

# Instructional Framework

Animation  
10.0200.60



## Domain 1: Phases of Production

**Instructional Time: 65-75%**

### STANDARD 7.0 Engage in pre-production/planning phase of product creation in animation

7.1 Apply drawing skills (i.e., shading, perspective, and gesture drawing)	<ul style="list-style-type: none"><li>• Drawing both on paper and with digital tools</li><li>• Drawing from observation</li><li>• shading</li><li>• light sources and chiaroscuro</li><li>• 1, 2, and 3 point perspective</li></ul>
7.2 Apply the elements and principles of design to all sketches, drawings, and projects	<ul style="list-style-type: none"><li>• Elements: Line, shape, space, form, value, texture, and color</li><li>• Principles: balance, contrast, emphasis, movement, pattern, rhythm, unity</li></ul>
7.3 Use the rule of thirds to create visually pleasing composition	<ul style="list-style-type: none"><li>• rule of thirds</li><li>• composition</li></ul>
7.4 Apply basic anatomy to figure drawing and character design	<ul style="list-style-type: none"><li>• muscular and skeletal structure</li><li>• capture movement and pose with gesture</li></ul>
7.5 Create detailed concept art illustrating content ideas for a project	<ul style="list-style-type: none"><li>• purpose of concept art in the production process</li></ul>
7.6 Create detailed comprehensive storyboards for a project	<ul style="list-style-type: none"><li>• purpose of storyboards in the production process</li></ul>
7.7 Explain the purpose of creating image representation (thumbnails and/or silhouette sketches) for each project	<ul style="list-style-type: none"><li>• Brainstorming</li><li>• idea development</li></ul>
7.8 Explain the purpose of creating an animatic for a project	<ul style="list-style-type: none"><li>• Working out timing and sound</li></ul>

### STANDARD 8.0 Implement plan(s) for acquiring or creating a product in accordance with production phase tasks in animation

8.1 Apply the principles of animation to all animated projects	<ul style="list-style-type: none"><li>• Straight Ahead and Pose to Pose</li><li>• Solid Drawing</li><li>• Appeal</li></ul>
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	<ul style="list-style-type: none"> <li>• Staging</li> <li>• Timing</li> <li>• Arcs</li> <li>• Slow in and Slow Out</li> <li>• Squash and Stretch</li> <li>• Exaggeration</li> <li>• Anticipation</li> <li>• Follow Thru and Overlapping Action</li> <li>• Secondary Action</li> </ul>
8.2 Explain the animation pipeline and its stages	<ul style="list-style-type: none"> <li>• Pre-production</li> <li>• Modeling</li> <li>• Texturing</li> <li>• Lighting</li> <li>• Animation</li> <li>• Visual Effects</li> <li>• Rendering</li> <li>• Post-production (Compositing, editing and sound)</li> </ul>
8.3 Create a folder hierarchy and organize project files within folders using consistent naming conventions (e.g., naming layers in Photoshop and naming objects in a 3D program)	<ul style="list-style-type: none"> <li>• File management</li> <li>• Naming conventions (objects, shaders, layers)</li> </ul>
8.4 Use mathematical calculations to determine frame rates (e.g., animation, film, and video)	<ul style="list-style-type: none"> <li>• Frame rates for film (24 fps), video (30 fps), animation (24 fps)</li> </ul>
8.5 Apply an understanding of 3D image creation in terms of modeling (e.g., polygons, NURBS/hyper-nurbs, subdivision surfaces)	<ul style="list-style-type: none"> <li>• Modeling</li> <li>• Types of geometry</li> <li>• Types of mesh</li> <li>• Edge flow</li> <li>• Components</li> <li>• Non-manifold geometry</li> </ul>
8.6 Differentiate among types of surface shaders	<ul style="list-style-type: none"> <li>• Shaders</li> <li>• Shader qualities</li> <li>• Shader to suit the purpose</li> </ul>
8.7 Create procedural textures utilizing map channels and Paint/photo reference	<ul style="list-style-type: none"> <li>• Texturing</li> </ul>

