracks
- Motion Wrap
- Using Pose
- Exporting/Importing Clips
- Exporting and Editing Character Maps

XVI. Render Utility & Mapping Techniques

- Node and Shading Networks

- Hypershade
- Shader Attributes
- Bump 2D
- Bump 3D
- Condition
- Reverse
- Set Range and Clamp
- Stencil Utility
- 2D, 3D Placement
- Contrast
- Blend Colors
- Surface Luminance
- Gamma Correct
- Luminance
- General Utilities
- Switch

XVII. Advanced Lip Sync/Expressions Fundamentals

- Dialogue Expressions
- Dialogue Character Acting
- The Vowels
- The Consonants
- Lip Sync

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.

