



**The Art Institutes™**  
*America's Leader in Creative Education*

**Game Art & Design Competency Map (3x5, 3x5x4)**

<b>Exit competency</b>	<b>Course Competency</b>	<b>Courses</b>
<b><i>Develop professional awareness through research and networking</i></b>	<ul style="list-style-type: none"><li>• Research and describe the corporate cultures and values of various companies within the game industry</li><li>• Conduct activities with pertinent industry groups and / or associations</li><li>• Identify various career paths in the game industry</li><li>• Research entry positions within the game industry as well as submission, requirements of particular companies</li></ul>	Introduction to Game Development
<b><i>Define concepts and terminology in game art and design</i></b>	<ul style="list-style-type: none"><li>• Assess the effects of technological advancements on interactive entertainment</li><li>• Define the terminology used in the game development cycle</li></ul>	Introduction to Game Development
<b><i>Define the processes for developing interactive games from concept to final product</i></b>	<ul style="list-style-type: none"><li>• Describe the production process, including pre-production, production and post-production for a given project</li><li>• Identify demographic and marketing processes</li></ul>	Introduction to Game Development
<b><i>Analyze various types of games based on their historical context, future applications and current trends</i></b>	<ul style="list-style-type: none"><li>• Discuss game genres and their differences</li><li>• Identify games within their historical perspective and timeline</li></ul>	Introduction to Game Development
<b><i>Apply basic design principles to physical sculpture</i></b>	<ul style="list-style-type: none"><li>• Demonstrate an understanding of scale, proportion and positive and negative space</li><li>• Identify geometric and organic forms</li></ul>	Figure Sculpture
<b><i>Create three dimensional sculptures from clay and/or other media</i></b>	<ul style="list-style-type: none"><li>• Demonstrate an understanding of the 3D form</li><li>• Study specific examples the human figure</li><li>• Use various sculpting tools</li></ul>	Figure Sculpture

<p><b>Create a back story, character biographies, concept bible, and script</b></p>	<ul style="list-style-type: none"> <li>• Identify research and present material that provide the building blocks for an effective script</li> <li>• Create main and ancillary characters</li> <li>• Create concept bible that contains all research and supporting material derived in the process of creating an effective script</li> <li>• Create an industry standard script</li> <li>• Differentiate between linear narrative and interactive storytelling</li> </ul>	<p>Interactive Storytelling</p>
<p><b>Evaluate creative elements</b></p>	<ul style="list-style-type: none"> <li>• Identify and analyze various archetypes within a script</li> <li>• Analyze the effectiveness of a narrative that includes introduction, conflict and resolution</li> </ul>	<p>Interactive Storytelling</p>
<p><b>Use computerized paint, texturing, modeling, and animation software to create images</b></p>	<ul style="list-style-type: none"> <li>• Utilize basic real time Shaders introduction</li> <li>• Apply maps to an object or scene</li> <li>• Use image manipulation software to create tile able, color-limited maps</li> <li>• Employ naming conventions to image files</li> <li>• Develop production mapping workflow</li> </ul>	<p>Texture Mapping for Games</p>
<p><b>Analyze and evaluate texture mapping and lighting strategies</b></p>	<ul style="list-style-type: none"> <li>• Apply Introduction of Lighting theory</li> <li>• Demonstrate appropriate selection of 3D surfacing techniques</li> <li>• Use Light to define and enhance shapes and forms</li> </ul>	<p>Texture Mapping for Games</p>
<p><b>Analyze various types of games based on game theory and strategy and their historical context</b></p>	<ul style="list-style-type: none"> <li>• Demonstrate a working knowledge of game history including video games</li> <li>• Analyze games based on game theory and strategy</li> <li>• Determine the genre of game to be produced</li> <li>• Develop game concepts that utilize risk-reward systems of gameplay</li> </ul>	<p>Game Design &amp; Game Play</p>
<p><b>Produce and present a game</b></p>	<ul style="list-style-type: none"> <li>• Create rough layouts for game levels to build on and detail</li> </ul>	<p>Game Design &amp; Game Play</p>

<b><i>pitch</i></b>	<ul style="list-style-type: none"> <li>game flow</li> <li>Write game play rules, detailing basic gameplay elements</li> <li>Produce basic game development document</li> <li>Prepare, present and defend a project suitable for professional presentation</li> </ul>	
<b><i>Define the process for developing interactive games from concept to final product</i></b>	<ul style="list-style-type: none"> <li>Evaluate playability and marketability of a product</li> <li>Write a game proposal for peer and supervisor review</li> </ul>	Game Design & Game Play
<b><i>Evaluate games critically</i></b>	<ul style="list-style-type: none"> <li>Critique game concepts and designs</li> <li>Comment on design features of games</li> </ul>	Game Design & Game Play
<b><i>Develop real-time 3D models</i></b>	<ul style="list-style-type: none"> <li>Adjust polygon count based on changing requirements to create real time 3D Models</li> <li>Develop strategies for translating initial design into acceptable low polygon versions</li> <li>Execute a model at various resolutions</li> <li>Create props, vehicles, and environments</li> </ul>	Game Modeling
<b><i>Produce well-ordered three dimensional compositions</i></b>	<ul style="list-style-type: none"> <li>Create environments making sure relative scale and perspective of foreground geometry matches the backdrop</li> <li>Match the lighting and shadows of the foreground to the backdrop</li> <li>Apply principles of color mixing in lighting</li> <li>Recognize historical architectural elements and utilize them for creating context appropriate interiors</li> </ul>	Interior Spaces & Worlds
<b><i>Generate assets for 3D Environments using industry standard techniques</i></b>	<ul style="list-style-type: none"> <li>Create backdrops with proper resolution and color depth</li> <li>Design and model an interior environment</li> <li>Design and model an exterior scene</li> </ul>	Interior Spaces & Worlds
<b><i>Identify the roles and</i></b>	<ul style="list-style-type: none"> <li>Recognize the typical characteristics of a successful team</li> </ul>	Project Management for

