Course Outline

School:	Eng. Tech. & Applied Science
Department:	Information and Communication Engineering Technology (ICET)
Course Title:	Assets for Game Developers
Course Code:	COMP 253
Course Hours/Credits:	56
Prerequisites:	COMP 391
Co-requisites:	COMP 391
Eligible for Prior Learning, Assessment and Recognition:	Yes
Originated by:	Arben Tapia
Creation Date:	Summer 2018
Current Semester:	Winter 2019
Approved by:	ppesikan c/o

Chairperson/Dean

Students are expected to review and understand all areas of the course outline.

Retain this course outline for future transfer credit applications. A fee may be charged for additional copies.

This course outline is available in alternative formats upon request.

Acknowledgement of Traditional Lands

Centennial is proud to be a part of a rich history of education in this province and in this city. We acknowledge that we are on the treaty lands and territory of the Mississaugas of the Credit First Nation and pay tribute to their legacy and the legacy of all First Peoples of Canada, as we strengthen ties with the communities we serve and build the future through learning and through our graduates. Today the traditional meeting place of Toronto is still home to many Indigenous People from across Turtle Island and we are grateful to have the opportunity to work in the communities that have grown in the treaty lands of the Mississaugas. We acknowledge that we are all treaty people and accept our responsibility to honor all our relations.

Course Description

This course introduces students to game assets development. Students gain hands-on experience by using various tools to create 2D sprites / sprite sheets / tile sets and/or 3D models, textures for their games, sounds/sound effects, model rigging and animations (2D and/or 3D).

Program Outcomes

Successful completion of this and other courses in the program culminates in the achievement of the Vocational Learning Outcomes (program outcomes) set by the Ministry of Advanced Education and Skills Development in the Program Standard. The VLOs express the learning a student must reliably demonstrate before graduation. To ensure a meaningful learning experience and to better understand how this course and program prepare graduates for success, students are encouraged to review the Program Standard by visiting http://www.tcu.gov.on.ca/pepg/audiences/colleges/progstan/. For apprenticeship-based programs, visit http://www.collegeoftrades.ca/training-standards.

Course Learning Outcomes

The student will reliably demonstrate the ability to:

1. 9.a. Integrate subsystems support real-time game environments and simulations
2. 9.b. Incorporate and extend third party systems in a game engine
3. 9.c. Apply principles of resource budgeting (CPU, GPU, memory) to support real-time game environments and simulations
4. 9.d. Apply advanced rendering techniques for realistic simulations and game environments
5. 9.e. Apply advanced animation techniques to enrich the look and feel of the game experience
6. 9.f. Integrate sound and audio programming (3D positional sound, audio channels, and audio prioritization)
7. 9.g. Use professional recording and editing principles and assigned/documented requirements to produce sound assets
8. 4.g. Work within a team to support the iterative process of game development
9. 6.b. Analyze issues relating to the concepts of privacy, intellectual property and copyright that occur within the game industry
10. 8.b. Analyze concepts such as rotations, translations, integration in existing games

Essential Employability Skills (EES)

The student will reliably demonstrate the ability to*:

3. Execute mathematical operations accurately.
4. Apply a systematic approach to solve problems.
6. Locate, select, organize, and document information using appropriate technology and information systems.
9. Interact with others in groups or teams in ways that contribute to effective working relationships and the achievement of goals.
10. Manage the use of time and other resources to complete projects.

**There are 11 Essential Employability Skills outcomes as per the Ministry Program Standard. Of these 11 outcomes, the following will be assessed in this course.*

Global Citizenship and Equity (GC&E) Outcomes

The student will reliably demonstrate the ability to*:

6. Support personal and social responsibility initiatives at the local, national or global level.

**There are 6 institutional Global Citizenship & Equity outcomes. Of these 6 outcomes, the following will be assessed in this course.*

Text and other Instructional/Learning Materials

Text Book(s):

[LB2ED] Learning Blender: A Hands-On Guide to Creating 3D Animated Characters by Oliver Villar, , 2nd Ed., 2017, Addison-Wesley.

[BB] Beginning Blender: Open Source 3D Modeling, Animation and Game Design by Lance Flavell, APress.