textures in Photoshop	<ul style="list-style-type: none"> <li>• Procedural textures</li> <li>• Image textures</li> </ul>
8.8 Map textures on polygon objects using planar, cylindrical, spherical mapping, and the UV texture editor	<ul style="list-style-type: none"> <li>• Unwrapping the UV in various ways</li> </ul>
8.9 Differentiate among types of lights and their attributes	<ul style="list-style-type: none"> <li>• Light types</li> <li>• Light attributes</li> </ul>
8.10 Explain the three lights in the three-point lighting system	<ul style="list-style-type: none"> <li>• Three-point lighting (key, fill, rim)</li> </ul>
8.11 Use white and colored lights and shadows to create mood in a scene	<ul style="list-style-type: none"> <li>• Use of lights to create a mood</li> </ul>
8.12 Use graph editor/curve editor software to manipulate keyframe interpolation	<ul style="list-style-type: none"> <li>• adjusting the timing of keyframes</li> <li>• avoiding over-keying</li> </ul>
8.13 Create animation using motion paths	<ul style="list-style-type: none"> <li>• Uses of a motion path</li> <li>• Define motion path</li> </ul>
8.14 Create SDKs/action constraints	<ul style="list-style-type: none"> <li>• Custom animation controls</li> </ul>
8.15 Explain the basics of and uses for FK/IK (forward kinematics and inverse kinematics)	<ul style="list-style-type: none"> <li>• Rigging</li> </ul>
8.16 Identify and explain camera angles and moves; use a camera to capture an image from a 3D scene utilizing positioning and focal length to make a nice composition	<ul style="list-style-type: none"> <li>• Angles: extreme long, long shot, medium shot, close up, extreme close up, bird's eye, high, over the shoulder, eye-level, canted</li> <li>• Movement: Pan, dolly, crane, zoom, tilt, rack-focus</li> </ul>
8.17 Identify rendering systems and explain their use; render still images in various sizes, qualities, and file types	<ul style="list-style-type: none"> <li>• Multiple rendering systems and their applications</li> <li>• The purpose of rendering</li> </ul>
8.18 Explain gates and safe frames and their uses	<ul style="list-style-type: none"> <li>• Safe action</li> <li>• Safe title</li> </ul>
8.19 Render an animated sequence	<ul style="list-style-type: none"> <li>• Image sequence</li> </ul>

8.20 Use ray tracing to create reflections	<ul style="list-style-type: none"> <li>• Ray tracing</li> </ul>
8.21 Use dynamic systems to simulate fire, fluid, and smoke	<ul style="list-style-type: none"> <li>• Simulating physical phenomenon</li> </ul>
<b>STANDARD 9.0 Perform tasks in post-production phase of product refinement in animation</b>	
9.1 Animate layers of footage in a compositing program	<ul style="list-style-type: none"> <li>• Setting keyframes</li> </ul>
9.2 Use and animate compositing effects	<ul style="list-style-type: none"> <li>• Applying effects</li> </ul>
9.3 Use masks, track mattes, and keying techniques	<ul style="list-style-type: none"> <li>• Combining multiple layers</li> <li>• Layer transparency</li> </ul>
9.4 Track motion and apply the data to footage	<ul style="list-style-type: none"> <li>• Stabilizing footage</li> <li>• Tracking objects</li> </ul>
9.5 Combine a sound file and an image sequence into one movie file	<ul style="list-style-type: none"> <li>• Exporting finished sound and image files</li> </ul>

<b>Domain 2: Delivery and Quality Assurance</b>	
<b>Instructional Time: 15-20%</b>	
<b>STANDARD 10.0 Deliver/distribute product(s) using various media in accordance with consumer expectations in animation</b>	
10.1 Identify various file formats, their advantages and disadvantages	<ul style="list-style-type: none"> <li>• JPEG, PNG, GIF, TIFF, PDF, AVI, MP4, MOV</li> </ul>
10.2 Select video or audio codecs for various formats [hard-drives, CDs, DVDs, blu ray, and the Internet (streaming and gaming engines)]	<ul style="list-style-type: none"> <li>• Codecs appropriate for specific uses</li> </ul>
10.3 Explore the Internet as a delivery system and the use of security parameters (e.g., Vimeo or YouTube as a video-sharing tool for distribution)	<ul style="list-style-type: none"> <li>• Options for posting portfolios, demo reels, and projects</li> </ul>
<b>STANDARD 11.0 Monitor quality assurance of product creation concurrent with all phases of production in animation</b>	
11.1 Critique an animation project for craftsmanship, content, and tone	<ul style="list-style-type: none"> <li>• Professional and technical feedback</li> </ul>