<b><i>responsibilities of the typical game development team</i></b>	<ul style="list-style-type: none"> <li>Identify the requirements and skill sets for the key roles of the team</li> </ul>	Game Art & Design
<b><i>Define the elements of a game development project</i></b>	<ul style="list-style-type: none"> <li>Determine the purpose of a game development project</li> <li>State the goals, scope, and limitations of the given project</li> <li>Demonstrate knowledge of salaries/wages for the production personnel</li> </ul>	Project Management for Game Art & Design
<b><i>Develop a working schedule for a given project</i></b>	<ul style="list-style-type: none"> <li>Identify and develop cost-effective resources within a given budget</li> <li>Divide work tasks and impose appropriate deadlines for the various stages</li> <li>Create a schedule or work flow chart</li> <li>Create naming convention and file structure for asset management</li> </ul>	Project Management for Game Art & Design
<b><i>Analyze game documents and extract level design needs</i></b>	<ul style="list-style-type: none"> <li>Create rough layouts for game levels to build on to detail game pacing and flow</li> </ul>	Level Design
<b><i>Create game levels in a game engine</i></b>	<ul style="list-style-type: none"> <li>Identify gameplay elements that facilitate the needs of the game design</li> <li>Create a functional prototype level to test design decisions</li> <li>Plan and assemble placeholder game assets for testing purposes</li> <li>Import relevant assets into game engine</li> </ul>	Level Design
<b><i>Test and iterate game level</i></b>	<ul style="list-style-type: none"> <li>Effectively troubleshoot and modify game mechanics</li> <li>Employ analytical skills to critique game levels</li> </ul>	Level Design
<b><i>Utilize camera and lighting techniques in a game engine</i></b>	<ul style="list-style-type: none"> <li>Manipulate camera and lights that will exhibit skills for a real-time interactive environment</li> <li>Adapt physical camera and lighting techniques to real time 3D environments</li> <li>Control different light properties</li> <li>Compare real light with the computer simulation of light</li> <li>Demonstrate the principles of 3D staging, direction, lighting, and mood</li> </ul>	Lighting & Texture

<b><i>Utilize camera and lighting techniques in a game engine</i></b>	<ul style="list-style-type: none"> <li>• Manipulate camera and lights that will exhibit skills for a real-time interactive environment</li> <li>• Adapt physical camera and lighting techniques to real time 3D environments</li> <li>• Control different light properties</li> <li>• Compare real light with the computer simulation of light</li> <li>• Demonstrate the principles of 3D staging, direction, lighting, and mood</li> </ul>	Lighting & Texture
<b><i>Analyze and evaluate texture mapping and lighting strategies</i></b>	<ul style="list-style-type: none"> <li>• Analyze the appropriateness of solutions in combining texture and lighting</li> <li>• Modify texture and lighting of an object or scene</li> </ul>	Lighting & Texture
<b><i>Operate image manipulation and 3D software</i></b>	<ul style="list-style-type: none"> <li>• Use image manipulation software to create tile able, color-limited maps</li> <li>• Demonstrate an understanding of bitmap and procedural textures and the applications of each</li> <li>• Apply techniques for real time and pre-rendered imagery</li> <li>• Utilize production mapping workflow</li> </ul>	Lighting & Texture
<b><i>Identify the relationship between programming and game production</i></b>	<ul style="list-style-type: none"> <li>• Identify programming languages used in games</li> <li>• Explain how scripting languages and techniques are used in game production</li> <li>• Choose the appropriate language for a given task</li> </ul>	Programming for Artists
<b><i>Program in a high level language</i></b>	<ul style="list-style-type: none"> <li>• Demonstrate an understanding of programming language syntax</li> <li>• Use a professional level programming environment</li> <li>• Work with basic data types and arrays</li> <li>• Create decision constructs, loops and functions</li> <li>• Utilize aspects of object-oriented programming</li> <li>• Use a debugging process to find and correct errors in a program</li> <li>• Construct basic command line operations</li> <li>• Solve problems using the basics of programming</li> </ul>	Programming for Artists

