

//3D Animation & Visual Effects

... Redefine Reality with Imagination!



Step 5—3D Animator

3D Animation Activity Sheet

Focus on rigging and animation—the first step towards becoming a 3D Animator, which is also a prerequisite for the Motion Graphics Artist career major. Look around you—our world is filled with animation. Animation is becoming an integral part of our society, as the entertainment industry has evolved to encompass all types of businesses and organizations who cater to a diverse group of individuals with high expectations, that constantly desire more.

GET THE JOB! IN THIS PHASE, YOU WILL master the following skills:

Rigging:

Adopts habits and techniques to support industry standards for rigging. These techniques can be applied to real-world unpredictable situations and include: Set-Driven Keys, relationships; constraints; bones/joints; binding; Character, facial, inanimate objects, deformers, expressions, scripting, caching, etc.

Animation Techniques:

Adopts habits and techniques to support industry standards for animation. This includes: Keyframing & manipulation; curve editor & types, paths, non-linear, facial, to sound, expressions/scripts, timeline controls; deformers, blend shapes, frame rate, inanimate objects, layers, characters, body mechanics in relation to characters, etc.

Motion Capture:

Adopts industry-recognized habits and techniques to support data acquired through motion capture. These techniques can be applied to real-world unpredictable situations and include: Capturing data, using data, cleaning data, re-targeting data, etc.

A detailed checklist of skills you may be required demonstrate is provided on the following page.

Prepare with Purpose | Pursue | Persist | Polish | Produce | Problem-Solve | Perform with Promise



Competencies Checklist:

Demonstrate the skills you need to get the job!

Rigging:

- Adopts habits and techniques to support industry standards for rigging. These techniques can be applied to real-world unpredictable situations and include: Set-Driven Keys, relationships; constraints; bones/joints; binding; Character, facial, inanimate objects, deformers, expressions, scripting, caching, etc.
 - Understand constraints when rigging.
 - Rig joints/bones and apply appropriate binding techniques for characters, facial animation, inanimate objects, etc.
 - Build control systems.
 - Design rigs that can be re-used.
 - Understand deformers.
 - Build relationships between objects; driven-key relationship
 - Create, edit, and replace bones and joints while conforming to proper naming and hierarchy conventions.
 - Utilize expressions, scripting, set-driven keys, and other techniques for rigging and animation.

Animation Techniques

- Adopt habits and techniques to support industry standards for animation. This includes: Keyframing & manipulation; curve editor & types, paths, non-linear, facial, to sound, expressions/scripts, timeline controls; deformers, blend shapes, frame rate, inanimate objects, layers, characters, body mechanics in relation to characters, etc.
 - Perform advanced keyframing functions.
 - Construct complex animations, using independent judgment, creativity and technology.
 - Build relationships between objects using set-driven keys.
 - Work with the animation curve editor; understand and identify curve and tangent types.
 - Animation with expressions and scripts.
 - Perform different types of animation: path, non-linear, facial, inanimate objects, etc.
 - Animate to sound.
 - Explain timeline controls, frame rate, animation layers, etc.
 - Animate with deformers: jiggle, lattice, squash, twist, etc.
 - Understand and use Blend Shapes.
 - Explain body mechanics in relation to characters.
 - Determine appropriate scripting techniques to automate tasks and add efficiency to workflow.
 - Produce an accurate digital representation of motion for film and/or video games.
 - Export 3D Animations for a variety of applications.

Motion Capture:

- Adopts industry-recognized habits and techniques to support data acquired through motion capture. These techniques can be applied to real-world unpredictable situations and include: Capturing data, using data, cleaning data, re-targeting data, etc.
 - Integrate motion capture technology with 3D Motion Graphics.
 - Perform motion capture as needed to support motion graphics.
 - Re-target animation data.
 - Produce and clean motion capture and employ techniques for advanced animations.



Resources and Skill Mastery



College Credit:

TECH 2003 dm18 3D Animation

Certification:

ODCTE: 3D Animator

What

Learn the essentials of animation and creative methods for using Maya's animation tools.

