3D CHARACTER ANIMATION

INSTRUCTOR: Aaron C. Karlson  
CLASS LOCATION: NRG-120

SEMESTER/YEAR: FALL 2019  
CLASS MEETING TIME(S):  
T, P 8 – 9; TR, P 9

OFFICE LOCATION/HOURS: TBA  
CONTACT PHONE: (352) 294-2000

CREDIT HOURS: 3.0  
COURSE NUMBER: DIG4354

CONTACT EMAIL: Canvas  
COURSE COMMUNICATION: UF e-LEARNING

COURSE DESCRIPTION
This course teaches students practical techniques for implementing three-dimensional digital character animations into digital animation. Students will develop skills in these advanced animation principles by learning and practicing character development, pipeline management, procedural framework simulation, and basic rigging. Students will also perform frame-by-frame studies of traditional and contemporary motion picture animation. By the end of the course, students will be able to fluently use both industry-standard and open-source tools to animate basic 3D object and 3D bipedal motion as well as perform key-framing in 3D.

PREREQUISITE KNOWLEDGE AND SKILLS
● DAS major and Junior standing or higher

PURPOSE OF COURSE
This course expands students’ existing knowledge of character animation, posing, and timing, through iterative feedback on in-progress development in 3D character animation.

COURSE GOALS AND/OR OBJECTIVES: Students will complete 5 long form animations (greater than 300 frames) and regular posing exercises to:
1. Practice timing, slow ins and slow outs, blocking, breakdowns, spline, as well as polish passes for arcs and secondary action.
2. Translate straight ahead and pose to pose 3D animation
3. Analyze and implement shot based character development and appeal, acting, reference filming, and follow through and overlapping action
4. Evaluate and apply real life reference into action lines and using pushed poses, incorporating squash and stretch and exaggeration
5. Expand upon foundations of solid drawing, anticipation, and staging to create dynamic shot compositions

COURSE SCHEDULE:
This course incorporates lectures, feedback and critique, and in class work sessions. 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/
<table>
<thead>
<tr>
<th>Week</th>
<th>Topic</th>
<th>Assignments/Quizzes</th>
</tr>
</thead>
</table>
| 1    | Overview of course and objectives | **Assign Project 1:** Character Animation Assignment 1  
Posing exercise 1  
**Due:** -P1 Checkpoint 1 |
|      | Overview of materials and software |  
- Project formats and naming conventions  
- Assessment of previous animations and establishing baseline fundamental development plans |
| 2    |  
- History of acting  
- Story and character development basics for short films  
- P1 Concept, Reference and Blocking Checkpoint | **Due:** -P1 Checkpoint 2  
P1 Checkpoint 3  
**Due:** -Posing exercise 1  
P1 Checkpoint 4  
P1 Checkpoint 5 |
| 3    |  
- Investigation into the 9 principles of acting  
- P1 Spline Checkpoint | **Due:** P1 Checkpoint 4  
P1 Checkpoint 5 |
| 4    |  
- Laban Movement analysis  
- P1 Animation Polish Checkpoint | **Assign Project 2:** Character Animation Assignment 2  
Posing exercise 2  
**Due:** Animation 1  
P2 Checkpoint 1  
P2 Checkpoint 4  
P2 Checkpoint 5 |
| 5    |  
- Cartoony vs. Realistic Animation analysis  
- P2 Concept, Reference and Blocking Checkpoint | **Due:** -P2 Checkpoint 2  
P2 Checkpoint 3  
**Due:** -Posing exercise 2  
P2 Checkpoint 4  
P2 Checkpoint 5 |
| 6    |  
- Shot composition for moving cameras  
- P2 Spline Checkpoint | **Due:** P2 Checkpoint 4  
P2 Checkpoint 5 |
| 7    |  
- Character design edits for pre-rigged assets  
- P2 Animation Polish Checkpoint | **Assign Project 3:** Character Animation Assignment 3  
Posing exercise 3  
**Due:** Animation 2  
P3 Checkpoint 1  
P3 Checkpoint 3 |
| 8    |  
- Live action acting analysis  
- Anatomy of the dramatic scene  
- P3 Concept, Reference and Blocking Checkpoint | **Due:** -P3 Checkpoint 2  
P3 Checkpoint 3  
**Due:** -Posing exercise 3 |
| 9   | - Multiple character scene management techniques  
|     | - ATOM Import/Export  
|     | - P3 Spline Checkpoint | **Due:** P3 Checkpoint 4  
|     |                       | P3 Checkpoint 5 |
| 10  | - Rigging fundamentals-Set Driven Keys  
|     | - P3 Animation Polish Checkpoint | **Assign Project 4:**  
|     |                          | Character Animation  
|     |                          | Assignment 4  
|     |                          | Posing exercise 4  
|     |                          | **Due:** -P3 Checkpoint 4  
|     |                          | Animation 2  
|     |                          | P4 Checkpoint 1 |
| 11  | - Rigging fundamentals continued - vertex  
|     | deformations and joint chains  
|     | - P4 Concept, Reference and Blocking Checkpoint | **Due:** -P4 Checkpoint 2  
|     |                          | P4 Checkpoint 3  
|     |                          | **Due:** -Posing exercise 4  
| 12  | - Rigging fundamentals continued – IK and IK Spline  
|     | handles  
|     | - Lattice and cluster deformers  
|     | - P4 Animation Spline Checkpoint | **Due:** P4 Checkpoint 4  
|     |                          | P4 Checkpoint 5 |
| 13  | - Advanced rendering/compositing techniques  
|     | - P4 Animation Polish Checkpoint  
|     | - P5 Concept, Reference and Blocking Checkpoint | **Assign FINAL:**  
|     |                          | Character Animation  
|     |                          | Assignment 5  
|     |                          | Posing exercise 5  
|     |                          | **Due:** Animation 4  
|     |                          | P5 Checkpoint 1 |
| 14  | - Render farm basics  
|     | - Dynamic hair simulation  
|     | - P5 Animation Spline Checkpoint | **Due:** -P5 Checkpoint 2  
|     |                          | P5 Checkpoint 3  
|     |                          | **Due:** -Posing exercise 5  
| 15  | - Editing video and sound for animation  
|     | - Foley sound fundamentals  
|     | - P5 Polish Checkpoint | **Due:** FINAL Checkpoint 4  
|     |                          | P5 Final due |
| 16  | Review finished animation (playblast) for final project | **Due before exam week:**  
|     |                          | Post mortem assessment |