<b><i>Produce well ordered three-dimensional spatial compositions</i></b>	<ul style="list-style-type: none"> <li>• Produce a 3D environment in a game engine based on a layout design</li> <li>• Develop an aesthetically pleasing 3D environment using industry-standard design principles</li> </ul>	Advanced Level Design
<b><i>Generate art objects, structures and landscapes needed for level design in 3D</i></b>	<ul style="list-style-type: none"> <li>• Assess the needed artistic, structural and environmental needs of a game level</li> <li>• Create the needed art, objects, structures, and landscapes in 3D</li> </ul>	Advanced Level Design
<b><i>Create game levels</i></b>	<ul style="list-style-type: none"> <li>• Employ assets from previously designed level within an engine</li> <li>• Implement a character into the level functioning within an engine</li> <li>• Use scripting to create more intricate design elements</li> </ul>	Advanced Level Design
<b><i>Analyze project needs and manage files and assets</i></b>	<ul style="list-style-type: none"> <li>• Demonstrate an understanding of naming conventions and as file management</li> <li>• Utilize version control software</li> <li>• Control and deploy assets as needed in the production process</li> <li>• Collect, create, synthesize and optimize audio, video and graphic elements needed for the production of the game</li> <li>• Construct, maintain and employ videogame pipeline</li> </ul>	Game Prototyping
<b><i>Prioritize tasks to meet deadlines</i></b>	<ul style="list-style-type: none"> <li>• Determine the priority of various tasks</li> <li>• Develop a detailed list of milestones</li> <li>• Check progress along the way to ensure completion of tasks by deadlines</li> <li>• Develop a production schedule of deliverables to meet a series of milestones that is approved from instructor</li> </ul>	Game Prototyping
<b><i>Develop an understanding of scripting for a 3D software package</i></b>	<ul style="list-style-type: none"> <li>• Understand command line operations</li> <li>• Explain the process of loading and executing scripts</li> <li>• Use and modify existing 3D scripts</li> </ul>	3D Scripting
<b><i>Create scripts</i></b>	<ul style="list-style-type: none"> <li>• Program using the syntax of a language appropriate to a 3D</li> </ul>	3D Scripting

	<p>software package</p> <ul style="list-style-type: none"> <li>• Control modeling, animation, and rigging through scripting</li> <li>• Use scripting to solve problems in a production workflow</li> </ul>	
<b><i>Create character rigs designed for effective animation</i></b>	<ul style="list-style-type: none"> <li>• Construct character to function within limitations of specific platform</li> <li>• Describe how topology affects setup concerns</li> <li>• Create functional hierarchies for skeleton</li> <li>• Differentiate between IK and FK and demonstrate ability to implement each</li> <li>• Use scripting as it applies to character rigging</li> <li>• Bind the skeletal structure to the geometry</li> <li>• Define deformation order as well as editing membership of points, and point weighting</li> <li>• Describe the production constraints and challenges to the rig</li> <li>• Use pole vector, aim, orient, and point constraints</li> <li>• Optimize binding for quick feedback as well as the creation of low-res models for instant feedback</li> </ul>	3D Character Rigging
<b><i>Create a game concept and design document</i></b>	<ul style="list-style-type: none"> <li>• Research and develop a game design project for peer and supervisor approval</li> <li>• Create illustrations using 2D and 3D design</li> <li>• Create character sheets and turnarounds</li> </ul>	Team Production Planning
<b><i>Manage the pre-production of a game design project</i></b>	<ul style="list-style-type: none"> <li>• Assign development roles around needs and resources</li> <li>• Develop timeline to include resources and components</li> <li>• Employ production schedules and budgeting as part of the project management process</li> <li>• Establish an asset management system</li> <li>• Investigate skills needed to successfully complete project objectives</li> </ul>	Team Production Planning
<b><i>Create playable demo-grade game levels using one or more industry-standard engines or development kits</i></b>	<ul style="list-style-type: none"> <li>• Deliver a functional level</li> <li>• Identify and correct problems in the game pipeline</li> <li>• Create game environments that convey specific social, cultural, or historic contexts</li> <li>• Support effective gameplay</li> <li>• Apply appropriate triggered and environmental sound</li> </ul>	Advanced Game Prototyping

	<ul style="list-style-type: none"> <li>• Identify parameters of various platforms</li> <li>• Describe requirements and constraints of various platforms of delivery</li> </ul>	
<b>Conduct effective presentations</b>	<ul style="list-style-type: none"> <li>• Create promotional material to sell the game</li> <li>• Present the final demo</li> </ul>	Advanced Game Prototyping
<b>Apply interface design principles</b>	<ul style="list-style-type: none"> <li>• Develop a production plan for a prototype of an interactive project</li> <li>• Survey existing user interface designs and analyze their relative effectiveness</li> <li>• Create a flowchart to plan a user interface</li> <li>• Incorporate interactivity into a user interface design</li> </ul>	Interface Design
<b>Design interfaces for games that provide players with appropriate, unobtrusive and easily comprehended information</b>	<ul style="list-style-type: none"> <li>• Critically analyze interface approaches</li> <li>• Utilize hardware interface devices</li> <li>• Develop understandable user interface and head-up display</li> <li>• Utilize an appropriate application to create a user interface design</li> </ul>	Interface Design
<b>Create real-time 3D models and animation</b>	<ul style="list-style-type: none"> <li>• Create, model and animate based on a concept</li> <li>• Construct character to function within limitations of specific platform</li> </ul>	Advanced 3D Animation
<b>Utilize camera and lighting techniques in computer animation and interactive work</b>	<ul style="list-style-type: none"> <li>• Apply professional lighting techniques</li> <li>• Demonstrate proper use of staging and camera angles in creating a scene</li> </ul>	Advanced 3D Animation
<b>Apply the principles of rigging and set-up to solve animation problems</b>	<ul style="list-style-type: none"> <li>• Create proper rig for animating a given character</li> <li>• Demonstrate proper use and application of texture and materials</li> </ul>	Advanced 3D Animation
<b>Utilize motion capture to</b>	<ul style="list-style-type: none"> <li>• Utilize cleanup methods to prepare motion capture data for application to 3D assets</li> </ul>	Advanced 3D Animation

