DigiPen Institute of Technology
CG 130-F17
3D Computer Animation Production I

CG130-F17-A Thursday 9am - 11:50am, Lumier
CG130-F17-B Tuesday 9am - 11:50am, Turing
CG130-F17-C Wednesday 12 - 2:50pm, Turing

Instructor: Mark Nelson Email: mark.nelson@digipen.edu

Office Phone Number: 425-629-5049

Office Hours: See office hours form

Catalog Description:

Prerequisite(s): None
This course introduces students to the basic theories and techniques of 3D computer animation. The curriculum emphasizes standard 3D modeling techniques, including polygonal and spline modeling, texture map creation and application, keyframing, and animating through forward kinematics and inverse kinematics. No Text books are required for this class

Course Objectives:

1. Provide a theoretical and practical overview of 3D creation as it relates to game development and the Computer Graphics (CG) field in general.
2. Develop fundamental understandings and skills in 3D modeling, texture mapping, camera, lighting and rendering.digital art. The course covers interface
3. Apply previous knowledge of traditional art & animation skills to the electronic 3D realm in Computer Graphics.
4. Develop professional work habits including establishing effective art pipelines, creating & manipulating 3D objects quickly and efficiently. production elements. It also introduces Solve technical issues as they relate to the 3D creation and production process in a self-directed manner.

Exit Competencies:

1. Understand production pipelines
2. Demonstrate basic modeling techniques
3. Demonstrate basic texturing techniques.
4. Demonstrate UV unwrapping techniques.
5. Basic rigging of the biped form with an existing rig.
6. Demonstrate basic lighting and rendering techniques

Classroom Policy:

1. Class attendance and participation: Come on time and come prepared. We expect regular attendance of all students at all classes. Anyone who comes to class unprepared or without the materials to work may be asked to leave and will be marked absent for the day. Class participation is one of the ways you are graded.
2. Every student is expected to behave in a professional manner at all times. Come to class with an open mind, be flexible to change and have the right work attitude. Meet your deadlines and do your homework.
3. CG production, 3D modeling and animation are highly technical endeavors. You will need to develop your ability to solve problems, troubleshoot errors and fix inconsistencies in your work. The best CG productions are made by creative team members that can reliably solve a problem and achieve a desired result in a self-directed manner and are also collaborative.

Late work:
All work is due at 4PM, the day before class time. The following penalties will apply to late work:

Less than one week late:	**20%** deduction
More than one week late:	**40%** deduction

Two exceptions: medical emergency and death in the family. Both exceptions need to be documented. i.e. a doctor's written note related to your injury/health issue. See Student Services for support if this arises.

Attendance Policy:
3 unexcused absences = reduction of final grade, one full grade letter.
4 unexcused absences = class failure

Grade Scale:

A	**93-100%**
A-	**90-92%**
B+	**87-89%**
B	**83-86%**
B-	**80-82%**
C+	**77-79%**
C	**73-76%**
C-	**70-72%**
D	**60-69%**
F	**59% and Below**

Grading Distribution:

a) In class work (20%)
b) Professionalism Including attendance and weekly journal (10%)
c) Projects, weekly assignments and quizzes (70%)

Grading Philosophy:

Evaluation your work and participation is based on professional industry standards. Allowances will be made for the fact that you are new to the software and concepts, however, understanding what is and is not acceptable work in a game development environment is critical to your viability in the workforce.

A: Outstanding work, demonstrating a professional level of creativity and skill, completed on time, meeting and exceeding project objectives; displays a positive, enthusiastic attitude, dedication and professional demeanor. Participates in all classroom activities and discussions.

B: Excellent work, demonstrating a professional level of creativity and skill in most areas, completed on time, meeting and exceeding project objectives; displays a positive, enthusiastic attitude, dedication and professional demeanor. Participates in most classroom activities and discussions. C+: Above average student level work

C: Average student level work. Competent work, completed on time, meeting project objectives; displays an acceptable level of understanding and abilities relating to subject matter. Takes part in classroom activities and discussions.

C-: Below average student level work

D: Less than satisfactory work. Needs further development. May not meet project requirements. May not demonstrate a professional attitude and dedication to the learning process. Participates in few classroom activities and discussions.

F: Unacceptable work.

Academic Integrity:

Each student in this course is expected to abide by DigiPen's Student Enrollment Agreement. With the exception of the RTIS project, any work submitted by a student in this course for academic credit will be the student's own work. For the RTIS project, collaboration is allowed though individual performance for completing the assigned tasks will be what is evaluated.

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 Code can also be extended to include failure of the course and University disciplinary action. During examinations, you must do your own work.