Objective:

Students will utilize 3D animation tools and techniques for advanced key frame animation, animation layering, and motion as they produce an accurate digital representation of motion for film and/or video games. Techniques will include motion capture technology, and designing rigs that can be re-used as a basis for articulating similar characters and/or objects.

Why

Look around you—our world is filled with animation. Animation is becoming an integral part of our society, as the entertainment industry has evolved to encompass all types of businesses and organizations who cater to a diverse group of individuals with high expectations, that constantly desire more.

How

Instruction:

Maya Animation
Rigging Techniques
MotionBuilder Integration



Creative Blitz Portfolio Challenge

Autodesk STEAM 3D Animation:

OR 11-Second Club OR Animated Greeting Card OR Choice*

* (If choice, must be pre-approved.)

Project Guidelines—**READ & PREPARE** before starting

Creative Brief: Check out the monthly competition at the 11-second club and enter!

Client: Dana Myers

Industry: Entertainment

Project Goals: The 11-second club provides the audio clip and rigged characters so you can focus on animation. You'll need to join the club to enter. Download the audio files and other assets and become familiar with their rules.

You can also choose to use pre-developed assets from an online resource library to make an animated greeting card or other animation of your choice that is pre-approved.

Objectives:

- Animation should be realistic, according to the character's personality; use source footage of yourself acting out the scene to use for comparison/documentation and include those as a side-by-side comparison in the final footage.
- Final will utilize their audio and rigged assets, as well as segments of the source footage you create, compared to the final scene.
- Do not spend time modeling characters, use their assets.

Target Market:

Gender: M & F

Age: 10+

Additional Info: May use 2D scene for background

Message:

To be determined by 11-second club audio.

Initial reference ideas:

- Start with a normal walk cycle for your character, an event causes your character to be angry—most facial animation occurs at this point. Include a walk cycle, typical for the movements of this character. Finally, there is resolution, and your character jumps up and down happily. Lip-syncing could occur at end with some joyful proclamation.
- Conversation not necessary during all scenes, but there should be enough to support story and requirements. Consider audio background music to correlate with mood of story.
- Research walk cycles, (Animator's Survival Guide Workbook); Use source footage of self acting out mood of various walk cycles.
- Research your character—save your research for documentation.
- Check out the 11-second club monthly competition, <http://www.11secondclub.com>

Technical requirements listed on following page.



Technical requirements:

- Deadline: 30 hours
- Use an appropriate background scene for animation. (May be 2D)
- Review rubric prior to starting for quality indicators for success
- Write out the **storyboard**.
- Animation should incorporate various angles, shots, and views.
- Use the Motion Capture studio to generate some of the animation. While doing so, capture footage of yourself acting out the scene, and include this as a "side by side" or reference in the final video.
- Use your own animation skills within in Maya for a portion of the scene—no motion capture.
- Use titling and captions, as appropriate.
- Study Life! Research your character and document your research. Be prepared to show source footage and research data to instructor. You may wish to include this in your final video, at least in the credits section.
- Use **Grab** and/or **IShowU** to document any **formulas** or **scripting** utilized as well as file-naming conventions within Maya.
- **At least 5 Peer Reviews** completed (ask instructor to assign one peer)
- **Post** your work in progress to Behance AND the 11-second club.
- **Prior to beginning**, for any animations in your scene, you must shoot **raw footage** of yourself acting out the scene to use as **comparison** for **accuracy**.
- For this animation, details of characters are not as important as **fluid, realistic movements—according to your character**, and animations.
- The animation should **include at least one the following, at a minimum**:
 - The following walk cycles and/or movements:
 - normal walk cycle/angry or excited walk cycle
 - jumping or acrobatic movement
 - Facial Animation OR Lip Syncing
 - Incorporate at least two different angels and four different shot types.
 - Motion Capture
- Considering secondary motion, momentum is calculated by multiplying the mass of an object by its velocity.
- Use **IShowU** and/or **Grab** to document development as well as advanced techniques used for animation. Save often and save **versions**; consider using these versions in IShowU documentation. This will enable you to show **various stages of development**, and progression of your animation.
- The **Work in Progress posting** must include a **side-by-side comparison** of your **source footage** to the **animation**.
- **Render, Optimize, and Publish** animation to YouTube and/or Vimeo, and also embed in portfolio. **Publish** your work, as completed in phases to Behance, using the Work in Progress section to communicate regularly with your client to keep them updated.
- Prior to publishing, print & complete **self-evaluation** on rubric and submit **reflection**.
- Schedule a meeting with client for final approval and payment.