<b><i>animate 3D assets</i></b>	<ul style="list-style-type: none"> <li>• Apply motion capture data to 3D assets</li> <li>• Demonstrate proper use of animation blending for creating unified animations</li> </ul>	
<b><i>Create basic game assets</i></b>	<ul style="list-style-type: none"> <li>• Create realtime 3D models and animation. (rigs)</li> <li>• Adjust polygon count based on changing requirements</li> <li>• Create and apply image and texture maps</li> <li>• Select appropriate audio effects and environmental sounds</li> <li>• Apply scripting languages to game needs</li> <li>• Create functional user interface</li> <li>• Integrate level design into game engine</li> </ul>	Team Production I
<b><i>Manage the production workflow</i></b>	<ul style="list-style-type: none"> <li>• Analyze project art needs, and control all files and assets</li> <li>• Maintain project workflow documentation and log</li> <li>• Employ production schedules as part of the project management process</li> </ul>	Team Production I
<b><i>Perform and contribute as a member of a team</i></b>	<ul style="list-style-type: none"> <li>• Work as part of a team to solve technical problems as they occur</li> <li>• Mediate solutions to conflicts</li> <li>• Demonstrate the ability to communicate effectively within the team</li> <li>• Identify the various roles of team members</li> <li>• Perform assigned role on the development team</li> </ul>	Team Production I, Team Production II, Game Prototyping
<b><i>Utilize digital audio recording and playback devices</i></b>	<ul style="list-style-type: none"> <li>• Acquire sound effects using recorders</li> <li>• Determine playback capabilities of different hardware in games</li> <li>• Calculate total amount of disk space that sound and music can use</li> <li>• Convert audio files to compressed formats</li> </ul>	Sound Design for Games
<b><i>Synthesize information from diverse sources for project purposes</i></b>	<ul style="list-style-type: none"> <li>• Assemble audio assets for a targeted project</li> <li>• Modify and edit existing sound files</li> <li>• Create and record new sound effects</li> <li>• Determine music appropriate to game</li> </ul>	Sound Design for Games
<b><i>Apply appropriate sound effects and transitions to game</i></b>	<ul style="list-style-type: none"> <li>• Survey game music and sound effectiveness</li> <li>• Incorporate music and sound effects into a game engine</li> <li>• Assign custom musical themes to characters</li> </ul>	Sound Design for Games

<b><i>Apply appropriate sound effects and transitions to game design</i></b>	<ul style="list-style-type: none"> <li>• Survey game music and sound effectiveness</li> <li>• Incorporate music and sound effects into a game engine</li> <li>• Assign custom musical themes to characters</li> <li>• Make loop-able music and ambient tracks</li> <li>• Consider and log all sound triggers in a given level</li> <li>• Identify appropriate use of copyright</li> </ul>	Sound Design for Games
<b><i>Create a website</i></b>	<ul style="list-style-type: none"> <li>• Utilize a web authoring package to produce a web page</li> <li>• Integrate movies, images and sound in web page</li> <li>• Identify web standards and hosting requirements</li> <li>• Produce a live web page</li> </ul>	2D Digital Authoring
<b><i>Produce an interactive DVD</i></b>	<ul style="list-style-type: none"> <li>• Utilize DVD authoring software to create interface and interactive elements</li> <li>• Utilize media capturing software to capture screenshots, video and sound for DVD</li> <li>• Finalize and create working DVD</li> </ul>	2D Digital Authoring
<b><i>Create a playable demo grade game</i></b>	<ul style="list-style-type: none"> <li>• Conform assets for game engine deployment</li> <li>• Test gameplay</li> <li>• Modify game levels and assets as needed</li> <li>• Apply scripting language to game engine</li> </ul>	Team Production II
<b><i>Manage the production workflow</i></b>	<ul style="list-style-type: none"> <li>• Analyze project art needs, and control all files and assets</li> <li>• Maintain project workflow documentation and log</li> <li>• Employ production schedules as part of the project management process</li> </ul>	Team Production II
<b><i>Conduct effective presentations</i></b>	<ul style="list-style-type: none"> <li>• Create promotional material to sell the game</li> <li>• Present the final demo</li> </ul>	Team Production II
<b><i>Develop a digital and online portfolio for professional use</i></b>	<ul style="list-style-type: none"> <li>• Create a website to display portfolio work</li> <li>• Compose demo reel elements</li> </ul>	Portfolio I

