I. CATALOG INFORMATION

A. Discipline: MULTIMEDIA

B. Subject Code and Number: MM M40

C. Course Title: 3D Fundamentals

D. Credit Course units:

Units: 3

Lecture Hours per week: 2

Lab Hours per week : 3

Variable Units : No

E. Student Learning Hours:

Lecture Hours:

Classroom hours: 35 - 35

Laboratory/Activity Hours:

Laboratory/Activity Hours 52.5 - 52.5

Total Combined Hours in a 17.5 week term: 87.5 - 87.5

F. Non-Credit Course hours per week _____

G. May be taken a total of: [X] 1 [ ] 2 [ ] 3 [ ] 4 time(s) for credit

H. Is the course co-designated (same as) another course: No [X] Yes [ ]
If YES, designate course Subject Code & Number: _____

I. Course Description:

Introduces the fundamental concepts and tools used in the creation of 3D digital animation, including modeling, character rigging, animation, shading, lighting and rendering. Requires the creation of character animation, construction of set designs, and completion of an independent animated project. Emphasizes the conceptual issues and strategies in project development, as well as a working knowledge of the software.

J. Entrance Skills

*Prerequisite: No [X] Yes [ ] Course(s)

_____

*Corequisite: No [X] Yes [ ] Course(s)

_____

Limitation on Enrollment: No [X] Yes [ ]

_____

Recommended Preparation: No [ ] Yes [X] Course(s)
MM M10

Other: No [X] Yes [ ]

K. Other Catalog Information:

Formerly MM M04

II. COURSE OBJECTIVES

Upon successful completion of the course, a student will be able to:

		Methods of evaluation will be consistent with, but not limited by, the following types or examples.
1	map out the narrative structure and create a storyboard for the animation project; propose, design, create, and present a short 3D animation project utilizing design, storytelling and cinematic concepts.	quizzes and critique using project specific rubric
2	view and navigate 3D space, use view-handling commands and control object display.	quizzes and critique using project specific rubric
3	create and transform geometric primitives, architectural objects, mental ray object, shapes, compound objects, dynamic objects and systems.	quizzes and critique using project specific rubric
4	create copies and arrays and use modifiers, surface modeling, precision and drawing aids as well as space warps and particle systems.	quizzes and critique using project specific rubric
5	design, edit and apply materials, maps and shaders.	quizzes and critique using project specific rubric
6	use key, fill, and back-lighting to create depth in a 3D scene; control various aspects of lighting, including intensity and falloff, position, color, visibility and shadows.	quizzes and critique using project specific rubric
7	choose the placement of the camera to determine the audience's point of view and animate cameras.	quizzes and critique using project specific rubric
8	apply the animation concepts, control time and choose a frame rate and playback speed.	quizzes and critique using project specific rubric
9	render a movie using lighting, materials, and environment settings, such as background and atmosphere.	quizzes and critique using project specific rubric

III. COURSE CONTENT

Estimated %	**Topic**	**Learning Outcomes**

Lecture (must total 100%)		
5.00%	Modifiers: - Transforms, modifiers, and object data flow - Using modifiers - World-Space modifiers (WSMs) - Object-Space modifiers	1, 2, 3, 4, 5, 6, 7, 8, 9
15.00%	Animation: - Animation concepts and methods - Working with controllers - Animation controllers - Animation constraints - Wire parameters - Hierarchies and kinematics - Track view - Motion mixer - Saving and loading animation - Animation utilities	1, 2, 3, 4, 5, 6, 7, 8, 9
10.00%	Lights and Cameras: - Lights - Lighting analysis assistant - Cameras	1, 2, 3, 4, 5, 6, 7, 8, 9
5.00%	Surface Modeling: - Subdivision surfaces - Soft selection rollout - Collapse utility - Graphite modeling tools - Editable mesh surface - Editable poly surface - Patch objects - NURBS (Non-uniform rational basis spline) modeling - Tools for low-polygon modeling	1, 2, 3, 4, 5, 6, 7, 8, 9
2.00%	Introduction: - Project work - Setting up your scene - Modeling objects - Using materials - Placing lights and cameras - Animating your scene - Rendering Your scene - The 3D application User Interface - Managing files - Importing, merging, replacing, and externally referencing scenes - Using the asset browser - Startup files and defaults - The initialization file - Backing up and archiving scenes	1, 2, 3, 4, 5, 6, 7, 8, 9
5.00%	Creating Copies and Arrays: - Overview of copies, instances, and references - Techniques for cloning objects - Arraying objects - Mirroring objects - Using the spacing tool	1, 2, 3, 4, 5, 6, 7, 8, 9
	Material Editor, Materials, and Maps: - Designing materials - Material editor	1, 2, 3, 4,