This is for a **Quack** award and will be featured in your portfolio. **Do your best** 😊

You are responsible for reviewing the rubric prior to beginning for additional requirements, and to be sure you earn all your points. During production, **problem-solve** and **refine** your design as needed to **submit an awesome project you will be proud of showcasing in your portfolio**.

Supplemental Resources:

- Photospin, <http://www.photospin.com>
- Soundsnap, <http://www.soundsnap.com/>
- Freeplaymusic, <http://freeplaymusic.com/>
- Adobe Story – for scriptwriting
- The following are available on the class site:
 - http://curriculum.autodesk.com/student/public/level1/digital/software_id/3/category_id/





Quack Award

It's time to do your very best work—this project will be featured in the Quack Award entries 😊

11-Second Club Animation OR Animated Greeting Card

Refer to the rubric and project guidelines for quality indicators.



Alternate STORYBOARD TEMPLATE

Commitment Statement: _____

NOTES Shots/Location/Props/Talent/Special Equipment Needed	VIDEO/ILLUSTRATION	AUDIO (Should attach script, List of questions, Music selection, etc.)

Instructor Approval/Date: _____

(Submit shot list, deliverables, storyboard, scripts, project proposal)



Peer review

Prior to beginning, ask the instructor to assign a classmate to conduct periodic peer reviews.

Overview

Revision is an important part of the design process. In addition to conducting review and redesign cycles personally and with your client, using peer review can also be beneficial to your project. Peer review occurs in many professional environments, and it is an essential skill to starting learning.

When giving a peer review, be sure to **make both positive and negative points**. Give critiques as suggestions, not commands. When receiving peer review, do not feel disenchanting or think you did a bad job based on one review. Every review is different and what one person may not approve, the next person may find exemplary.

Once you have a draft developed of your project, have your assigned classmate read this document and review your work to give suggestions. They should also review it again before you present your final project to the instructor. They should use the Final Evaluation Grade Rubric form as a guide, and the form on the following page for comments.

Evaluatee:

Process for presenting work for peer review

- Ask the instructor to assign a peer for review purposes—you want a different, objective perspective
- When presenting your work for a peer review, state the purpose, audience, and goals of your project and point out any concerns you have.
- After someone else reviews your work, your first response should be to reiterate their suggestions, make sure you understand their comments, and ask for additional clarification, if needed.
- To conclude, have the student summarize the suggestions on the back side of this form, and start revising, as needed.

Evaluator:

Guidelines for giving comments and suggestions

- Before making any comments, review the goals of the project and then the entire project, making sure you understand the student's intentions.
- Point out the strengths as well as the weaknesses of the project (composition, storyboard, research, design, technical skills, timing, so on).
- Offer suggestions, not commands. For instance, do not say "You should do this...." Instead, use "I" statements: "I see that..." or "I'm confused about..."
- Be respectful and considerate of your peer's feelings. Do not say or write anything you wouldn't want to hear about yourself. There is no reason to be rude.
- Make sure your comments are clear and specific so your peer knows what you are referring to. Give specific examples and point to techniques, examples, script writing, and so on to make your point. (Comments such as "This is unclear" or "This is too vague" are too general to be helpful. Rather, make a comment such as "I'm confused by this scene because it seems out of place.")
- When you are writing your comments, reread them before giving them to your peer. **Make a list of positive comments and a list of suggested improvements.** Make sure your comments make sense and are easy to follow.