<p><b>Articulate career goals</b></p>	<ul style="list-style-type: none"> <li>• Collect and assimilate information regarding possible career opportunities</li> <li>• Explore opportunities in various geographical regions</li> <li>• Associate specifics of possible career opportunities with intended personal goals and interests</li> <li>• Generate targeted resumes and cover letters for effective job search</li> <li>• Identify and research potential employers and their submission requirements</li> <li>• Develop professional awareness for researching and networking</li> </ul>	<p>Portfolio I, Portfolio II</p>
<p><b>Create a demo reel and website</b></p>	<ul style="list-style-type: none"> <li>• Evaluate projects from past classes for incorporation into demo reel</li> <li>• Finalize demo reel elements</li> <li>• Utilize video editing and/or authoring software to assemble demo reel</li> <li>• Focus demo reel relative to personal strengths</li> </ul>	<p>Portfolio II</p>
<p><b>Create animations for game-specific usage</b></p>	<ul style="list-style-type: none"> <li>• Setup animation to be triggered by pre-defined situations within an interactive environment</li> <li>• Animate cycles for real-time implementation</li> <li>• Create environmental, vehicular and character animations</li> <li>• Combine animations using blending techniques</li> </ul>	<p>Game Animation</p>
<p><b>Identify limitations of animating game assets based on game engine specifications</b></p>	<ul style="list-style-type: none"> <li>• Refine game rigs to operate in a variety of game engines</li> <li>• Select and adjust mesh geometry for appropriate game rig application</li> </ul>	<p>Game Animation</p>
<p><b>Implement procedurally generated animations to achieve specific results</b></p>	<ul style="list-style-type: none"> <li>• Use game physics to generate simulations</li> <li>• Create animated surfaces</li> </ul>	<p>Game Animation</p>

<b>Identify the sequencing of the game content pipeline from concept to delivery</b>	<ul style="list-style-type: none"> <li>• Research contemporary game engines and their requirements</li> <li>• Develop a plan for game content creation, export and integration</li> </ul>	Game Production Pipeline
<b>Create assets for game engine</b>	<ul style="list-style-type: none"> <li>• Implement efficient modeling for game engine</li> <li>• Create and enforce standardized naming conventions</li> <li>• Integrate rigging requirements including naming conventions and functionality</li> <li>• Create appropriate maps for real-time surfaces</li> <li>• Apply real-time shaders</li> </ul>	Game Production Pipeline
<b>Conceptualize 3D coordinate systems and construct 3D models</b>	<ul style="list-style-type: none"> <li>• Identify elements of 3D software</li> <li>• Conceptualize 3D coordinate systems</li> <li>• Apply design principles to 3D space</li> <li>• Build 3D Models to scale and proportion</li> </ul>	3D Modeling
<b>Produce 3D objects using industry standard techniques</b>	<ul style="list-style-type: none"> <li>• Construct 3D models from reference</li> <li>• Employ different types of geometric modeling</li> <li>• Create models that are efficient in their use of geometry</li> <li>• Determine appropriate amount of detail for given subject matter</li> </ul>	3D Modeling
<b>Demonstrate craftsmanship (organization, neatness, precision)</b>	<ul style="list-style-type: none"> <li>• Exhibit solutions in a finished manner</li> <li>• Use sighting techniques to create object relationships on paper which relate convincingly to what is being observed</li> <li>• Use the perspective grid in defining proportion for multiple objects to and in a given space</li> <li>• Demonstrate the ability to provide the accurate size format for the assignment</li> <li>• Exercise attention to detail</li> <li>• Create the illusion of depth through shading and compositional techniques</li> </ul>	Design Fundamentals, Observational Drawing, Color Fundamentals, Perspective Drawing
<b>Develop, analyze, and refine creative concepts from initial</b>	<ul style="list-style-type: none"> <li>• Create a design solution that communicates concept</li> <li>• Use the elements and principles of design to compose a</li> </ul>	Design Fundamentals, Perspective Drawing

<b><i>idea as thumbnail sketches to final product</i></b>	<p>drawing based on observation</p> <ul style="list-style-type: none"> <li>• Control the direction of observed contour line, and to control line weight as it relates to contour edge and outline</li> <li>• Examine value intervals and translate what is seen to the two-dimensional drawing surface</li> <li>• Sketch shadows in freehand perspective</li> </ul>	
<b><i>Utilize basic terminology and concepts of design and media</i></b>	<ul style="list-style-type: none"> <li>• Apply basic design skills</li> <li>• Compare and contrast hue, value, and saturation</li> <li>• Apply the concepts of unity, variety, contrast, dominance, appropriateness, balance, and harmony to their design</li> <li>• Analyze drawings, and using acquired vocabulary, identify opportunities for improvement</li> <li>• Draw a one-, two-, or three-point interior or exterior perspective with shading</li> <li>• Use the perspective grid in defining proportion for multiple objects to and in a given space</li> </ul>	Design Fundamentals, Color Fundamentals, Perspective Drawing
<b><i>Initiate creative solutions to graphic design challenges utilizing fundamental design principles</i></b>	<ul style="list-style-type: none"> <li>• Utilize the fundamentals of color, typography, and composition in developing page layouts</li> </ul>	Design Fundamentals
<b><i>Recommend and apply creative typographic solutions to design problems</i></b>	<ul style="list-style-type: none"> <li>• Select appropriate typefaces, leading, kerning, and style for various usages</li> </ul>	Design Fundamentals
<b><i>Apply time management skills to the development and production of projects</i></b>	<ul style="list-style-type: none"> <li>• Apply, prioritize, and sequence tasks</li> </ul>	Design Fundamentals
<b><i>Define and apply design terminology according to</i></b>	<ul style="list-style-type: none"> <li>• Using acquired vocabulary, identify opportunities for improvement</li> </ul>	Design Fundamentals, Color Fundamentals, Perspective