15.00%	- Material/Map browser - Material explorer - Types of materials - Maps and shaders - Material, mapping, and vertex color utilities	5, 6, 7, 8, 9
5.00%	Reactor: - Introducing dynamics simulation - Special features in reactor - Reactor helpers - Rigid bodies - Deformable bodies - Water simulation - Wind - The reactor utility - The real-time preview - Scripts and tools - Frequently asked questions - Troubleshooting reactor	1, 2, 3, 4, 5, 6, 7, 8, 9
5.00%	Character Animation: - CAT (Character Animation Toolkit) - Character studio	1, 2, 3, 4, 5, 6, 7, 8, 9
2.00%	Object Properties: - Object properties dialog panels - Rename objects tool - Custom attributes - Parameter collector - Expression techniques	1, 2, 3, 4, 5, 6, 7, 8, 9
2.00%	Viewing and Navigating 3D Space: - General viewport concepts - Home grid - Views based on the World Coordinate Axes - Understanding views - Setting viewport layout - Controlling viewport rendering - Controlling display performance - Using standard view navigation - Zooming, panning, and rotating views	1, 2, 3, 4, 5, 6, 7, 8, 9
2.00%	Selecting Objects: - Introducing object selection - Basics of selecting objects - Selecting by region - Using select by name - Using named selection sets - Using selection filters - Selecting with track view - Selecting with schematic view - Freezing and unfreezing objects - Hiding and unhiding objects by selection - Hiding and unhiding objects by category - Isolate selection - Introduction to sub-object selection	1, 2, 3, 4, 5, 6, 7, 8, 9
5.00%	Space Warps and Particle Systems: - Space warp objects - Particle systems	1, 2, 3, 4, 5, 6, 7, 8, 9
	Moving, Rotating, and Scaling Objects: - Using transforms	1, 2, 3, 4,

2.00%	- Transform commands - Transform coordinates and coordinate center - Transform tools	5, 6, 7, 8, 9
2.00%	Precision and Drawing Aids: - Tools for precision - Using units - Using grids - Alignment - Using snaps - Helpers - Drawing assistants	1, 2, 3, 4, 5, 6, 7, 8, 9
10.00%	Creating Geometry: - Basics of creating and modifying objects - Geometric primitives - Architectural objects - Mental ray object - Shapes - Compound objects - Dynamics objects - Systems	1, 2, 3, 4, 5, 6, 7, 8, 9
8.00%	Rendering: - Render setup dialog - Rendered frame window - Render output file dialog - View image file - Rendering commands - Common panel (render setup dialog) - Renderers - Rendering elements separately - Render to texture - Rendering previews and grabbing viewports - Random access memory (RAM) player - Panorama exporter utility - Network rendering - Batch rendering - Command-Line rendering	1, 2, 3, 4, 5, 6, 7, 8, 9
Lab (must total 100%)		
30.00%	Exercises related to lecture content	1, 2, 3, 4, 5, 6, 7, 8, 9
30.00%	Hands-on experience in animation and rendering	1, 2, 3, 4, 5, 6, 7, 8, 9
30.00%	Hands-on experience in producing models, mapping and shading, rigging and lighting	2, 3, 4, 5, 6, 7, 8, 9
10.00%	Critiques related to projects	1, 2, 3, 4, 5, 6, 7, 8, 9

IV. TYPICAL ASSIGNMENTS

A. Writing assignments

Writing assignments are required. Possible assignments may include, but are not limited to:	
1	write a proposal of a final project.

2	keep a blog of observations on their development as an animation artist.
3	write the findings from the research about the technical and aesthetic value of 3D animations for in-class discussion.

B. Appropriate outside assignments

Appropriate outside assignments are required. Possible assignments may include, but are not limited to:	
1	build a memorable character for their final animation project.
2	develop the narrative and illustrate the storyboard for their final animation project.
3	create one portfolio level project for critique per month.
4	research of subject matter for a 3D animation project.

