UNIVERSITY OF CALIFORNIA
UCMERCED

Syllabus for EECS287-01: Computer Animation/Simulation

Fall 2018
Instructor: Marcelo Kallmann

Designation:	Computer Animation and Simulation
Catalog Description:	This course covers the main animation algorithms and techniques used in the implementation of interactive 3D Graphics, such as in Computer Games, Modeling tools, Robotics Simulators and Virtual Reality. Topics covered are: physically-based simulation, keyframe animation, articulated figures, direct and inverse kinematics, path planning, behavior-based animation, scripting behaviors, and other topics.
Text Books and Other Required Materials:	The course relies on several class notes and papers which are distributed to the class. The following book is recommended but not mandatory: Computer Animation Algorithms and Techniques, Rick Parent, Morgan Kaufmann.
Course Objectives/ Student Learning Outcomes:	The course introduces the main computer animation algorithms and techniques, and also reviews the latest developments in the domain. The goal is to provide solid foundations required to enable students to design and implement a wide variety of computer animation and simulation applications.
Program Learning Outcomes:	
Prerequisites by Topic:	
Course Policies:	The course has the format of 2h of lectures and 6h of lab per week. The lab time is used to practice and implement projects developed along the semester.
Academic Dishonesty Statement:	a. Each student in this course is expected to abide by the University of California, Merced's Academic Honesty Policy. Any work submitted by a student in this course for academic credit will be the student's own work. b. You are encouraged to study together and to discuss information and concepts covered in lecture and the sections with other students. You can give "consulting" help to or receive "consulting" help from such students. However, this permissible cooperation should never involve one student having possession of a copy of all or part of work done by someone else, in the form of an e mail, an e mail attachment file, a diskette, or a hard copy. Should copying occur, both the student who copied work from another student and the student who gave material to be copied will both automatically receive a zero for the assignment. Penalty for violation of this Policy can also be extended to include failure of the course and University disciplinary action. c. During examinations, you must do your own work. Talking or discussion is not permitted during the examinations, nor may you compare papers, copy from others, or collaborate in any way. Any collaborative behavior during the examinations will result in failure of the exam, and may lead to failure of the course and University disciplinary action.
Disability Statement:	Accommodations for Students with Disabilities: The University of California Merced is committed to ensuring equal academic opportunities and inclusion for

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	students with disabilities based on the principles of independent living, accessible universal design and diversity. I am available to discuss appropriate academic accommodations that may be required for student with disabilities. Requests for academic accommodations are to be made during the first three weeks of the semester, except for unusual circumstances. Students are encouraged to register with Disability Services Center to verify their eligibility for appropriate accommodations.
Topics:	The main covered topics are: scene graph implementation, physically-based modeling and animation, rotations and quaternions, keyframe animation and blending, move graphs and motion graphs, inverse kinematics, scripting languages, navigation behaviors, path planning, collision detection.
Class/laboratory Schedule:	2h of lectures and two 3h lab sessions per week
Midterm/Final Exam Schedule:	No exams are planned. The final exam day will have presentations of final projects.
Course Calendar:	The course roughly follows the schedule below: 1 – support code and scene graphs; 2 - physics-based animation, particle simulation, spring forces; 3 – cloth simulation, rigid body dynamics; 4 - collision detection; 5 - forward kinematics; 6 - representations of rotations and quaternions; 7 - inverse kinematics; 8 - keyframe animation and blending; 9 - move graphs and motion graphs; 10 – skinning, navigation behaviors and crowds; 11 - graph search and path planning; 12 - geometric path planning and shortest paths. 13 - motion planning; 14 – behavioral animation; 15 - integration of scripting languages.
Professional Component:	
Assessment/Grading Policy:	Grading will be based on exercise lists, programming projects, and student-lead seminars.
Coordinator:	Marcelo Kallmann
Contact Information:	mkallmann@ucmerced.edu
Office Hours:	TBD