11.2 Review a project workflow after completion and determine areas for improvement	<ul style="list-style-type: none"> <li>• Value of self-reflection</li> </ul>
11.3 Identify factors, including personal trait, that contribute to the success of small production houses for animation, film, and audio	<ul style="list-style-type: none"> <li>• Meeting deadlines</li> <li>• Meeting client expectations</li> <li>• Producing quality work</li> </ul>
<b>STANDARD 12.0 Present product(s) to selected audience(s) using animation</b>	
12.1 Structure and develop a demo reel of an appropriate length	<ul style="list-style-type: none"> <li>• Quality over quantity</li> <li>• Maximum 3 minutes</li> </ul>
12.2 Explore methods of distributing portfolios and demo reels for the purpose of work and employment	<ul style="list-style-type: none"> <li>• Web portfolio sites</li> <li>• Social media</li> <li>• Printed portfolio books</li> </ul>
12.3 Research a company as a potential employee and develop a cover letter	<ul style="list-style-type: none"> <li>• Writing cover letters</li> </ul>
12.4 Explore interviewing techniques for professional placement	<ul style="list-style-type: none"> <li>• Making eye contact</li> <li>• Taking notes</li> <li>• Being engaged</li> <li>• Ask good questions of the interviewer</li> <li>• Appropriate attire</li> </ul>

<b>Domain 3: Technology Skills</b>	
<b>Instructional Time: 10-15%</b>	
<b>STANDARD 5.0 Utilize computer applications to manage media</b>	
5.1 Use appropriate electronic publishing software and output devices	<ul style="list-style-type: none"> <li>• Computer literacy</li> </ul>
5.2 Apply essential commands and knowledge of computer operating systems	<ul style="list-style-type: none"> <li>• Computer literacy</li> </ul>
5.3 Apply computer file management techniques	<ul style="list-style-type: none"> <li>• Importance of good file management</li> </ul>

5.4 Use the Internet for file transfer	<ul style="list-style-type: none"> <li>• Various options for transferring files over the internet</li> </ul>
5.5 Select the format for digital delivery	<ul style="list-style-type: none"> <li>• Various options for animated content</li> </ul>
5.6 Use and care for equipment and related accessories	<ul style="list-style-type: none"> <li>• Maintenance of equipment</li> </ul>
5.7 Describe the functionality of the internet, intranet, and extranet in the media environment	<ul style="list-style-type: none"> <li>• Functionality of the internet in the media environment</li> </ul>
5.8 Explain methods of protecting a computer against computer threats	<ul style="list-style-type: none"> <li>• Firewalls</li> <li>• Antivirus software</li> <li>• Email best practices</li> </ul>
<b>STANDARD 6.0 Apply knowledge of data capture and manipulation</b>	
6.1 Identify software that supports data capture for media devices (i.e., digital camera, video input device, graphics tablet, graphics expansion boards)	<ul style="list-style-type: none"> <li>• Photo manipulation software</li> <li>• Scanning software</li> <li>• Digital sculpting software</li> <li>• Motion capture software</li> <li>• Video capturing software</li> </ul>
6.2 Select appropriate resolutions for data capture	<ul style="list-style-type: none"> <li>• Appropriate resolutions for data capture</li> </ul>
6.3 Capture and transfer still image, audio, and moving image content	<ul style="list-style-type: none"> <li>• Camera</li> <li>• Scanner</li> <li>• Graphics tablet</li> <li>• Microphone</li> <li>• Motion capture device</li> </ul>

<b>Domain 4: Business and Industry</b>	
<b>Instructional Time: 5-10%</b>	
<b>STANDARD 1.0 Analyze the media industry, its business practices, and its role in the economy</b>	
1.1 Research the role of the media industry and its impact on society and the	<ul style="list-style-type: none"> <li>• Role of the media industry and its impact on society and the</li> </ul>

economy	economy
1.2 Investigate the history and evolution of media and emerging technology	<ul style="list-style-type: none"> <li>• Victorian gadgets (thaumatrope, zoetrope, etc)</li> <li>• Pioneers of animation</li> <li>• Rubber Hose</li> <li>• Disney-style realism</li> <li>• Warner Bros-style slapstick</li> <li>• Limited animation</li> <li>• Computer animation</li> <li>• Stop motion animation</li> </ul>
1.3 Identify factors that contribute to the success of media businesses and freelance/contract providers	<ul style="list-style-type: none"> <li>• Meeting deadlines</li> <li>• Meeting client expectations</li> <li>• Producing quality work</li> </ul>
1.4 Examine the impact of social media on the media industry	<ul style="list-style-type: none"> <li>• Increased accessibility</li> <li>• Oversaturation</li> <li>• Variation in quality</li> </ul>
1.5 Identify key factors to be considered in launching a media business	<ul style="list-style-type: none"> <li>• Business plan</li> <li>• Budget</li> <li>• Clientele</li> </ul>
1.6 Examine how the relationship among marketing, sales, and production affects profitability	<ul style="list-style-type: none"> <li>• Expenses</li> <li>• Profit margin</li> <li>• Pricing</li> </ul>
1.7 Describe how production processes and cycles affect media businesses	<ul style="list-style-type: none"> <li>• Production processes and cycles affect media businesses</li> </ul>
1.8 Determine costing projections for various media objectives and/or functions	<ul style="list-style-type: none"> <li>• Costing projections for various media objectives and/or functions</li> </ul>
1.9 Describe how diversity (cultural, ethnic, multigenerational) and ethics affect the selection of projects and programs	<ul style="list-style-type: none"> <li>• Diversity (cultural, ethnic, multigenerational) and ethics affect the selection of projects and programs</li> </ul>

