

## ***BA DigiPen Academy – 12D***

**District Name: Kamloops/North Thompson**

**District Number: 73**

**Developed by: Justin deVries**

**Date Developed: Spring 2012**

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

**Principal's Name: Richard Kienlein**

**Board/Authority Approval Date:**

**Board/Authority Signature:**

**Course Name: BA DigiPen Technical Academy 12A**

**Grade Level Course: Grade 12**

**Number of Course Credits: 4**

**Number of Hours of Instruction: 120**

**Prerequisite(s) recommended:**

- Principals of Math 10
- Principals of Math 11 (or concurrent)
- Physics 11 (concurrent)
- Art course(s)
- BA DigiPen Academy 12A, 12B, 12C (concurrent)

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

Computer Science background, or experience in similar area along with training provided by DigiPen Institute of Technology. Facilities should include a computer lab with recent model computer, with reasonable video card and memory. Video projector, DigiPen training software (proprietary game development tools), graphics programs for 2D and 3D graphics (preferably PhotoShop CS3, 3D StudioMax). Printed support materials (workbooks, etc) are provided by DigiPen ó students retain their workbooks.

## **Course Synopsis**

This course is the final of four courses which make up the DigiPen Academy Program and is used to plan and produce an advanced platform game. The DigiPen ProjectFUN Computer Science Technology Program is a project-based curriculum targeted at high school students that leverages interest in video game development as a learning vehicle. The program is essentially a computer science course made up of seven modules, each with a unique game that students will produce. In addition to teaching computer science, the material also covers topics in mathematics and production art.

## **Rationale:**

Vancouver 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 of an internationally recognized video game university (DigiPen), while gaining experience with real-world video game creation. Students will also acquire the knowledge and skills to enable them to become successful candidates for other roles within the industry. Students will be able to draw on a cross-curricular knowledge and skills from disciplines such as Mathematics, Physics, Music and Art.

This course is one of four and will engage the last of 7 modules in the program. The course offers an introduction to real time interactive simulation, motion picture and game elements, and covers computer architecture, and an overview of C++ programming language. Module 7 culminates previous topics and results in an independently developed video game using knowledge and skills from the previous courses.

## Organizational Structure

The nature of this course doesn't lend itself to a structured unit-by-unit outline. However, the following table lists the topics and approximate percentage of time spent on these tasks:

Topic	Title	Time
Module 7 ó ðYour Gameö	Game Elements	40 hours
Programming	Queue	
	Insertion sort algorithm	
	Selection sort algorithm	
Physics	Player movement: introduction to linear motion	
	Displacement and distances	
	Velocity and speed	
	Acceleration	
	One-dimensional motion with zero acceleration	
	One-dimensional motion with constant acceleration	
	One-dimensional motion with variable acceleration	
	Free-fall	
	Projectile motion	
Art and Design	Key framing and Tweening	
	Cycles	
Production	Design Cycle, Game Development & Production	80 hours

## Unit Topic Module Descriptions

Module 7: "OttoBaddø" consists of hero "Ottoø" who has to defeat enemies by jumping on each one of them. Otto moves left, right, accelerates and jumps. When Otto eliminates all enemies he goes to the end of the map to find the gate which ends the level successfully.

### Computer Science

*It is expected students will:*

- Develop understanding of the use of queuing
- Demonstrate the use of insertion sort and selection sort algorithms

### Physics:

*It is expected students will:*

- Develop an understanding of linear motion, displacement and distances
- Develop an understanding of velocity, speed and acceleration
- Demonstrate the creation of free fall and projectile motions

### Production Art

*It is expected students will:*

- Demonstrate the use of key framing, tweening, and cycles.

### Production

*It is expected students will:*

- Demonstrate the ability to design, develop and produce a complete video game.

## Instructional Components

- Direct instruction
- Indirect instruction
- Interactive instruction
- Group work ó principal component in assessment
- Independent, guided practice
- Modeling

## Student Expectations

- Ability to work cooperatively
- High level of classroom maturity
- Leadership in classroom activities, small group interactions
- Good Math skills
- Basic knowledge of computer operation

## Learning Resources

- Printed materials: DigiPen *Technical Academy: Module 7*
- Computer Lab
- Video projector
- Software

## Student Fees

- \$150/year

## Assessment

Topic	Title	Percent Value
Module 7 ó ðYour Gameö	Game Elements	
Programming	Queue	10
	Insertion sort algorithm	
	Selection sort algorithm	
Physics	Player movement: introduction to linear motion	30
	Displacement and distances	
	Velocity and speed	
	Acceleration	
	One-dimensional motion with zero acceleration	
	One-dimensional motion with constant acceleration	
	One-dimensional motion with variable acceleration	
	Free-fall	
	Projectile motion	

Art and Design	Key framing and Tweening	10
	Cycles	
Production	Design Cycle, Game Development & Production	50

Assessments will be both formative and summative and consist of conversations, group presentations, concept quizzes, class work, projects, and a large compositional assessment piece that will allow students to synthesize, evaluate, practice, and extend their learning from these modules.