NAME:

SHOT NUMBER:

SHOT TYPE: _____
CAMERA MOVEMENT: _____
ACTION: _____

AUDIO: _____

SHOT NUMBER:

SHOT TYPE: _____
CAMERA MOVEMENT: _____
ACTION: _____

AUDIO: _____

SHOT NUMBER:

SHOT TYPE: _____
CAMERA MOVEMENT: _____
ACTION: _____

AUDIO: _____

SHOT NUMBER:

SHOT TYPE: _____
CAMERA MOVEMENT: _____
ACTION: _____

AUDIO: _____

Treatment (*Optional* new form)

Project title: _____

Producing team: _____

Completion date (est): _____

Client: _____

Business: _____

Contact information: _____

The concept

Use your research to create a *concept statement*—a very brief summary of the theme and purpose of the animation.

Scene description

Identify the number of scenes and briefly describe the action for each scene. Use a shot list to further develop each scene.

The approach (style)

Explain what techniques you will use to effectively communicate your message/story. (Examples: You will use composited video to create action scenes. You will use black-and-white filters and music from the past to give your project the feel of a documentary.)

Music style: _____

Narration style: _____

Font style: _____

Transition type: _____

Video effects: _____

Other style: _____

Client signature: _____

Instructor signature: _____

Team Initials:

Shot list/Frames/Illustration Sequence (Optional new form)

Name(s): _____

Project: _____

o Shot _____

Location _____ Talent _____

Props _____ Special Equipment _____

o Shot _____

Location _____ Talent _____

Props _____ Special Equipment _____

o Shot _____

Location _____ Talent _____

Props _____ Special Equipment _____

o Shot _____

Location _____ Talent _____

Props _____ Special Equipment _____

o Shot _____

Location _____ Talent _____

Props _____ Special Equipment _____

o Shot _____

Location _____ Talent _____

Props _____ Special Equipment _____

o Shot _____

Location _____ Talent _____

Props _____ Special Equipment _____

Assessment

3D Animation—Challenge (Multiply final values by 5)

Category	Excellent 4	Good 3	Satisfactory 2	Needs Improvement 1	Points Received Self/Teacher	
Research, Storyboard, Peer Review, Script, Raw Footage, Research, Preparations before starting	Story Structure and Storyboard sheets were detailed and included script, camera angles/shots, props, and sources . Animation and had a beginning, middle, and an ending . Story supported theme, "rule of thirds", and had good use of color. Script, Peer Review, Raw Footage, and Storyboard completed prior to starting.	Story Structure, Storyboard sheets were prepared and included script, camera angles/shots, props . Story had a beginning, middle, and an ending . Storyboard completed, uploaded to Behance, & approved prior to starting. Animatic completed prior to final.	Storyboard lacked necessary information and/or details specified. Story was not appealing. Self-Evaluation on Rubric and storyboard were completed and printed prior to assessment and/or blog not grammatically correct.	Storyboard not completed. Self-Evaluation on Rubric and/or storyboard or blog has not been completed and/or not printed prior to assessment. Project was lacking source footage for comparison.		
Length, Camera shots, Angles, Timing, Message, Grammar	Animation utilized at least 2 angles and 4 shots and was 11 seconds in length. Used Pan/Zoom features appropriately. Timing was appropriate. Message: positive and appropriate for ages 3+ and was grammatically correct.	Animation used few angles/shots and/or timing was off. Message could have been improved and strengthened.	Length was not appropriate and/or message was not incorporated into animation, and/or camera shots, angles were missing. Grammar required few corrections.	No consideration given to message, camera angles, shots, or length. Final story not grammatically correct.		

