

# BAA DigiPen 3D Animation 11

**District Name:** School District No. 73 (Kamloops / Thompson)

**Developed by:** DigiPen Institute of Technology / Martin Culbert

**Revised by:** Justin deVries

**Date Developed:** 4/27/11

**Date Revised:** 11/14/11

**School Name:** Sa-Hali Secondary School

**Principal's Name:** Rick Kienlein

**Board/Authority Approval Date:**

**Board/Authority Signature:**

**Course Name:** DigiPen 3D Animation 11

**Grade Level of Course:** Grade 11

**Number of Course Credits:** 4

**Number of Hours of Instruction:** 114

**Prerequisite(s):**

- Interest in 3D Animation and use of 3DS Max
- Art skills recommended but not required

**Special Training, Facilities or Equipment Required:**

Proficiency with Windows operating systems, understanding of 3D Animation as an industry and training provided by DigiPen Institute of Technology. Facilities should include a computer lab with recent model computer, with powerful video card and larger memory. Video projector, Autodesk's 3DS Max, and 2D paint package such as Photoshop. Printed support materials (workbooks, etc) are provided by DigiPen ó students retain their workbooks.

**Course Synopsis:**

This course is designed as an introductory course exploring the 3D Animation pipeline through the 3DS Max software. This is an industry grade piece of software and basic skills will be

mastered. Students participate in synchronous instruction via online video and audio conferencing and use the course websites and workbooks to satisfy the asynchronous time commitment.

**Rationale:**

British Columbia is rapidly attracting a concentration of video game production companies. Employment and compensation opportunities provided in this industry are among the fastest growing in Canada’s knowledge-based economy. This program will provide our students with an opportunity to participate in the curriculum developed by an internationally recognized video game university (DigiPen), while gaining an introduction to the field of video game creation and programming. Students will be encouraged to develop cross-curricular knowledge and skills in disciplines such as Mathematics, Science, and Art.

**Organizational Structure:**

Unit	Title	Time (hours)
Unit 1	<b>Basic Animation Principles and Production Pipeline</b>	10
Unit 2	<b>Art Elements and Principles of Animation</b>	10
Unit 3	<b>Animation Pre-production</b> ó pitches, storyboarding, character design	10
Unit 4	<b>Foundations of 3D Animation</b> The following 6 units, though individual in content, need to be taught not in order, but collectively in an iterative process. This iterative process models the production pipeline of successful animators, and is a foundational learning outcome of this course.	48 (total of the units below)
Unit 4a	<b>Modelling:</b> skill building, parametric objects, explicit objects, mesh, free-form, transformations	8
Unit 4b	<b>Texturing:</b> UVW mapping, BMP texturing, computer generated textures	8
Unit 4c	<b>Lighting:</b> goals, three point lighting system	8
Unit 4d	<b>Cameras:</b> free camera, target camera, cuts, perspective	8
Unit 4e	<b>Rigging:</b> selections, grouping, attaching, linking, bones	8
Unit 4f	<b>Animation:</b> key frames and interpolations, 12 animation principles, hierarchies	8
Unit 5	<b>Rendering and Post production:</b> marketing, showcase	6 (optional ó time dependent)
Unit 6	<b>Application to student designed projects</b>	30
<b>Total Hours</b>		114 hours

## **Unit/Topic/Module Descriptions:**

### **Unit 1:Basic Animation Principles and Production Pipeline**

In the first portion of this course students learn the interface and skills to use 3DS Max. The focus of these lessons will be on the 3D production pipeline as it relates to the current computer animation industry.

### **Unit 2:Art Elements and Principles of Animation**

This section of the course will focus on basic foundations of animation that require students to have skills and understanding of. Basic drawing skills will be focused on and improved. The main outcomes will be basic story elements, art elements, and art principles.

### **Unit 3:Animation Pre-production**

This unit focuses primarily on what to do before you start animating: how to plan effectively, give pitches for an idea, how to generate ideas, and how to communicate that idea. The elements of character design and the importance of proper research and pre-production will also be highlighted.

### **Unit 4:Foundations of 3D Animation**

This unit represents the bulk of both the learning and doing in this course. It not only allows students to become accustomed with one of the most powerful tools in the animation business, but the foundations of the production pipeline are worked through again and again in an iterative process that the students will become familiar with. There are many projects in this section including basic animals, furniture, textured spheres, ball-in-a-box (lighting challenge), monster truck, and the walk cycle.

### **Unit 5:Rendering and Post Production**

The only optional unit in the course focuses on the self-evaluation of work, how to market your story, and how to set up a showcase. Some of these principles will be integrated throughout the course.

### **Unit 6:Application to student designed projects**

In this portion of the class students will demonstrate the skills mastered in the early section by creating a 30-45 second animation. Students are responsible for designing, pitching, creating, rendering and presenting their own animation. All steps of the pipeline need to be demonstrated for successful completion. Clear communication of proposals and needs is also required. Students are responsible for managing and reporting on their own timelines and milestones weekly.

## **Learning Resources**

- Student workbook
- Distance education website
- Pre-recorded video lessons
- Discussions

### **Learning Outcomes**

It is expected the student will be able to:

- Easily navigate the 3DS Max user interface
- Understand and apply the 3D modelling pipeline
- Improve on baseline drawing abilities
- Know Disney's principles of animation
- Create and modify geometries
- Create surface materials for geometries
- Apply 3-point lighting correctly
- Free form model to meet a design requirement
- Link and group separate geometries
- Animate geometries and shapes in assigned manner
- Render stills and animations to communicate the story
- Create a design proposal that can actually be completed
- Solidify all skills learned earlier in class
- Research and apply new skills from online resources (tutorials)
- Present and talk about learning experience in a professional manner

### **Assessment Procedure (Units 1-5)**

<b>Formative</b>	<b>%</b>	<b>Summative</b>	<b>%</b>
Hand drawing skill	15	Demonstrate good composition	30
In class discussions	15	Project Effectiveness	40
<b>Total</b>	<b>30%</b>	<b>Total</b>	<b>70%</b>

### **Assessment Procedure (Unit 6)**

<b>Formative</b>	<b>%</b>	<b>Summative</b>	<b>%</b>
Completed proposal and pitch	15	Apply complete pipeline to process	15
Establish and meet milestones	15	Create a visually appealing project	10
Respond to issues professionally	15	Final project effectiveness	20
		Project presentation	10
<b>Total</b>	<b>45%</b>	<b>Total</b>	<b>55%</b>

### **Overall Course Requirements:**

#### **Instructional Components**

- Direct instruction
- Interactive instruction (in-class labs / demos)
- Group-based discussions

#### **Student Expectations**

- Ability to work cooperatively
- High level of classroom maturity
- Leadership in classroom activities
- Dedication to developing math skills
- Basic knowledge of computer operation
- Independent learning and strong work ethic
- Detail-orientation and strong interest in logic and programming

### **Learning Resources**

- Student workbooks
- DigiPen Distance Education Website / course website
- DigiPen ProjectFUN website ó community resources and forums
- Computer Lab / Home Computer