

Course Syllabus

Course Information

<i>Course Number/Section</i>	CS 6323 – 001
<i>Course Title</i>	Computer Animation and Gaming
<i>Term</i>	Fall 2020
<i>Days & Times</i>	Monday/Wednesday 4:00 pm – 5:15 pm
<i>Instructional Mode</i>	Remote

Professor Contact Information

<i>Professor</i>	Xiaohu Guo
<i>Office Phone</i>	972-883-4723
<i>Other Phone</i>	
<i>Email Address</i>	xguo@utdallas.edu
<i>Office Location</i>	ECSS 4.605
<i>Online Office Hours</i>	Tuesday / Wednesday 10am-11am
<i>Other Information</i>	

Note: We will use MS Teams for the online office hours. The meeting link is posted on eLearning.

Course Modality and Expectations

Instructional Mode	The instructional mode is Remote for this course. More information about this instructional mode can be found at: https://www.utdallas.edu/fall-2020/fall-2020-registration-information/
Course Platform	The course meeting will be delivered via MS Teams. The meeting link is posted on eLearning. The instructions about how to access the course meeting in Teams can be found at: https://dox.utdallas.edu/instruction1160
Expectations	Students are expected to attend the class either synchronously or asynchronously, and complete the programming assignments independently before the due time.
Asynchronous Learning Guidelines	All the lectures will be recorded and videos uploaded on MS Stream. The instructions about how to access the lecture recording in Stream can be found at: https://dox.utdallas.edu/instruction1159 More information about the asynchronous instruction can be found at: https://www.utdallas.edu/fall-2020/asynchronous-access-for-fall-2020/

COVID-19 Guidelines and Resources

The information contained in the following link lists the University's COVID-19 resources for students and instructors of record.

Please see <http://go.utdallas.edu/syllabus-policies>.

Class Participation

Regular class participation is expected regardless of course modality. Students who fail to participate in class regularly are inviting scholastic difficulty. A portion of the grade for this course is directly tied to your participation in this class. It also includes engaging in group or other activities during class that solicit your feedback on homework assignments, readings, or materials covered in the lectures (and/or labs). Class participation is documented by faculty. Successful participation is defined as consistently adhering to University requirements, as presented in this syllabus. Failure to comply with these University requirements is a violation of the [Student Code of Conduct](#).

Class Recordings

Students are expected to follow appropriate University policies and maintain the security of passwords used to access recorded lectures. Unless the Office of Student Accessibility has approved the student to record the instruction, students are expressly prohibited from recording any part of this course. Recordings may not be published, reproduced, or shared with those not in the class, or uploaded to other online environments except to implement an approved Office of Student Accessibility accommodation. Failure to comply with these University requirements is a violation of the [Student Code of Conduct](#).

The instructor may record meetings of this course. Any recordings will be available to all students registered for this class as they are intended to supplement the classroom experience. Students are expected to follow appropriate University policies and maintain the security of passwords used to access recorded lectures. Unless the Office of Student Accessibility has approved the student to record the instruction, students are expressly prohibited from recording any part of this course. Recordings may not be published, reproduced, or shared with those not in the class, or uploaded to other online environments except to implement an approved Office of Student Accessibility accommodation. If the instructor or a UTD school/department/office plans any other uses for the recordings, consent of the students identifiable in the recordings is required prior to such use unless an exception is allowed by law. Failure to comply with these University requirements is a violation of the [Student Code of Conduct](#).

Class Materials

The Instructor may provide class materials that will be made available to all students registered for this class as they are intended to supplement the classroom experience. These materials may be downloaded during the course, however, these materials are for registered students' use only. Classroom materials may not be reproduced or shared with those not in class, or uploaded to other online environments except to implement an approved Office of Student Accessibility accommodation. Failure to comply with these University requirements is a violation of the [Student Code of Conduct](#).

Course Pre-requisites, Co-requisites, and/or Other Restrictions

Formal prerequisite for this course is CS5343 Algorithm Analysis and Data Structure. You should have familiarity with basic calculus, linear algebra and geometry, and good working knowledge of C++ and graphical programming (we will use OpenGL for this course).

Course Description

This graduate class focuses on the both theoretical foundations and programming techniques involved in computer animation and game engines. Algorithms and approaches for both character animation and physically based animation will be covered. Particular subjects may include 2D & 3D transformations, skeletons, forward and inverse kinematics, skinning, keyframing, particle systems, rigid bodies, collision detection, and animation for video games.

Student Learning Objectives/Outcomes

After successful completion of this course, the students will be able to:

- Knowledge of all of the major terms and concepts in computer animation;
- Able to apply concepts to specific computer animation problems;
- Able to implement key parts of certain animation techniques;
- Able to independently read and study current computer animation research publications;
- Knowledge of at least one topic of research interest related to computer animation;

Textbooks and Materials

“Computer Animation: Algorithms and Techniques”, by Rick Parent, Published by Morgan Kaufmann, 3rd Edition, 2012, ISBN: 0124158420.

Textbooks and some other bookstore materials can be ordered online or purchased at the [UT Dallas Bookstore](#).

Technical Requirements

In addition to a confident level of computer and Internet literacy, certain minimum technical requirements must be met to enable a successful learning experience. Please review the important technical requirements on the [Getting Started with eLearning](#) webpage.

Course Access and Navigation

This course can be accessed using your UT Dallas NetID account on the [eLearning](#) website.

Please see the course access and navigation section of the [Getting Started with eLearning](#) webpage for more information.

