# Animation 3D Course No. 10210 Credit: 0.5

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| **Student name:** |  | **Graduation Date:** |  |

Pathways and CIP Codes: **Media Arts, Web, and Design**

Course Description: **Technical Level:** The 3D Animation course explores the creative and conceptual aspects or designing and producing animated images for storytelling and multimedia presentations including dramatic narratives; artistic and experimental presentations and installations; and ambient, interactive, immersive and performance media. Topics may include motion graphics; compositing and visual effects; 2D and 3D animation; timing and spacing; aspect ratio; video editing; animation physics and expressions; pre- and post-production methods, tools, and processes; animation presentation, transmission, distribution, and marketing; and contextual, cultural, and historical aspects and considerations.

Directions:The following competencies are required for full approval of this course. Check the appropriate number to indicate the level of competency reached for learner evaluation.

**RATING SCALE:**

4. Exemplary Achievement: Student possesses outstanding knowledge, skills or professional attitude.

3. Proficient Achievement:Student demonstrates good knowledge, skills or professional attitude. Requires limited supervision.

2. Limited Achievement:Student demonstrates fragmented knowledge, skills or professional attitude. Requires close supervision.

1. Inadequate Achievement:Student lacks knowledge, skills or professional attitude.

0. No Instruction/Training:Student has not received instruction or training in this area.

## Benchmark 1: Animation Basics

### Competencies

| **#** | **DESCRIPTION** | **RATING** |
| --- | --- | --- |
| 1.1 | Navigate within the 3D work area. |  |
| 1.2 | Place and orient the 3D camera to focus on desired actions. |  |
| 1.3 | Place and manipulate a 3D object in the work area. |  |
| 1.4 | Create animated motion with keyframes on the timeline. |  |
| 1.5 | Create squash and stretch keyframes on a 3D model or rig. |  |
| 1.6 | Build basic scenic elements in 3D and use keyframes to create mechanical and physcial motion. |  |
| 1.7 | Animate a series of physical and mechanical actions in sequence. |  |
| 1.8 | Animate the motion of an object with a tail using overlapping action and follow through. |  |

## Benchmark 2: software proficiency

### Competencies

| **#** | **DESCRIPTION** | **RATING** |
| --- | --- | --- |
| 2.1 | Master the use of industry-standard 3D animation software (e.g., Autodesk Maya, Blender) for modeling, rigging, animation, and rendering. |  |

## Benchmark 3: modeling skills

### Competencies

| **#** | **DESCRIPTION** | **RATING** |
| --- | --- | --- |
| 3.1 | Create 3D models of characters, objects, and environments using appropriate modeling techniques. |  |

## Benchmark 4: Rigging and skinning

### Competencies

| **#** | **DESCRIPTION** | **RATING** |
| --- | --- | --- |
| 4.1 | Create skeletons, set up inverse kinematics (IK) and forward kinematics (FK) controls, and skin characters to the rigs. |  |
| 4.2 | Create a character skeleton. |  |
| 4.3 | Add bone weights to character model to attach character to the animation skeleton. |  |
| 4.4 | Create character controllers to allow manipulation of the character for animation. |  |

## Benchmark 5: Animation Techniques

### Competencies

| **#** | **DESCRIPTION** | **RATING** |
| --- | --- | --- |
| 5.1 | Apply advanced animation techniques, such as character acting, lip sync, and character interaction. |  |

## Benchmark 6: Storyboarding

### Competencies

| **#** | **DESCRIPTION** | **RATING** |
| --- | --- | --- |
| 6.1 | Explain storyboarding as the process of planning out an animation shot-by-shot. |  |
| 6.2 | Plan an animated sequence by creating a set of clear storyboard drawings describing the intended action and camera angles. |  |
| 6.3 | Translate storyboard drawings into a set of animation keyframe drawings. |  |
| 6.4 | Animate a sequence pose to pose and straight ahead. |  |

## Benchmark 7: Texturing and shading

### Competencies

| **#** | **Description** | **RATING** |
| --- | --- | --- |
| 7.1 | Apply textures and shaders to 3D models to enhance realism and aesthetic appeal. |  |

## Benchmark 8: timing and pacing

### Competencies

| **#** | **Description** | **RATING** |
| --- | --- | --- |
| 8.1 | Break a planned action down into a set of 3D key poses on the timeline. |  |
| 8.2 | Apply different timing and spacing to a 3D character's action to alter the quality of its motion. |  |
| 8.3 | Use stepped keyframes to plan the timing of a 3D character action. |  |
| 8.4 | Add breakdowns and inbetweens to a set of key poses on the timeline. |  |
| 8.5 | Use the graph editor to create a smooth animation between keyframes. |  |

## Benchmark 9: lighting and rendering

### Competencies

| **#** | **Description** | **RATING** |
| --- | --- | --- |
| 9.1 | Understand principles of lighting and rendering, and apply them to create visually appealing animations. |  |

## Benchmark 10: cinematography and camera animation

### Competencies

| **#** | **Description** | **RATING** |
| --- | --- | --- |
| 10.1 | Utilize camera animation and cinematography principles to enhance storytelling and visual impact. |  |

## Benchmark 11: Post-production skills

### Competencies

| **#** | **Description** | **RATING** |
| --- | --- | --- |
| 11.1 | Integrate rendered sequences with post-production tools for final editing and compositing. |  |
| 11.2 | Optimize rendering settings and output formats for efficient production and distribution. |  |
| 11.3 | Compare exposure sheet with Graph and Curve Editor for manipulating keyframe interpolation. |  |
| 11.4 | Create animation using motion paths and constraints (i.e., Set Dynamic Keys (SDKs)/action constraints, Artificial Intelligence (Al), etc.). |  |
| 11.5 | Explain the use of bones, armatures, and constraints for rigging and skinning techniques (i.e., forward kinematics and inverse kinematics (FK/IK)). |  |
| 11.6 | Explain how cinematic decisions [i.e., Field of View (FOV), camera angles, paths, etc.] for capturing images from a 3D scene can be used to make an aesthetically pleasing composition that reinforces the story. |  |
| 11.7 | Export assets to real-time rendering engine in the appropriate format and inspect/correct UVW maps, textures, and lighting to emphasize the most important aspects of the scene. |  |
| 11.8 | Test assets in the real-time engine to ensure animations and deformations work as intended. |  |
| 11.9 | Compare the benefits of different rendering methods (e.g., real-time rendering, or offline as an image sequence, or video file). |  |

## Benchmark 12: professional workflow

### Competencies

| **#** | **Description** | **RATING** |
| --- | --- | --- |
| 12.1 | Learn about the prefessional workflow for 3D animation, including how to collaborate with other artists, meet deadlines, and prepare their work for presentation. |  |
| 12.2 | Plan and manage animation projects from concept to completion. |  |

## Benchmark 13: Ethics and copyright

### Competencies

| **#** | **Description** | **RATING** |
| --- | --- | --- |
| 13.1 | Understand ethical considerations in animation creation. |  |
| 13.2 | Respect copyright and intellectual property rights, |  |

## Benchmark 14: portfolio development

### Competencies

| **#** | **Description** | **RATING** |
| --- | --- | --- |
| 14.1 | Create a portfolio of animation work showcasing skills and talents, highlighting growth and improvement over time - add appropriate class artifacts to the (IPS) Individual Plan of Study. |  |

I certify that the student has received training in the areas indicated.

Instructor Signature:

For more information, contact:

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