Animation Requirements	<p>Animation demonstrated an understanding of and included at least two of the following:</p> <ul style="list-style-type: none"> ○ a walk cycle ○ angry walk cycle ○ jumping motion ○ facial animation or lip syncing. ○ Motion capture <p>AND</p> <ul style="list-style-type: none"> ○ Source footage was taken, utilized, and side-by-side comparison included in Behance WIP section. 	<p>Animation demonstrated an understanding of and included at least one of the following:</p> <ul style="list-style-type: none"> ○ a walk cycle ○ angry walk cycle ○ jumping motion ○ facial animation or lip syncing. ○ Motion capture <p>AND</p> <ul style="list-style-type: none"> ○ Source footage was taken, utilized, and side-by-side comparison included in Behance WIP section. 	<p>Animation could appear more realistic and/or needed improvement, but project guidelines are followed. Source footage included as specified.</p>	<p>Project guidelines were not met.</p>		
Originality	<p>All products developed show significant evidence of originality and inventiveness and are unique. Majority of content and ideas are fresh, original, and inventive. No copyright laws are violated.</p>	<p>Work mostly shows evidence of some originality however a small portion resembles existing design.</p>	<p>Efforts show evidence of some originality however a small amount resembles current products. May have violated copyright laws. Not unique.</p>	<p>Model developed is copied or very closely resembles current products for existing business or product.</p>		
Audio, Required Components, Assets	<p>Royalty-free audio/voice-over was clear, at an appropriate, even volume, easy to understand, and supported message. All assets developed were exceptional quality.</p>	<p>Royalty-free audio included; quality is Adequate, at an appropriate volume and pace. No grammatical errors.</p>	<p>Quality of royalty-free audio could be improved and/or had grammatical errors. Audio supported message, but volume fluctuated, and/or enunciation was not clear. All assets were adequate</p>	<p>Audio/Voice-Over, or any other assets developed were lacking or of poor quality.</p>		

Reflection and Self-Evaluation	Reflection and self-evaluation completed and submitted prior to evaluation. Reflection was grammatically correct , used paragraphs , answered all questions , and was appropriate to share with potential employer. Links to resources used were shared and explanation of why resource was helpful provided.	Submitted prior to evaluation. Reflection had a few errors, or some answers were missing.	Reflection and self-evaluation submitted prior to evaluation, but had a few errors, and/or some answers were missing.	Reflection and/or self-evaluation not submitted prior to evaluation; and/or reflection lacking information or required correction.		
Project management: Updates to project and Behance. Communications with client regarding achievements and progress.	Project was thoroughly planned & documented before starting. Weekly updates were published to Behance and Basecamp. Design process and techniques were documented using Grab and/or IShowU. Multiple versions of work were saved. Client was updated weekly regarding progress and achievements.	Project planned & documented. At least one update published to Behance and Basecamp. Multiple versions of work saved. Client updated regularly.	Project was planned before starting. No updates were published to Behance and Basecamp. Client was familiar with progress and achievements.	No evidence project was planned before starting. Client was unfamiliar with progress and achievements.		
Raw Footage, Side-by-Side Comparison, Sources, Accuracy	Used creativity to include raw footage alongside animation to demonstrate accuracy. Labels were provided, showing comparisons that were easily understood. Animations were accurate according to character. Could cite sources used.	Raw footage was shown alongside animation. Labels or creativity could be improved. Animations were accurate, according to character. Sources were used, but not easily identified.	Used raw footage alongside animation to demonstrate accuracy. Animations were close. Sources lacking.	Failed to use raw footage for side by side comparison, or animation was not close to raw footage.		

<p>Peer Review and Problem-Solving</p>	<p>Thorough peer review completed by assigned mentor prior to starting final; revisions made based upon peer suggestions and self-evaluation. Student took initiative in problem-solving and correcting as needed, and was able to explain revision and problem-solving process.</p>	<p>At least 5 peer reviews completed; revisions made based upon suggestions and self-evaluation. Problem-solving skills and explanation of techniques used were adequate.</p>	<p>Less than 5 peer review completed; revisions made based upon peer suggestions and self-evaluation. Problem-solving skills need improvement and/or student couldn't explain problem-solving process.</p>	<p>Peer review lacking; and/or design lacked revisions for improvements; and/or there was a lack of problem-solving.</p>		
<p>Target Market; Branding, Marketing; Collaboration</p> <p>Bonus Point</p>	<p>Design is unique, appropriate for ages 10+, and depicts the intent of the client. Community forums utilized for problem-solving and/or review of work; links to resources were shared with client and peers, including an explanation of their value. Bonus point awarded for Grab shot of formulas and/or scripts used.</p>	<p>Design is unique, appropriate, and integrated most of client requests. All but one requirement was published. Links to resources were shared, including an explanation of their value.</p>	<p>Design met most specifications. Additional details at could have improved animation. Links to resources were shared.</p>	<p>Design needs improvement and/or some of requirements were not published and/or there was no collaboration with others regarding problem-solving or sharing resources</p>		
<p>Effective Use of Time; Pride and Quality of Work</p> <p>Established Delivery Date:</p> <hr/> <p>Actual Delivery Date:</p> <hr/>	<p>Design was not rushed, and was also completed on time. Time was taken to critique design and make improvements so that final version represents student's best work. Design submitted in a timely manner, according to guidelines. All products submitted (reflection, video, and design,) are at a high level of quality, appropriate for portfolio.</p>	<p>Design was rushed and/or completed up to two days late. Design was average and could have been improved prior to publishing. Most products submitted were at an average level of quality, but appropriate for portfolio.</p>	<p>No delivery date was established. Design was rushed and/or not completed on time. Design was average and could have been improved prior to publishing. Most products submitted were at an average level of quality, but appropriate for portfolio.</p>	<p>Improvements required, but not made prior to publishing. Design was rushed when more time would have resulted in improvements. Some products needed improvements or were lacking.</p>		