C. Critical thinking assignments

Critical thinking assignments are required. Possible assignments may include, but are not limited to:	
1	actively participate in the class critiques.
2	compare and contrast students' work with the work of a traditional or digital animator.
3	analyze students' narrative and final movie in the context of societal and cultural concerns.

V. METHODS OF INSTRUCTION

Methods of instruction may include, but are not limited to:

[X] Distance Education – When any portion of class contact hours is replaced by distance education delivery mode (Complete DE Addendum, Section XV)

[X] Lecture/Discussion

[X] Laboratory/Activity

[X] Other (Specify)
Students will learn through the exercises, projects, discussions, critiques and activities on-site as well as through the distance education.

[X] Optional Field Trips

[ ]

☐ Required Field Trips

VI. METHODS OF EVALUATION

Methods of evaluation may include, but are not limited to:

☐ Essay Exam	☒ Classroom Discussion	☒ Skill Demonstration
☐ Problem Solving Exam	☒ Reports/Papers/ Journals	☒ Participation
☒ Objective Exams	☒ Projects	☒ Other (specify)

Moorpark College Graphics and Multimedia Unified Project Rubric contains evaluative tables for all of the listed items, including professionalism, teamwork, follow through, and class participation.

VII. REPRESENTATIVE TEXTS AND OTHER COURSE MATERIALS

Derakhshani, Randi, and Dariush Derakhshani. Autodesk 3ds Max 2013 Essentials. Sybex, 2012.

Daniele, Todd. Poly-Modeling with 3ds Max: Thinking Outside of the Box. Focal, 2008.

Gahan, Andrew. 3ds Max Modeling for Games: Insider's Guide to Game Character, Vehicle, and Environment Modeling; Vol. 1. 2nd ed. Focal, 2011.

Vaughan, William. Digital Modeling. New Riders, 2012.

Ratner, Peter. 3-D Human Modeling and Animation. 3rd ed. Wiley, 2009.

Chopine, Ami. 3D Art Essentials: The Fundamentals of 3D Modeling, Texturing, and Animation. Focal, 2011.

Ahearn, Luke. 3D Game Environments: Create Professional 3D Game Worlds. Focal, 2008.

Franson, David. 2D Artwork and 3D Modeling for Game Artists. Premier, 2002.

Autodesk 3ds Max Design - Getting Started with 3ds Max Design (online training)
http://docs.autodesk.com/MAXDES/

Autodesk 3ds Max training
http://usa.autodesk.com/3ds-max/training/

VIII. STUDENT MATERIALS FEES

☒ No ☐ Yes

IX. PARALLEL COURSES

College	*Course Number*	*Course Title*	*Units*
Santa Monica College	ET 24A	Introduction to 3D Animation	2
Santa Barbara City College	MAT/DRFT 136	Computer Animation I	3
CSU Fullerton	ART 255	Intro 3D Computer Animation	3

CSU Northridge	MSE 106	Introduction to CAD Animation	3
San Jose State Univ.	ANI 51A	Introduction to 3D Modeling	3
CSU Channel Islands	ART 205	Multimedia	3

X. MINIMUM QUALIFICATIONS

Courses in Disciplines in which Masters Degrees are not expected:
Any bachelor's degree and two years of experience, or any associate degree and six years of experience.

XI. ARTICULATION INFORMATION

A. Title V Course Classification:

1. This course is designed to be taken either:

   [ ] Pass/No Pass only (no letter grade possible); or
   [X] Letter grade (P/NP possible at student option)

2. Degree status:
   Either [X] Associate Degree Applicable; or [ ] Non-associate Degree Applicable

B. Moorpark College General Education:

1. Do you recommend this course for inclusion on the Associate Degree General Education list?
   Yes: [ ] No: [X] If YES, what section(s)?

   [ ] A1 - Natural Sciences - Biological Science
   [ ] A2 - Natural Sciences - Physical Science
   [ ] B1 - Social and Behavioral Sciences - American History/Institutions
   [ ] B2 - Social and Behavioral Sciences - Other Social Behavioral Science
   [ ] C1 - Humanities - Fine or Performing Arts
   [ ] C2 - Humanities - Other Humanities
   [ ] D1 - Language and Rationality - English Composition
   [ ] D2 - Language and Rationality - Communication and Analytical Thinking
   [ ] E1 - Health/Physical Education
   [ ] E2 - PE or Dance
   [ ] F - Ethnic/Gender Studies

C. California State University(CSU) Articulation:

1. Do you recommend this course for transfer credit to CSU? Yes: [X] No: [ ]

2. If YES do you recommend this course for inclusion on the CSU General Education list?
   Yes: [ ] No: [X] If YES, which area(s)?

