DIGI 134	Technical Direction and Rigging I			
Fall Term 2014	3D ANIMATION FOR FILM AND GAMES COURSE OUTLINE			
Credits 3.0	Course Format: 4 lecture hours per week for 15 weeks			
Prerequisites	None			
Instructor	TBA	TBA@capilanou.ca	Office: BC2xx	Local: xxxx

SCHOOL OF MOTION PICTURE ARTS VISION STATEMENT

The School of Motion Picture Arts is dedicated to inspiring a new generation of independent Canadian filmmakers through the fostering and mentoring of emerging talent utilizing progressive learning environments and authentic production experiences, such that graduates make valued contributions to the global media culture.

MISSION STATEMENT

The program strives to provide a comprehensive artistic and technical education, preparing students in the art of animation and encouraging critical reflection, collaboration and professionalism. Through innovative teaching, local and international partnerships and the highest standards of artistic and academic excellence, the program seeks to ensure student success in creative careers within the animation industry.

COURSE OBJECTIVES

In this course students will be introduced to techniques for rigging 3D characters and objects for use in animated productions. Students will learn the production methodology used to create skeletons, expressions, controls and user interface systems that allow an animator to bring characters and objects to life. Students will learn troubleshooting techniques necessary to create assets ready for use in animated projects.

COURSE STUDENT LEARNING OUTCOMES

Upon successful completion of this course, students will be able to:
● research the historical context for technical animation in film, television and game production;
● demonstrate a solid understanding of working with transforms, centers, and hierarchies in a production context;
● determine the appropriate use of hierarchies, constraints, linking and expressions;
● identify and implement forward kinematics (FK) and inverse kinematic (IK) systems in the creation of animatable rigs;
● assemble animation ready props, characters or vehicles;
● create animator friendly rigs with suitable controls for use in an animated production.

REQUIRED TEXTS

Ritchie, Kiaran, Jake Callery, and Karim Biri. *The Art of Rigging.* Vol. 1. CG Toolkit, 2005. Print.
O'Hailey, Tina. *Rig it Right!* Focal Press, 2013. Print.

Week 1
 Introduction to rigging
- Parenting and hierarchies
- Attaching geometry to skeletons
- Forward kinematics (FK) vs. Inverse Kinematics (IK) systems
- Examples of production rigs for characters and objects
- *Assignment 1 – Parenting and hierarchies, due week 2.*

Week 2
The importance of transforms, centers and constraints
- Parent and children hierarchies
- Constraint types and common uses
- Adjusting pivot points for controllers
- *Assignment 2 – Constraints, due week 3.*

Weeks 3 – 5
Rigging mechanical objects
- Creating pistons
- Creative use of constraints
- Linking elements together - set driven keys
- Mechanical rigging examples: Gears, train wheels, bike chains, tank treads
- *Assignment 3 – Mechanical rig, due week 6.*

Weeks 6 – 9
Rigging a bipedal character
- Pivot points and articulation of a character's body
- Rotation orders and gimbal lock
- Ball and socket joints, hinge joints
- Mesh optimization for rigging
- *Assignment 4 – Bipedal character rig, due week 10.*

Weeks 10 – 11
Performance driven character rigs
- Common rigging problems and solutions – shoulders and hips
- Reverse foot rigging
- Facial rigging for expression and lip sync
- *Assignment 5 – Performance character rig, due week 12.*

Weeks 12 – 15
Group animated project from idea to final production
- *Term project – Group animated production, due week 15.*

EVALUATION PROFILE

Participation	15%
In-class projects	10%
Assignment 1 – Parenting and hierarchies	5%
Assignment 2 – Constraints	5%
Assignment 3 – Mechanical rig	10%
Assignment 4 – Bipedal character rig	10%
Assignment 5 – Performance character rig	15%
Term project	30%
Total	**100%**

GRADING PROFILE

A+ 90-100	**A** 85-89	**A-** 80-84
B+ 77-79	**B** 73-76	**B-** 70-72
C+ 67-69	**C** 63-66	**C-** 60-62
D 50-59		
F 0-49		

OPERATIONAL DETAILS

Capilano University has policies on Academic Appeals (including appeal of final grades), Student Conduct, Cheating and Plagiarism, Academic Probation and other educational issues. These and other policies are available on the University website.

Professional Behaviour
Students must demonstrate a professional attitude and behaviour toward work, other students, guests and instructors. Each student should demonstrate reliability, respect for and co-operation with colleagues. A willingness to work calmly and courteously under difficult conditions as well as a determination to achieve first class work while meeting deadlines is necessary in this course. Students must have respect for equipment and systems and constructive response to criticism.

Attendance
Regular attendance is essential. Students who miss more than 20% of the course will not receive credit for the course. Attendance will be taken daily and will form part of the participation grade (see Evaluation Profile). Each student is responsible for the material covered and any work assigned in class. The instructor has no obligation to repeat material for students who missed class.

Punctuality
Punctuality is essential. Students more than 15 minutes late for class will be marked absent.

Participation
Students will be evaluated on the following aspects:
- Attendance of classes and labs
- Active engagement in class discussions and projects
- Knowledge of reading / assignments
- Frequency and quality of comments, questions and observations

Late Assignments
All assignments must be delivered at the place and time specified by the instructor. Late assignments will only be accepted if prior approval for a late submission date has been given by the instructor.

Submission of Late Assignments
Although late assignments will not be graded, all assignments must be submitted in order to receive a passing grade in the course.

Incomplete Grades
Grades of incomplete (I) will may be assigned in exceptional circumstances. If the date for the submission of incomplete assignments is not met, the grade will automatically revert to the grade based on the student's present achievements. In addition, the student concerned must submit a written request for approval by the instructor prior to the last regular class in the course.

Continuation Requirement
Students must successfully complete all 3D Animation courses in one term before continuing to the next term.

Emergency Procedures
Students should familiarize themselves with emergency procedures posted in the classroom.