3D DIGITAL ANIMATION TECHNIQUES

INSTRUCTOR: Aaron C. Karlson	**CLASS LOCATION:** NRG 0120
SEMESTER/YEAR: FALL 2019	**CLASS MEETING TIME(S):** T, P 5 – 6; TR, P 6 M, P 5 – 6; W, P 6
Office location/Hours: TBA	**Contact phone:** (352) 294-2000
Credit Hours: 3.0	**COURSE NUMBER:** DIG3305C
CONTACT EMAIL: Canvas	**COURSE COMMUNICATION:** UF E-LEARNING

COURSE DESCRIPTION

Practical techniques for the implementation of three-dimensional digital animations. Basic principles of 3D design workflow in modeling, texturing, lighting, rendering and animation. Understanding basic object and bipedal motion and key-framing using both industry-standard and open-source tools to perform a frame-by-frame study of traditional and contemporary motion picture animation.

PREREQUISITE KNOWLEDGE AND SKILLS

- DAS major and Junior standing or higher

PURPOSE OF COURSE

To familiarize students with the methodology and software used in creating 3D digital art. Students will gain practical experience through modeling and texturing simple geometry, animating using key frames, and finalizing projects through lighting and rendering. This course is intended to introduce students to 3D workflow and practices used in the film industry.

COURSE GOALS AND/OR OBJECTIVES: Through directed projects in each learning objective, students will be able to:

1. Understand the general work-flow for creating 3D assets for film or game.
2. Understand image sequences and post production process of 3D animation.
3. Apply materials that control 3D surface appearance.
4. Create original objects, characters and environments.
5. Create/manage key frames for animation film.

COURSE SCHEDULE:

This course incorporates lecture, discussion, quizzes, and group learning projects. Individual assignments will be explained in detail as the course progresses. The final exam time scheduled for this course will be announced in advance of each semester by the University of Florida Registrar's Office at http://www.registrar.ufl.edu/soc/

Week	Topic	Assignments/Quizzes

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1	Overview of course and objectives Overview of materials and software • Project formats and naming conventions • Foundational terms and intro to 3D animation	Download all applicable software and become familiar with course projects and naming conventions.
2	Introduction to the production pipeline Introduction to Maya ● Maya 2018 GUI ● Navigating the viewport ● Primitive objects ● Basic 3D transforms ● Creating basic key frames ● Setting up project folders	Project 1: Primitives in 3D
3	Review: Basics of Maya ● Navigating orthographic and perspective views/ using keyboard shortcuts ● Scene organization utilizing the Outliner ● Components of polygons ● Soft selection	Project 2: Primitive Landscape DUE Project 1: Primitives in 3D
4	Review: Basics of Maya Part II Modeling in Maya ● Smooth mesh preview ● Parenting ● Mesh tools ● Modeling workflow ● Creating image planes ● Topology	Project 3: Modeling utilizing photo references DUE Project 2: Primitive Landscape
5	Review: Modeling in Maya Basics of Texturing I: UVs ● Review project folders ● Materials overview ● Unwrapping UVs ● UV tools ● Cutting & Sewing UV edges	Project 4: UV Mapping DUE Project 3: Modeling with image planes
6	Review: Unwrapping UVs Basics of Texturing II: Materials ● Exporting UVs	Project 5: Texturing and Lighting

	● Painting in Photoshop ● Creating seamless textures ● More UV Tools ● Intro to lights and rendering	Bonus Group Project: Animating with Deformers DUE Project 4: UV Mapping
7	Review: Materials and Texturing Non Linear Deformers Setting up a render in Maya ● 3 Point Lighting ● Linear Workflow ● Color Management ● Applying a bump map ● Rendering with Arnold	Project 6: Lighting and Rendering DUE Project 5: Texturing and Lighting
8	Review: Lighting and Rendering Final Project Overview History of animation The 12 Principles of Animation Animating a bouncing ball ● Intro to animation rigs ● Studying film reference ● Utilizing the Graph Editor ● Graph editor tangents	Project 6: Bouncing Ball in 3D Final Project Proposal DUE Bonus Group Project: Animating with Deformers Project 5: Texturing and Lighting
9	Review: Bouncing Ball Character Animation Part I ● Pre-rigged character overview ● Walk cycle (Legs and Lower Body) ● Advanced character controls ● File referencing ● Copying and pasting animation curves	Project 7: Walk Cycle (Legs and Lower Body) Quiz: The 12 Principles of Animation DUE Project 6: Bouncing Ball in 3D Final Project Proposal
10	Review: Character Walk Cycle (Legs) Character Animation Part II ● Adding personality to characters ● Walk cycle (upper body) ● Editing the graph editor	Project 8: Character Walk Cycle (Arms and Upper Body) DUE