   A1 [ ] A2 [ ] A3 [ ] B1 [ ] B2 [ ] B3 [ ] B4 [ ]

   C1 [ ] C2 [ ] D1 [ ] D2 [ ] D3 [ ] D4 [ ] D5 [ ]

☐
D6 ☐ D7 ☐ D8 ☐ D9 ☐ D10 ☐ E ☐

D. University of California (UC) Articulation:

1. Do you recommend this course for transfer to the UC? Yes: ☒ No: ☐
2. If YES do you recommend this course for the Intersegmental General Education Transfer Curriculum (IGETC)? Yes: ☐ No: ☒

IGETC Area 1: English Communication

- ☐ English Composition
- ☐ Critical Thinking-English Composition
- ☐ Oral Communication

IGETC Area 2: Mathematical Concepts and Quantitative Reasoning

- ☐ Mathematical Concepts

IGETC Area 3: Arts and Humanities

- ☐ Arts
- ☐ Humanities

IGETC Area 4: Social and Behavioral Sciences

- ☐ Anthropology and Archaeology
- ☐ Economics
- ☐ Ethnic Studies
- ☐ Gender Studies
- ☐ Geography
- ☐ History
- ☐ Interdisciplinary, Social & Behavioral Sciences
- ☐ Political Science, Government & Legal Institutions
- ☐ Psychology
- ☐ Sociology & Criminology

IGETC Area 5: Physical and Biological Sciences (mark all that apply)

- ☐ Physical Science Lab or Physical Science Lab only (none-sequence)
- ☐ Physical Science Lecture only (non-sequence)
- ☐ Biological Science
- ☐ Physical Science Courses
- ☐ Physical Science Lab or Biological Science Lab Only (non-sequence)
- ☐ Biological Science Courses
- ☐ Biological Science Lab course
- ☐ First Science course in a Special sequence

☐ Second Science course in a Special Sequence
☐ Laboratory Activity
☐ Physical Sciences

IGETC Area 6: Language other than English

☐ Languages other than English (UC Requirement Only)
☐ U.S. History, Constitution, and American Ideals (CSU Requirement ONLY)
☐ U.S. History, Constitution, and American Ideals (CSU Requirement ONLY)

XII. REVIEW OF LIBRARY RESOURCES

A. What planned assignment(s) will require library resources and use?

The following assignments require library resources:
Research, using the Library's print and online resources, appropriate to preparing the storyboard and characters for the final project.

B. Are the currently held library resources sufficient to support the course assignment?

YES: ☒ NO: ☐

If NO, please list additional library resources needed to support this course.

XIII. PREREQUISITE AND/OR COREQUISITE JUSTIFICATION

MM M40: Not Applicable

XIV. WORKPLACE PREPARATION

Required for career technical courses only. A career technical course/program is one with the primary goal to prepare students for employment immediately upon course/program completion, and/or upgrading employment skills.

Detail how the course meets the Secretary of Labors Commission on the Achievement of Necessary Skills (SCANS) areas. (For a description of the competencies and skills with a listing of what students should be able to do, go to: http://www.ncrel.org/sdrs/areas/issues/methods/assment/as7scans.htm)

The course will address the SCANS competency areas:

1. Resources: the students will learn to allocate resources, set goals and time-manage a design and media arts production to completion.

2. Interpersonal: the students will instruct each other about those areas in which they are proficient and assess each other's skills in order to build a successful design team.

3. Information: the students will acquire information, organize information and interpret and communicate that information.

4. Systems: the students will understand the systems and monitor and correct performance.

5. Technology: the students will choose visual technologies and perform proper

procedures in the design production process.

The course also addresses the SCANS skills and personal qualities:

1. Basic Skills: the students will read documents and textbooks, listen and present ideas clearly.
2. Thinking Skills: the students will generate creative ideas, make decisions, and reason through and solve problems.
3. Personal Qualities: the students will be responsible, sociable, self-disciplined, honest, and will maintain integrity.