Animation Techniques, Student Understanding, Scale	Animation techniques employed exceeded a basic skill level. Student could compare techniques used to skills acquired during instruction; explanation was thorough, and demonstrated understanding.	Animation techniques were appropriate. Student could compare techniques used to skills acquired during instruction; explanation.	Animation techniques were basic when more advanced techniques would have improved, or student could not compare skills or give explanation.	More than one item in this category was not met.		
Creative Artistry, Entertainment Value	Animation is very creative and appealing. Good design principles have been applied and "personality" is evident. Animation is innovative and entertaining.	Animation is creative and/or appealing. Good design principles applied. Product is clean and simple.	Animation is average; message is lacking; audience is not aware of the purpose.	Animation is not appealing; principles of animation/design are lacking.		
52 Points Possible: Total Points Earned:						

Technical Competencies:

4 - Skilled; 3 - Moderately Skilled; 2 - Limited Skill; 1 - No Exposure

Skill	Competency Rating
Rigging Within Maya, must be able to demonstrate the following:	
<ul style="list-style-type: none"> ○ Establish Set-Driven Keys, build relationships between objects ○ Application of Deformers ○ Utilization of Expressions, scripting ○ Demonstrate constraints when rigging ○ Rig joints/bones and apply appropriate binding techniques for characters, facial animation, inanimate objects, etc. (Smooth, Rigid, Weights, etc.) ○ Build control systems ○ Design rigs that can be re-used ○ Create, edit, and replace bones and joints while conforming to proper naming and hierarchy conventions. 	
Animation Techniques Within Maya, must be able to demonstrate the following:	
<ul style="list-style-type: none"> ○ Perform advanced keyframing functions using various methods, and manipulate keyframes, as needed. ○ Work with the curve editor to manipulate paths and simulate fluid, realistic movements. ○ Understand and identify curve and tangent types. ○ Animate with expressions and scripts. ○ Perform different types of animation: path, non-linear, facial, inanimate objects, etc. ○ Animate to sound. ○ Explain timeline controls, frame rate, animation layers, etc. ○ Animate with deformers: jiggle, lattice, squash, twist, etc. ○ Understand and use Blend Shapes. ○ Explain body mechanics in relation to characters. ○ Export 3D Animations for a variety of applications. 	
Motion Capture Within MotionBuilder and Maya, must demonstrate the following:	
<ul style="list-style-type: none"> ○ Integrate motion capture technology with 3D Motion Graphics. ○ Perform motion capture as needed to support motion graphics. ○ Re-target animation data. ○ Produce and clean motion capture and employ techniques for advanced animations. 	
Performance Test/Test preps (2)/DT Test Critique/analyze completed results to determine if objectives are achieved. (1 point each)	
Pull up Quick Start Guides—what did you do/learn?	
Week 6 Take Charge! Pull up your completed projects—what did you do/learn?	
Demonstrate four unique things you learned not on this list.	
31 POINTS	