**REQUIRED TEXTBOOKS AND SOFTWARE:**

1. Autodesk Maya 2019 Educational Version (Free for students) [DOWNLOAD](#)  
2. Adobe Photoshop CC 2019  
3. Adobe After Effects CC 2019  
4. 3 Button Mouse
DIG4354 – 3D CHARACTER ANIMATION

5. Sketchbook 9” x 12”

RECOMMENDED MATERIALS:

8. Lynda.com, Online Tutorials (Free access for UF students)
9. Williams, Richard. The Animator’s Survival Kit App:

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 $0.00

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

EVALUATION OF GRADES

<table>
<thead>
<tr>
<th>Assignment</th>
<th>Total Points</th>
<th>Percentage of Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attendance and Participation – Students are expected to actively participate in class by bringing project progress with them and actively engaging in feedback and critique. Posing demos will also be part of this grade.</td>
<td>100</td>
<td>10%</td>
</tr>
<tr>
<td>Assignment 1 What’s in the Box? - Students will animate a character interacting with and opening a box. Particular attention will be paid to the physicality of the performance and the emotional responses of the character at the beginning, middle, and end of the piece.</td>
<td>100</td>
<td>13%</td>
</tr>
<tr>
<td>Assignment 2 Advanced Character/Camera Motion – Students will animate a moving camera following a character running/jumping through a scene using gymnastics or free-running as reference.</td>
<td>100</td>
<td>13%</td>
</tr>
<tr>
<td>Assignment 3 Realistic Dialogue – Students will animate a piece of dialogue with up to 2 characters utilizing acting principles with focus on realistic movement.</td>
<td>100</td>
<td>13%</td>
</tr>
</tbody>
</table>
Assignment 4 Cartoony Dialogue – Students will animate a piece of dialogue with up to 2 characters utilizing extreme exaggeration and motion with focus on arcs and solid posing.

Assignments 5 – Students will animate a short story based on pre-recorded audio and finalize all components such as animation, texturing, lighting, and rendering.

Final Project – This turn-in will be a fully rendered version of one of the 5 weekly projects with sound effects and title cards.

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

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
DIG4354 – 3D CHARACTER ANIMATION

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
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

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.
DIG4354 – 3D CHARACTER ANIMATION

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:

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.


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/


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.