XV. DISTANCE LEARNING COURSE OUTLINE ADDENDUM

1. Mode of Delivery

   [X] Online (course will be delivered 100% online)

   [ ] Online with onsite examinations (100% of the instruction will occur online, but examinations and an orientation will be scheduled onsite)

   [X] Online/Hybrid (a percentage of instruction will be held online and the remaining percentage of instruction will be held onsite)

   [ ] Lab activities will be conducted onsite

   [ ] Televideo (Examinations and an orientation will be held onsite)

   [ ] Teleconference

   [ ] Other

2. Need/Justification

   Improve general student access.

3. Describe how instructors teaching this course will ensure regular, effective contact with and among students.

   The instructor will communicate with students through the course management system, using both synchronous tools (such as chat) and asynchronous tools (such as email and discussions).

   Email is a tool primarily used for course-wide updates and individual student contact. Students and the instructor can privately contact each other with questions, concerns, etc. Discussion Forums will be used to disseminate course-wide information and facilitate ongoing collaborative course work. Students may also use the Discussion Forums to solicit help from the instructor and other students. Discussions may also be graded encouraging students to participate in the class. The Calendar and Announcement tools will be used to keep students informed of important events, deadlines, etc. Additional collaborative learning involves using software that allows students and the instructor to collaborate in real-time. These sessions may also be recorded and archived so that students who were not able to participate can also benefit from them. The instructor may talk with individual students or with student groups. Students may also collaborate with each other without the instructor.

4. Describe how instructors teaching this course will involve students in active learning.

All course materials will be available online. Students will be able to download files and view them offline. Instructor may also provide course content within the course management system as well as provide links to supplemental publications, articles, and websites.

Quizzes may be issued (using a course-specific timeline) in which students will be tested on their knowledge of the material. Assignments may include exercises through which students explore course concepts using a textbook and/or additional research. Students can submit their assignments online and get feedback from the instructor and/or other students as determined per assignment. This can be an iterative process in that students can receive feedback and then be able to improve their submittal if necessary. Email is a tool primarily used for course-wide updates and individual student contact. Students and the instructor can privately contact each other with questions, concerns, etc. Discussion Forums will be used to disseminate course-wide information and facilitate ongoing collaborative course work. Students may also use the Discussion Forums to solicit help from the instructor and other students. Discussions may also be graded encouraging students to participate in the class. Additional collaborative learning involves using software that allows students and the instructor to collaborate in real-time. These sessions may also be recorded and archived so that students who were not able to participate can also benefit from them. The instructor may talk with individual students or with student groups. Students may also collaborate with each other without the instructor.

5. Explain how instructors teaching this course will provide multiple methods of content representation.

   The instructor can provide text, presentation slides, audio/visual material, assignment examples, tutorials (which may be live or recorded), and links to supplemental publications, articles, and websites.

6. Describe how instructors teaching this course will evaluate student performance.

   Student evaluation will occur via standard techniques such as exercises, projects, quizzes, and a program rubric. The online environment will allow the exercises and projects to be iterative so that students may submit their work online and receive feedback from the instructor. The instructor can then communicate critique and/or solutions to students by posting them online. Additionally, graded discussions can be used to provide additional means of assessment.

XVI. GENERAL EDUCATION COURSE OUTLINE ADDENDUM

MM M40: Not Applicable

XVII. STUDENT MATERIALS FEE ADDENDUM

MM M40: Not Applicable

XVIII. REPEATABILITY JUSTIFICATION TITLE 5, SECTION 55041

MM M40: Not Applicable

XIX. CURRICULUM APPROVAL

Course Information:

Discipline: MULTIMEDIA

Discipline Code and Number: MM M40

Course Revision Category: Outline Update

Course Proposed By:

Originating Faculty Svetlana Kasalovic 08/12/2015

Faculty Peer: Tim Samoff 08/12/2015

Curriculum Rep: Tim Samoff 08/12/2015

Department Chair: Lydia Etman 08/13/2015

Division Dean: Lisa Putnam 08/27/2015

Approved By:

Curriculum Chair: Jerry Mansfield 09/14/2015

Executive Vice President: Lori Bennett 10/21/2015

Articulation Officer: Letrisha Mai 09/02/2015

Librarian: Mary LaBarge 09/02/2015

Implementation Term and Year: Fall 2016

Approval Dates:

Approved by Moorpark College Curriculum Committee: 12/01/2015

Approved by Board of Trustees (if applicable): _____

Approved by State (if applicable): 01/19/2016