		Project 7: Character Walk Cycle (Legs and Lower Body)
11	Review: Character Walk Cycle/Locomotion Character Animation in Maya Part III ● Using character constraints ● Implementing reference footage ● Demonstrating weight	Final Project Progress (Part I) DUE Project 8: Character Walk Cycle (Arms and Upper Body)
12	Review: Character Animation in Maya Part III ● Lip sync in Maya ● Character emotions	Project 9: Lip Sync Animation Quiz: Character Rig Functionality DUE Final Project Progress (Part I)
13	Review: Lip Sync Animation ● Review scene lighting ● Rendering image sequences	Final Project Progress (Part II) DUE Project 9: Lip Sync Animation
14	Review: Final Project Progress ● Camera animation ● Post production in AE ● Work on final project ● Final project feedback	FINAL PROJECT TURN-IN DUE Final Project Progress (Part II)
15	Review: Final Project ● Review rendering and post production ● Final project feedback ● Implementing sound and backgrounds in AE	
16	Review finished animation (playblast) for final project	DUE Final Project Progress (Part III) FINAL PROJECT

REQUIRED TEXTBOOKS AND SOFTWARE:

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1. Williams, Richard. *The Animator's Survival Kit--Revised Edition: A Manual of Methods, Principles and Formulas for Classical, Computer, Games, Stop Motion and Internet*. Faber & Faber, 2012.
2. Autodesk Maya 2018 Educational Version (Free for students) **DOWNLOAD**
3. Adobe Photoshop CC
4. Adobe After Effects CC
5. Two-monitor setup (ONLINE students only)
6. 3 Button Mouse

RECOMMENDED MATERIALS:

1. Hooks, Ed. *Acting for Animators, 4TH Edition*
   ISBN-13: 978-1138669123 / ISBN-10: 1138669121
2. Johnston, Ollie. *The Illusion of Life: Disney Animation.* Disney Press, 1995
3. Lynda.com, Online Tutorials *(Free access for UF students)*
4. Williams, Richard. The Animator's Survival Kit App:
   https://itunes.apple.com/us/app/the-animators-survival-kit/id627438690?mt=8

COURSE FEES:

Course fees are assessed for certain courses to offset the cost of materials or supply items consumed in the course of instruction. A list of approved courses and fees is published in the Schedule of Courses each semester. (UF-3.0374 Regulations of the University of Florida).

Material and supply and equipment use fee information is available from the academic departments or from the schedule of courses (Florida Statutes 1009.24). The total course fee for this class is $12.26

The total course fee for each course is listed on the UF Schedule of Courses. (https://registrar.ufl.edu/soc/).

EVALUATION OF GRADES

Assignment	Total Points	Percentage of Grade
Participation – Students are expected to actively participate in class discussions, both in class as well as in class online forums outside class meetings.	100	10%
Weekly Assignments and Quizzes – Weekly assignments and group projects are due the Tuesday session of each week unless otherwise noted. The work will be uploaded to CANVAS prior to the beginning of class otherwise the work will be considered late	100	55%
Final Project – The result of the semester long effort in learning. It is expected that in this final project, students	100	35%

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employ the principles and techniques they have learned during the semester.		

GRADING SCALE:

Letter Grade	% Equivalency	GPA Equivalency
A	94 – 100%	4.0
A-	90 – 93%	3.67
B+	87 – 89%	3.33
B	84 – 86%	3.00
B-	80 – 83%	2.67
C+	77 – 79%	2.33
C	74 – 76%	2.00
C-	70 – 73%	1.67
D+	67 – 69%	1.33
D	64 – 66%	1.00
D-	60 – 63%	.67
E, I, NG, S-U, WF	0 – 59%	0.00

More information on grades and grading policies is here:
https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx

COURSE POLICIES:

PARTICIPATION / ATTENDANCE
We value participation more than mere attendance. Each Instructor is responsible for communicating the specific details of what percentage of your grade (if any) will be assigned to participation, and how class participation will be measured and graded. Three unexcused absences will result in the drop of one letter grade (i.e. the student will now only be able to obtain a maximum grade of 'B' for the course). Students should contact the Instructor 24 hours before class time (If possible) if they wish to be considered for an excused absence. Upon return to class, students must provide documentation for their absence. Students should communicate with the instructor about their absences and be proactive about their course work.

Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies that can be found at:
https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx

MAKE-UP POLICY

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a. At the sole discretion of the instructor, Exams may or may not be taken late. Documented Emergencies or medical situations may be the only accepted reasons for an excused absence on the day of an exam.
b. Any assignment turned in past the due date may lose up to 10% of the total point value of the assignment for each class day it is late.

Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies that can be found at:
https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx

COURSE TECHNOLOGY
The University of Florida and Digital Worlds requires that students have access to and on-going use of a laptop/mobile computer for DIG courses in order to be able to function in the current learning environment. Students are required to access electronic forms of information, submit assignments and communicate with other students and faculty electronically. DW requires each student's mobile computer to meet certain minimum specs for heavy graphics use, the requirements documented below must be met.

DW Computer Requirements
http://digitalworlds.ufl.edu/programs/ba-in-digital-arts-sciences/new-student-buyers-guide/

COURSE COMMUNICATIONS
Students can communicate directly with the Instructor regarding the course material through UF e-Learning. http://elearning.ufl.edu/

COURSE TECHNOLOGY SUPPORT:

The Technology Support Center provides computer support for Digital Worlds students who access Visimeet, lecture recordings, student equipment, facilities and other technology-based resources.
http://digitalworlds.ufl.edu/support

For computer assistance related to Visimeet, lecture recordings, student equipment, and facilities request please Submit a Help Ticket or email support@digitalworlds.ufl.edu.

For support related to account services, technical consulting, mobile device services, software services, administrative support, application support center, and learning support services, please contact the UF Computer Help Desk available 24 hours a day, 7 days a week at 352-392-4357 or helpdesk@ufl.edu.

UF POLICIES:

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UNIVERSITY HONESTY POLICY

UF students are bound by The Honor Pledge that states, "We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: "On my honor, I have neither given nor received unauthorized aid in doing this assignment." The Honor Code specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor or TAs in this class.

CLASS DEMEANOR

Students are expected to arrive to class on time and behave in a manner that is respectful to the instructor and to fellow students. Please avoid the use of cell phones and restrict eating to outside of the classroom. Opinions held by other students should be respected in discussion, and conversations that do not contribute to the discussion should be held at minimum, if at all.

STUDENTS REQUIRING ACCOMMODATIONS

Students with disabilities requesting accommodations should first register with the Disability Resource Center (352-392-8565) by providing appropriate documentation. Once registered, students will receive an accommodation letter which must be presented to the instructor when requesting accommodation. Students with disabilities should follow this procedure as early as possible in the semester.

NETIQUETTE COMMUNICATION COURTESY

All members of the class are expected to follow rules of common courtesy in all email messages, threaded discussions and chats, more information can be found at: http://teach.ufl.edu/wp-content/uploads/2012/08/NetiquetteGuideforOnlineCourses.pdf

ONLINE COURSE EVALUATIONS

Students are expected to provide feedback on the quality of instruction in this course by completing online evaluations. Evaluations are typically open during the last two or three weeks of the semester, but students will be given specific times when they are open. Summary results of these assessments are available to students at evaluation results.

CAMPUS RESOURCES

HEALTH AND WELLNESS

U Matter, We Care

If you or a friend is in distress, please contact umatter@ufl.edu or 352 392- 1575 so that a team member can reach out to the student.

Counseling and Wellness Center

http://www.counseling.ufl.edu/cwc/Default.aspx, 392-1575; and the University Police Department: 392-1111 or 9-1-1 for emergencies.

Sexual Assault Recovery Services (SARS)
Student Health Care Center, 392-1161.

University Police Department, 392-1111 (or 9-1-1 for emergencies). http://www.police.ufl.edu/

ACADEMIC RESOURCES

E-learning technical support, 352-392-4357 (select option 2) or e-mail to Learning-support@ufl.edu. https://lss.at.ufl.edu/help.shtml.

Career Resource Center, Reitz Union, 392-1601. Career assistance and counseling. http://www.crc.ufl.edu/

Library Support, http://cms.uflib.ufl.edu/ask. Various ways to receive assistance with respect to using the libraries or finding resources.

Teaching Center, Broward Hall, 392-2010 or 392-6420. General study skills and tutoring. http://teachingcenter.ufl.edu/

Writing Studio, 302 Tigert Hall, 846-1138. Help brainstorming, formatting, and writing papers. http://writing.ufl.edu/writing-studio/

Student Complaints Campus:
https://www.dso.ufl.edu/documents/UF_Complaints_policy.pdf

On-Line Students Complaints:
 http://www.distance.ufl.edu/student-complaint-process

Disclaimer: This syllabus represents the instructor's current plans and objectives. As we go through the semester, those plans may need to change to enhance the class learning opportunity. Such changes, communicated clearly, are not unusual and should be expected.