1.10 Describe how ethics, hype, and content influence media products	<ul style="list-style-type: none"> <li>• Ethics, hype, and content influence media products</li> </ul>
1.11 Identify industry safety standards	<ul style="list-style-type: none"> <li>• Industry safety standards</li> </ul>
1.12 Describe multiple distribution platforms that are in compliance with the American Disability Act	<ul style="list-style-type: none"> <li>• American Disability Act Compliance</li> </ul>
<b>STANDARD 2.0 Investigate intellectual property law and rights management</b>	
2.1 Identify current legal issues in media professions	<ul style="list-style-type: none"> <li>• Legal issues in media professions</li> </ul>
2.2 Explain plagiarism and its effects in business	<ul style="list-style-type: none"> <li>• Plagiarism</li> </ul>
2.3 Define the establishment of a copyright	<ul style="list-style-type: none"> <li>• Copyright</li> </ul>
2.4 Discuss rights and implications of copyright law	<ul style="list-style-type: none"> <li>• Copyright law</li> </ul>
2.5 Examine intellectual property law and its ramifications	<ul style="list-style-type: none"> <li>• Intellectual property</li> </ul>
2.6 Explain the establishment of a trade name and trademark	<ul style="list-style-type: none"> <li>• Tradename and trademark</li> </ul>
2.7 Explain fair use in relation to legal and regulatory considerations	<ul style="list-style-type: none"> <li>• Compare fair use vs. plagiarism</li> </ul>
<b>STANDARD 3.0 Demonstrate verbal and nonverbal communication skills required by the media industry</b>	
3.1 Use industry terminology appropriately in the work environment	<ul style="list-style-type: none"> <li>• Animation, storyboard, rendering, keyframes, etc.</li> </ul>
3.2 Use effective communication techniques to obtain accurate information from sources, audiences, and clients	<ul style="list-style-type: none"> <li>• Accurate and effective communication techniques</li> </ul>
3.3 Practice verbal and nonverbal communication skills with people of diverse cultures, generations, and situations	<ul style="list-style-type: none"> <li>• Verbal and nonverbal communication skills with people of diverse cultures, generations, and situations</li> </ul>



3.4 Practice active listening skills appropriate to the medium/media	<ul style="list-style-type: none"> <li>Active listening skills appropriate to the medium/media</li> </ul>
<b>STANDARD 4.0 Demonstrate written communication skills required by the media industry</b>	
4.1 Use professional etiquette for web-, email-, and social-media-based communications	<ul style="list-style-type: none"> <li>Professional etiquette for web-, email-, and social-media-based communications</li> </ul>
4.2 Conduct formal and informal research to collect information	<ul style="list-style-type: none"> <li>Formal and informal research</li> </ul>
4.3 Verify the accuracy of information	<ul style="list-style-type: none"> <li>Accuracy of information</li> </ul>
4.4 Verify the authority of sources	<ul style="list-style-type: none"> <li>Authority of sources</li> </ul>
4.5 Identify the purpose, content, and audience for communications	<ul style="list-style-type: none"> <li>Purpose, content, and audience for written communications</li> </ul>
4.6 Select the appropriate medium/media for distribution of communications	<ul style="list-style-type: none"> <li>Appropriate medium/media for distribution of written communications</li> </ul>
4.7 Format communications for the purpose, audience, and medium/media	<ul style="list-style-type: none"> <li>Format written communications for the purpose, audience, and medium/media</li> </ul>
4.8 Use editing skills when reviewing communications	<ul style="list-style-type: none"> <li>Editing skills in written communications</li> </ul>
4.9 Use proofing skills and check the spelling when reviewing communications	<ul style="list-style-type: none"> <li>Proofing skills and spell-checking in written communications</li> </ul>