<b><i>Define and apply design terminology according to industry standard</i></b>	<ul style="list-style-type: none"> <li>• Using acquired vocabulary, identify opportunities for improvement</li> <li>• Demonstrate the use of basic design elements</li> <li>• Become aware of the art historical context of drawing</li> <li>• Generate drawings that utilize economy of line</li> </ul>	Design Fundamentals, Color Fundamentals, Perspective Drawing
<b><i>Critique and evaluate design solutions</i></b>	<ul style="list-style-type: none"> <li>• Develop and use critical thinking in the design process</li> <li>• Compare and contrast additive and subtractive color theory</li> <li>• Demonstrate the design concept visually through sample boards, etc.</li> <li>• Define perspective terms</li> </ul>	Design Fundamentals, Color Fundamentals, Perspective Drawing
<b><i>Develop and execute accurate freehand drawings</i></b>	<ul style="list-style-type: none"> <li>• Apply perspective</li> <li>• Generate drawing using various media</li> <li>• Develop conceptual sketches to record and justify the creative process</li> </ul>	Observational Drawing
<b><i>Apply line, shadow, texture, color, and shading to drawings</i></b>	<ul style="list-style-type: none"> <li>• Examine value intervals and translate what is seen to the two dimensional surface</li> </ul>	Observational Drawing
<b><i>Draw accurate visual perspectives in relation to scale, shape, form, and space</i></b>	<ul style="list-style-type: none"> <li>• Use the elements and principles of design to compose a drawing based on observation</li> </ul>	Observational Drawing
<b><i>Create drawings based on observation, invention, and various sources such as: images, pictures, nature, life</i></b>	<ul style="list-style-type: none"> <li>• Analyze drawings and using acquired vocabulary identify opportunities for improvement</li> </ul>	Observational Drawing
<b><i>Create design solutions that reflect global and cultural identities</i></b>	<ul style="list-style-type: none"> <li>• Distinguish the relative aspects of color perception (e.g., psychological and cultural aspects) as they apply to solving design problems</li> <li>• Differentiate between color used as symbol, as expression,</li> </ul>	Color Fundamentals

<p><b><i>Operate a personal computer using current operating system interfaces</i></b></p>	<ul style="list-style-type: none"> <li>• Use correct terms and definitions to describe the operations and applications of computers</li> <li>• Summarize hardware characteristics based on configuration, compatibility, processing speed, cost, and rendering speed</li> <li>• Match appropriate connection devices with external equipment</li> <li>• Compare and contrast operation systems</li> <li>• Describe and apply the major steps in the “imaging chain”</li> <li>• Produce documents using word-processing, spreadsheet, and database tools</li> <li>• Transfer data across platforms</li> <li>• Correlate keyboard functions with menu operations</li> <li>• Define characteristics of peripheral communications standards</li> <li>• Demonstrate cross-platform applications</li> <li>• Apply database and spreadsheet skills</li> <li>• Protect data and equipment through the use of virus utilities</li> <li>• Perform basic disk maintenance and data retrieval operations</li> <li>• Use internet browsers</li> <li>• Work across network systems</li> </ul>	<p>Computer Applications</p>
<p><b><i>Use and manage computer hardware peripherals for input, output, and storage</i></b></p>	<ul style="list-style-type: none"> <li>• Use computer hardware to manage data</li> </ul>	<p>Computer Applications</p>
<p><b><i>Follow oral and written directions</i></b></p>	<ul style="list-style-type: none"> <li>• Demonstrate critical thinking skills</li> </ul>	<p>Computer Applications</p>
<p><b><i>Create a simple web page</i></b></p>	<ul style="list-style-type: none"> <li>• Develop knowledge of basic scripting languages</li> </ul>	<p>Computer Applications</p>
<p><b><i>Generate technically accurate and aesthetically pleasing drawings using perspective</i></b></p>	<ul style="list-style-type: none"> <li>• Apply principles of perspective to accurate representation in a drawing</li> <li>• Use techniques of measurement as an aid to observational figure drawing</li> </ul>	<p>Life Drawing &amp; Gesture</p>

<b><i>Generate drawings that depict motion and gesture</i></b>	<ul style="list-style-type: none"> <li>• Capture gesture accurately with minimal line, and to use gestural under-drawing as a technique for unifying observed form</li> <li>• Represent the major structural regions of human form and the important places to observe to capture stance, gesture and specific movements</li> <li>• Generate drawings that utilize economy of line</li> </ul>	Life Drawing & Gesture
<b><i>Demonstrate image manipulation skills</i></b>	<ul style="list-style-type: none"> <li>• Demonstrate scanning and output of imagery</li> <li>• Apply the tools used in photographic manipulation software</li> <li>• Open, edit and import files into raster-based software</li> <li>• Control image characteristics (size, color mode, resolution)</li> <li>• Demonstrate proper usage of selection tools</li> <li>• Select and apply filters</li> <li>• Edit selections, save selections, and apply alpha channels</li> <li>• Manipulate layers, channels, and paths</li> <li>• Create and edit images, type, and adjustment layers</li> <li>• Create and adjust layer masks, and blending modes</li> <li>• Composite multiple images</li> <li>• Restore damaged photographs</li> </ul>	Image Manipulation
<b><i>Select and apply appropriate visual elements</i></b>	<ul style="list-style-type: none"> <li>• Apply principles of color theory</li> <li>• Demonstrate the ability to choose images that complement each other in terms of matching subject and lighting to combine into a composite image</li> </ul>	Image Manipulation
<b><i>Prepare files for output for the appropriate media</i></b>	<ul style="list-style-type: none"> <li>• Prepare imagery for proofing and/or final outputting at a service bureau or other supplier</li> <li>• Create specific color palettes as per project requirements</li> <li>• Choose proper color modes for the output designated</li> <li>• Save files in appropriate formats</li> </ul>	Image Manipulation
<b><i>Create and optimize graphics for print and web</i></b>	<ul style="list-style-type: none"> <li>• Save files for commercial printing output</li> <li>• Optimize files for the Web</li> </ul>	Image Manipulation