Talking or discussion is not permitted during the exam, nor may you compare papers, copy from others, or collaborate in any way. Any collaborative behavior during the exam will result in failure of the exam, and may lead to failure of the course and University disciplinary action.

CG130-F17.us: Tentative Course Schedule
May change at the discretion of the instructor to accommodate guest presenter and/or student needs

Topics	Discussions	Assignment(s)
Week 1 Course Overview **Tech Topics:** 1. Maya Interface 2. Hotkeys 3. Shelves 4. Marking menu 5. Primitive modeling 6. Project management **Class exercise:** Modeling with primitives	This first class will be concerned with what this class is going to accomplish, how and why. Installing a student version of Maya 2017 on your home or laptop computer. What types of research you are expected to pursue.	
Week 2 **Tech Topics:** 1. Setting up your project 2. Polygon modeling techniques (basic) 3. Basic workflow **Class exercise:** Model a wooden crate, and a wooden barrel	**Basic information on working in Maya** When should you care about Poly Count? Simple Maya Lighting/Rendering with NO textures	Do an image search for crates, don't worry about textures/ materials.
Week 3 **Tech Topics:** 1.Setting up your project (review) 2.Polygon modeling techniques (more basic info) 3.Intro to UVs 4.Intro to Textures	**Basic info on UV unwrapping and textures** Sources for free textures	**In Class** complete and turn in **The Crate/Barrel Project**
Week 4 **Tech Topics:** Diffuse maps Normal maps Specular maps Using Photoshop	More Texture info Creating your own in Photoshop	Introducing the Props Project

Week 5 **Tech Topics:** 1. More modeling techniques 2. UVs continued 3. Textures/materials 4. Light Setup Arnold 5. Simple rendering Arnold	**More Photoshop** **Arnold rendering intro**	**Props Project Due Before class** **Image search for Medieval weapons**
Week 6 **Tech Topics:** 1. Discussion of lighting and rendering techniques 2. Scene setup	**Arnold rendering part 2**	**Project: Medieval Weapon** Combine the wooden crate and the weapon in a scene, light and render
Week 7 **Midterm** **Overall Class Review**	What's the point of the Quiz?	**In-Class:** Modeling Quiz 2 hours
Week 8 **Tech Topics:** 1. Image Planes 2. Nurbs curves 3. Mirroring Geometry	Gathering Ref Create Project Model Asset UV Asset Texture Asset Light and Render	**In-Class:** The Compass Project
Week 9 **Tech Topics:** Maya to Substance Painter and Back again	**Introduce Substance Painter** Setting up an asset for work in SP. Opening an asset in SP.	**In Class:** Using a model you've already built, create textures in Substance Painter

Week 10 **Tech Topics:** More discussions regarding Substance Painter Work on models with Substance Painter	**Working in Substance Painter**	
Week 11 **Tech Topics:** Substance Painter Texture Creation. What to do with the textures in Maya	**Which shaders in Maya/Arnold do we use and how to hook them up**	**Robotic Arm Project, research and project setup, modeling**
Week 12 **Tech Topics:** **Smart modeling Techniques**		**Robotic Arm Project, UV layout, Substance Painter, textures back to Maya**
Week 13 **Tech Topics:** **Clean outliner, which includes naming the meshes, freezing transforms, deleting history**		**Robotic Arm Project, Parenting, rigging, keyframing.** **scene setup, lighting and rendering using Arnold**
Week 14 **Tech Topics:** **Review Robotic Arm Project**		**Finalizing the Robotic Arm Project**
Week 15 **Final Project Due**		

An overall statement regarding grading

Each assignment will include a rubric (my expectations). I will state precisely I'm expecting you to deliver. Earlier assignments will obviously be less demanding, but since the course is developed to consistently build on previous assignments or class lectures, it's to your benefit to follow the rubric in order to satisfy all requirements.

The Academic Support Lab, located on the 3rd floor, offers free tutoring sessions for select 100 and 200 level courses. Tutors are trained to enhance the understanding of core course concepts, answer questions, and assist with exam preparation. Drop-in tutoring is available throughout the day or students can schedule a drop-in appointment. For any additional questions regarding Tutoring Services, please contact studentsuccess@digipen.edu.

"Disability Support Services:
If students have disabilities and will need formal accommodations in order to fully participate or effectively demonstrate learning in this class, they should contact the Disability Support Services Office at (425)629-5015 or dss[at]digipen[dot]edu. The DSS Office welcomes the opportunity to meet with students to discuss how the accommodations will be implemented. Also, if you may need assistance in the event of an evacuation, please let the instructor know."