To become familiar with the eLearning tool, please see the [Student eLearning Tutorials](#) webpage.

UT Dallas provides eLearning technical support 24 hours a day, 7 days a week. The [eLearning Support Center](#) includes a toll-free telephone number for immediate assistance (1-866-588-3192), email request service, and an online chat service.

Communication

This course utilizes online tools for interaction and communication. Some external communication tools such as regular email and a web conferencing tool may also be used during the semester. For more details, please visit the [Student eLearning Tutorials](#) webpage for video demonstrations on eLearning tools.

Student emails and discussion board messages will be answered within 3 working days under normal circumstances.

Distance Learning Student Resources

Online students have access to resources including the McDermott Library, Academic Advising, The Office of Student AccessAbility, and many others. Please see the [eLearning Current Students](#) webpage for more information.

Server Unavailability or Other Technical Difficulties

The University is committed to providing a reliable learning management system to all users. However, in the event of any unexpected server outage or any unusual technical difficulty which prevents students from completing a time sensitive assessment activity, the instructor will provide an appropriate accommodation based on the situation. Students should immediately report any problems to the instructor and also contact the online [eLearning Help Desk](#). The instructor and the eLearning Help Desk will work with the student to resolve any issues at the earliest possible time.

Academic Calendar

WEEK/ DATES	TOPIC/LECTURE	READING	ASSESSMENT / ACTIVITY	DUE DATE
W1 08/17	Introduction to Computer Animation	Slides 1	N/A	N/A
W1&2 08/19- 08/24	OpenGL Tutorial	Slides 2, OpenGL “Redbook”	Assignment 0	08/26 (tentative)
W2&3 08/26- 09/02	Vectors and Matrices	Slides 3, Appendix B.1, B.2, B.3	Assignment 1	09/06 (tentative)
W4 09/07	Cubic Curves	Slides 4, Chapter 3 & Appendix B.5	Assignment 2	09/15 (tentative)
W4&5 09/09- 09/14	Interpolating Values	Slides 5, Chapter 3 & Appendix B.5	Assignment 3	09/29 (tentative)
W5&6 09/16- 09/21	Quaternions	Paper Notes 6	N/A	N/A
W6&7 09/23- 09/28	Interpolating Orientations	Slides 7, Chapter 3 & Appendix B.5	Assignment 4	10/11 (tentative)
W7 09/30	Forward Kinematics	Slides 8, Chapter 5	Assignment 5	10/25 (tentative)
W8 10/05	Skinning	Slides 9, Chapter 5	N/A	N/A
W8&9&10 10/07- 10/21	Inverse Kinematics	Slides 10, Chapter 5	Assignment 6	11/07
W11 10/26	Time Integration	Slides 11	N/A	N/A
W11 10/28	Particle System	Slides 12	N/A	N/A

WEEK/ DATES	TOPIC/LECTURE	READING	ASSESSMENT / ACTIVITY	DUE DATE
W12 11/02	Constraints	Slides 13	N/A	N/A
W12&13 11/04- 11/09	Rigid Body Dynamics	Slides 14	N/A	N/A
W13 11/11	Collision Detection	Slides 15	N/A	N/A
W14 11/16- 11/18	Human Modeling	Slides 16	N/A	N/A

Important: The topics, their order, and assignment due dates in this schedule are only for your reference and they may be changed due to unpredictable adjustments. Please refer to the exact due time on eLearning for the assignments and projects. If the class needs more time and examples to understand a concept we will modify the schedule. If the class is ready to skip a topic or go faster we will modify the schedule. Therefore, it is the student's responsibility to check what we covered in class and the changes in the schedule announced during class.

Grading Policy

The final grade will be based on programming assignments, and final projects. Each student is required to complete seven programming assignments individually. The programming assignments will be implemented with OpenGL in any of your preferred programming environment (e.g. Windows, Linux, MacOS). All the assignments and projects are mandatory. The final grade will be composed of the following parts:

- Programming Assignments: 65%
 - Assignment 0: 3%
 - Assignment 1: 10%
 - Assignment 2: 10%
 - Assignment 3: 10%
 - Assignment 4: 10%
 - Assignment 5: 10%
 - Assignment 6: 12%
- Final Project: 30%
 - Project Proposal: 5%
 - Project Demo, Presentation, Report: 25%
- Class Attendance: 5%

Course Policies

Make-up exams

No exams for this course.

Extra Credit

No extra credit available for this course.

Late Work

Late submission of programming assignments will be accepted with a penalty of deduction in grades by 10% per day.

Special Assignments

No special assignments for this course.

Class Participation

The instructor will download a list of students who attended the meeting from MS Teams for each lecture. If you have to attend asynchronously, please inform the instructor that you have followed the recorded video of each lecture. These will be counted towards the 5% class attendance grade.

Comet Creed

This creed was voted on by the UT Dallas student body in 2014. It is a standard that Comets choose to live by and encourage others to do the same:

“As a Comet, I pledge honesty, integrity, and service in all that I do.”

Academic Support Resources

The information contained in the following link lists the University’s academic support resources for all students.

Please go to [Academic Support Resources](#) webpage for these policies.

UT Dallas Syllabus Policies and Procedures

The information contained in the following link constitutes the University’s policies and procedures segment of the course syllabus.

Please go to [UT Dallas Syllabus Policies](#) webpage for these policies.

The descriptions and timelines contained in this syllabus are subject to change at the discretion of the Professor.