	<ul style="list-style-type: none"> <li>• Save files with a transparent background</li> <li>• Save files for the Web</li> </ul>	
<b><i>Apply anatomical structure in drawings of both human and non-human forms</i></b>	<ul style="list-style-type: none"> <li>• Analyze the anatomical structure of both human and non-human forms</li> <li>• Generate drawings that display differences in lighting and value</li> <li>• Identify the skeletal and muscular structures of the human body</li> </ul>	Drawing & Anatomy
<b><i>Create life drawings</i></b>	<ul style="list-style-type: none"> <li>• Differentiate the correct proportions of adults and children of different ages and make use of these in drawing</li> <li>• Recognize various representations of moods and emotions in drawings</li> <li>• Represent moods and emotions in drawings</li> </ul>	Drawing & Anatomy
<b><i>Apply the twelve principles of animation to traditional 2D animations</i></b>	<ul style="list-style-type: none"> <li>• Integrate straight-ahead action, pose-to-pose, follow through and overlapping action into a 2D animation</li> <li>• Integrate slow in and slow out, arcs, secondary action and timing into a 2D action</li> <li>• Integrate exaggeration, weight, depth, balance and appeal into a 2D animation</li> <li>• Develop an animation that utilizes cycles, anticipation, squash, and stretch</li> <li>• Demonstrate an understanding of shape, weight, and space</li> <li>• Generate drawings that depict gesture and motion</li> </ul>	2D Animation Principles
<b><i>Apply industry-standard capture techniques, such as image scanning, video capture and pencil test in the creation of 2D animation</i></b>	<ul style="list-style-type: none"> <li>• Create, capture, manipulate, and edit images using digital processes</li> <li>• Utilize the pencil test system to create 2D animation</li> </ul>	2D Animation Principles
<b><i>Draw 2D and 3D objects and forms</i></b>	<ul style="list-style-type: none"> <li>• Create thumbnail sketches of concepts</li> <li>• Apply anatomical structure in drawings of both human and non-human forms</li> </ul>	Character & Object Design

	<ul style="list-style-type: none"> <li>Evaluate thumbnails in terms of aesthetic appeal and simplicity</li> </ul>	
<b>Create model sheets</b>	<ul style="list-style-type: none"> <li>Render character and object studies from a variety of angles</li> <li>Illustrate typical character traits: including emotions, poses and actions</li> <li>Demonstrate progression of character concept from thumbnail to final form</li> <li>Depict character in turnaround</li> </ul>	Character & Object Design
<b>Evaluate scale and size in relation to character or object utilization</b>	<ul style="list-style-type: none"> <li>Create objects and characters that are relative in scale to their environment</li> <li>Determine proportional relationships based on model sheets</li> </ul>	Character & Object Design
<b>Apply industry-standard storyboard techniques to animation</b>	<ul style="list-style-type: none"> <li>Explain the various purposes of storyboards in relation to animation</li> <li>Define formats and labeling guidelines for animation storyboards</li> <li>Identify and illustrate camera moves as they apply to animation</li> <li>Identify the purpose of scripts in relation to animation</li> </ul>	Storyboarding
<b>Create stories and illustrate concepts through sequential images</b>	<ul style="list-style-type: none"> <li>Differentiate scenes, cuts, fades, and dissolves as they apply to animation storyboards</li> <li>Examine shot selection as it applies to animation storyboards</li> </ul>	Storyboarding
<b>Create a storyboard based on a written script</b>	<ul style="list-style-type: none"> <li>Differentiate among thumbnail sketches, roughs, production, and presentation storyboards</li> <li>Create thumbnail sketches through interpretation of a written script</li> <li>Produce an animatic using refined thumbnail sketches and roughs</li> <li>Prepare a presentation-quality storyboard</li> </ul>	Storyboarding
<b>Apply lighting theory</b>	<ul style="list-style-type: none"> <li>Apply principles of color mixing in lighting</li> <li>Emulate real-world lighting conditions</li> </ul>	Material & Lighting

