MISSION VALLEY REGIONAL OCCUPATION PROGRAM
COMPUTER ANIMATION COURSE OUTLINE

1. Course Title:

Computer Animation

2. CBEDS Title:

Other Arts, Media and Entertainment

3. CBEDS Number:

5769

4. Job Titles/DOT Codes:

Technical Level:

Animated-Cartoon Artist	141.081-010
Animator	141.081-010
Artist	970.381-022
Audio Visual Production Specialist	141.061-038 143.382-010
Camera Operator, Animation	149.061-010
Commercial Designer	141.061-038
Continuity Editor	141.061-018
Continuity Writer	131.087-010
Graphic Designer	141.061-018
Illustrator	141.061-022
Layout Artist	141.061-018
Layout Helper	801.687-014
Managing Editor	132.017-010
Model-Set Artist	962.381-018
Painter, Animated Cartoons	970.681-026
Painter, Hand	740.684-022
Painter, Set	840.681-010
Photographer	979.382-018
Printer	970.281-014
Quick Sketch Artist	143.457-010
Renderer	970.281-014
Story Analyst	131.087-014
Story Editor	132.037-026

5. Course Description:

Computer Animation is an introduction to basic knowledge, skills, abilities, processes, and tools required for 3D Computer Animations. Students will be involved in hands-on lab activities designed to help them create their own 2D and 3D animations as well as a digital portfolio to showcase their years' work.

Computer Animation follows a lecture/demonstration, lab and hands on project based format. Computer Animations focuses on the creation of content for 3D animations, games and simulations. Tutorials on 3D application, tools and techniques. 2D and 3D computer graphic and animation creation are covered within the context of the course. Students will demonstrate a comprehension of the computer animation process and technical skills. Throughout the year, students will develop a digital portfolio of original artwork and participate in showings and festivals to better prepare them for a career in the game design industry.

6. Hours:

Class 180

7. Prerequisites: None

9. Course Outline:

		Career Preparation Standards Necessary skills for any occupation *(MVROP ESLR #1)*	**Class**	**CC**	**CVE**
I.		**WORKPLACE BASIC SKILLS AND BEHAVIORS**	Integrated throughout course		
	A.	Apply skills learned in class			
	B.	Analyze information and make decisions			
	C.	Communicate verbally and in writing			
	D.	Work independently and as a team member in a diverse workplace			
	E.	Work reliably, responsibly, and ethically			
		Career Technical Skills Occupational competencies *(MVROP ESLR #2)*			
II.		**INTRODUCTION TO COURSE**	5		
	A.	Learn course requirements, regulations, and procedures			
	B.	Review course syllabus and student expectations			
III.		**HISTORY AND PRINCIPLES OF ANIMATION**	10		
	A.	History of animation up to modern day.			
	B.	Principles – the foundation of solid animation			
	C.	Timing and Spacing			
	D.	Walk Cycles			
	E.	Weight			
	F.	Perspective			
	G.	Storytelling Basics			
	H.	Character Building			
IV.		**TRADIGITAL ANIMATION (ADOBE FLASH / PHOTOSHOP)**	10		
	A.	Introduction to Adobe Flash and Photoshop for Animation			
	B.	User Interface and Core Toolsets			
	C.	Design and develop Animated Short			
	D.	Deliver rough cut			
	E.	Final edits			
	F.	Deliver final	**Class**	**CC**	**CVE**

	G.	Critique	
V.		**3D ANIMATION PIPELINE - MODELING**	10
	A.	3DS Max Interface	
	B.	Standard Primitives	
	C.	What are the different techniques used to create 3D models and objects for props and environments.	
	D.	Modifiers	
	E.	Displacement / Subdivision Modeling	
	F.	Editable Poly for Hard Surface and Organic Modeling	
	G	Series of Models starting from Simple Primitives, Through Edit Poly Hard Surface and Organic Character Models.	
VI.		**3D ANIMATION PIPELINE – SHADERS AND MATERIALS**	10
	A.	Materials Introduction – Science behind light and shaders.	
	B.	Material Editor – Compact and Slate User Interfaces	
	C.	UVW Map Coordinate systems	
	D.	Procedural and Bitmap Texture generation.	
	E.	Unwrapping	
	F.	Projection Mapping	
	G.	Composite Materials	
	H.	Full Environment completely Mapped and Textured.	
VII.		**3D ANIMATION PIPELINE – DYNAMICS / PARTICLES**	10
	A.	Mass FX Simulation	
	B.	Cloth Simulation	
	C.	Garment Maker	
	D.	Standard Particle Emitters	
	E.	Particle Flow	
	F.	Data Operators and M-Particles	
	G.	Custom Built Particle and Dynamics Simulation for Special Effects.	
VIII.		**3D ANIMATION PIPELINE – TECHNICAL ART / RIGGING**	10
	A.	Introduction to Rigging in 3DS Max.	
	B.	Bones	
	C.	Controllers	
	D.	Biped	
	E.	C.A.T.	
	F.	Morpher Targets and Blending	
	G.	Skinning / Physique	
	H.	Full Skeletal Structure for Character, Rigged and Skinned.	
IX.		**3D ANIMATION PIPELINE – LIGHTING AND RENDERING**	20

			Class	CC	CVE
A.	Introduction to the Standard Default and Mental Ray Rendering Engines.				
B.	Standard and Photometric Lights				
C.	Final Gather and Global Illumination				
D.	Caustics				
E.	Motion Blur				
F.	Depth of Field				
G.	Light Maps.				
H.	CG Animated Short – Final Project				
	Career Path Strategies Strategic planning for a career *(MVROP ESLR #3)*				
XII.	**JOB EMPLOYMENT SKILLS**		5		
A.	Develop a plan to achieve career goals.				
1.	Prepare a career portfolio and Demo Reel				
B.	Use effective job search strategies				
1.	Perform employment research				
2.	Complete a job application and resume				
3.	Develop effective interview and follow up skills				
C.	Demonstrate an awareness of the importance of lifelong learning				
		Total Approved Course Hours	**180**		

10. Additional Items:

a. Articulation: none

b. Academic Credit: none

c. Instructional Strategies:

- Lecture
- Application Projects
- Reading Assignments
- Multi-Media
- Hands-on Practice
- Demonstration
- Team Learning
- Critiques

d. Instructional Materials:

- Adobe Flash
- Adobe CS6 Photoshop
- Adobe Premiere CS6
- Adobe After Effects
- 3DS Max 2015
- Mudbox 2015

e. Certificate Competency List:

- Demonstrate Workplace Basic Skills and Behaviors
- Demonstrate New Media Literacy and Ethic Behavior
- Demonstrate Artistic and Storytelling Skills

- Demonstrate Comprehension of Digital Mediums and Technical Aspects of the Industry.
- Create Compelling Contemporary Media
- Operate 3DS Max and Adobe Suites in a Skilled Manner
- Choose and Set Lighting for Various Projects
- Use Effective Job Employment Skills