	<ul style="list-style-type: none"> <li>• Develop lighting design</li> </ul>	
<b><i>Utilize lighting in a 3D package</i></b>	<ul style="list-style-type: none"> <li>• Differentiate between physical and simulated lighting properties</li> <li>• Implement direct and indirect lighting</li> <li>• Utilize light to compliment shapes and form</li> <li>• Apply principles of lighting to a 3D scene to reflect an appropriate mood and setting</li> </ul>	Material & Lighting
<b><i>Analyze and evaluate texture mapping strategies</i></b>	<ul style="list-style-type: none"> <li>• Apply UV mapping techniques</li> <li>• Use shading networks</li> <li>• Develop production mapping workflow</li> <li>• Render in 3D applications using materials and shaders</li> </ul>	Material & Lighting
<b><i>Apply traditional animation concepts and techniques within a 3D environment</i></b>	<ul style="list-style-type: none"> <li>• Use storyboard techniques to plan animation</li> <li>• Integrate traditional animation concepts into 3D animation as they apply to character performance</li> </ul>	3D Animation
<b><i>Apply real world observations to animation</i></b>	<ul style="list-style-type: none"> <li>• Observe and re-create the motion of organic and inorganic subject matter</li> <li>• Apply reference material to animation</li> </ul>	3D Animation
<b><i>Create 3D animation</i></b>	<ul style="list-style-type: none"> <li>• Use the animation tools in a 3D software package</li> <li>• Depict emotion and characterization through the utilization of effective animation techniques</li> <li>• Stage an animation with objects and characters that are appropriate in scale</li> </ul>	3D Animation
<b><i>Apply principles of design to background creation</i></b>	<ul style="list-style-type: none"> <li>• Separate foreground, midground and background elements</li> <li>• Create thumbnail sketches and concepts</li> <li>• Utilize effective composition</li> <li>• Illustrate concepts with forms and colors</li> <li>• Demonstrate proficiency in line art and drawing skill</li> <li>• Exhibit proper use of perspective in creating environment</li> </ul>	Background Design & Layout

<p><b><i>Apply principles of design to background creation</i></b></p>	<ul style="list-style-type: none"> <li>• Separate foreground, midground and background elements</li> <li>• Create thumbnail sketches and concepts</li> <li>• Utilize effective composition</li> <li>• Illustrate concepts with forms and colors</li> <li>• Demonstrate proficiency in line art and drawing skill</li> <li>• Exhibit proper use of perspective in creating environment concepts and sketches</li> <li>• Demonstrate appropriate spatial relationships</li> </ul>	<p>Background Design &amp; Layout</p>
<p><b><i>Use computerized paint and image manipulation software to create images</i></b></p>	<ul style="list-style-type: none"> <li>• Demonstrate understanding of appropriate software in creation of background environments</li> <li>• Prepare sufficient art assets in development of course projects</li> <li>• Associate production of 2D Drawings as they pertain to finished 2D or 3D projects</li> </ul>	<p>Background Design &amp; Layout</p>
<p><b><i>Produce 3D objects using industry standard techniques</i></b></p>	<ul style="list-style-type: none"> <li>• Create 3D models from real-world reference</li> <li>• Differentiate the techniques used for modeling hard surface objects versus organic objects</li> <li>• Apply appropriate modeling techniques relative to project specifications</li> <li>• Create models that are effective in their use of geometry</li> <li>• Determine appropriate amount of detail for given subject matter</li> </ul>	<p>Hard Surface &amp; Organic Modeling</p>
<p><b><i>Conduct research related to the job search and career development, using a variety of resources</i></b></p>	<ul style="list-style-type: none"> <li>• Research job responsibilities in the field</li> </ul>	<p>Career Development</p>
<p><b><i>Examine and differentiate personal and career goals</i></b></p>	<ul style="list-style-type: none"> <li>• Articulate career goals</li> <li>• Associate specifics of possible career opportunities with intended personal goals and interests</li> <li>• Identify a path to move towards and achieve stated goals</li> <li>• Develop job-search documents and interviewing skills for employment</li> <li>• List objectives for the interview</li> </ul>	<p>Career Development</p>

<b><i>Identify career paths and salaries</i></b>	<ul style="list-style-type: none"> <li>• Attend guest lectures given by industry professionals and integrate the material presented into course work</li> <li>• Utilize multiple tools to identify career opportunities</li> <li>• Develop an achievable career plan</li> <li>• Investigate salary levels in the field</li> <li>• Practice salary negotiation</li> </ul>	Career Development
<b><i>Select and apply various management strategies in business situations</i></b>	<ul style="list-style-type: none"> <li>• Describe business and management skills and responsibilities</li> </ul>	Career Development
<b><i>Apply basic business principles to the creation and maintenance of a business</i></b>	<ul style="list-style-type: none"> <li>• Predict global trends in business</li> </ul>	Career Development
<b><i>Apply legal principles to the formation, operation, and termination of sole proprietorships, partnerships, and corporations</i></b>	<ul style="list-style-type: none"> <li>• Compare and contrast the advantages and disadvantages of each form of business ownership</li> </ul>	Career Development
<b><i>Explore the opportunity and the operation of a freelance business</i></b>	<ul style="list-style-type: none"> <li>• Research opportunities for freelance business</li> <li>• Identify operational issues within freelance businesses</li> </ul>	Career Development
<b><i>Develop a code of business and personal ethics</i></b>	<ul style="list-style-type: none"> <li>• Develop a code of ethics</li> <li>• Demonstrate knowledge of protection and non-violation of copyright laws</li> </ul>	Career Development