[U18GD] Unity 2018 Game Development in 24 Hours, Sams Teach Yourself, 3rd Edition

Photoshop/GIMP

Online Resource(s):

Instructor dependent

f.e.:

http://www.2dgameartguru.com/

https://2d-game-art-tutorials.zeef.com/chris.hildenbrand

www.photoshop.com

www.autodesk.com/education/free-software/3ds-max

www.autodesk.com/products/autodesk-maya/overview

www.blender.org

www.maxon.net

www.gimp.org

www.sketchup.com

www.sidefx.com

Material(s) required for completing this course:

2D

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GIMP, TexturePacker, Photoshop, Tiled, Unity 2D Game development materials

3D

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Blender, Unity 3D Game development materials

Custom Courseware:

Linda.com

https://www.udemy.com/learn-professional-2d-game-asset-graphic-design-in-photoshop/

https://www.udemy.com/gimpforgames/

https://inkscapetutorials.wordpress.com/

Evaluation Scheme

- Assignment #1: Create a set of buttons in photoshop based on the theme of the Game Design Document
- Assignment #2: Create a 2D animation and pack it in a sprite sheet.
- Assignment #3: Create a 3D model in Blender
- Test#1: MidTerm Test - practical test
- Test#2: Final Group Project and project presentations
- Class Work, exercises, quizzes, group work: Class Work, exercises, quizzes, class group work

Evaluation Name	CLO(s)	EES Outcome(s)	GCE Outcome(s)	Weight/100
Assignment #1	4, 5	4, 6		15
Assignment #2	1, 2, 3, 4, 5	3, 4, 10		15
Assignment #3	1, 2, 3, 5, 6, 9, 10	3, 4, 9		15
Test#1	1, 2, 3, 4, 9, 10	3, 4, 10		20
Test#2	1, 2, 3, 4, 5, 6, 7, 8, 9, 10	3, 4, 6, 9, 10	6	25
Class Work, exercises, quizzes, group work	1, 2, 3, 4, 5, 6, 7, 8, 9, 10	3, 4, 6, 9, 10		10
Total				100%

If students are unable to write a test they should immediately contact their professor or program Chair for advice. In exceptional and well documented circumstances (e.g. unforeseen family problems, serious illness, or death of a close family member), students may be able to write a make-up test.

All submitted work may be reviewed for authenticity and originality utilizing Turnitin®. Students who do not wish to have their work submitted to Turnitin® must, by the end of the second week of class, communicate this in writing to the instructor and make mutually agreeable alternate arrangements.

When writing tests, students must be able to produce official College photo identification or they may be refused the right to take the test or test results will be void.

Student Accommodation

Students with permanent or temporary accommodations who require academic accommodations are encouraged to register with the Centre for Students with Disabilities (CSD) located at Ashtonbee (L1-04), Progress (C1-03), Morningside (Rm 190), and Story Arts Campus (Rm 284). Documentation outlining the functional limitations of a disability is required; however, interim accommodations pending receipt of documentation may be possible. This service is free and confidential. For more information, please email csd@centennialcollege.ca.

Use of Dictionaries

- Any dictionary (hard copy or electronic) may be used in regular class work.

Program or School Policies

N/A

Course Policies

N/A

College Policies

Students should familiarize themselves with all College Policies that cover academic matters and student conduct.

All students and employees have the right to study and work in an environment that is free from discrimination and harassment and promotes respect and equity. Centennial policies ensure all incidents of harassment, discrimination, bullying and violence will be addressed and responded to accordingly.

Academic honesty is integral to the learning process and a necessary ingredient of academic integrity. Academic dishonesty includes cheating, plagiarism, and impersonation. All of these occur when the work of others is presented by a student as their own and/or without citing sources of information. Breaches of academic honesty may result in a failing grade on the assignment/course, suspension or expulsion from the college.

For more information on these and other policies, please visit www.centennialcollege.ca/about-centennial/college-overview/college-policies.

Students enrolled in a joint or collaborative program are subject to the partner institution's academic policies.

PLAR Process

This course is eligible for Prior Learning Assessment and Recognition (PLAR). PLAR is a process by which course credit may be granted for past learning acquired through work or other life experiences. The PLAR process involves completing an assessment (portfolio, test, assignment, etc.) that reliably demonstrates achievement of the course learning outcomes. Contact the academic school to obtain information on the PLAR process and the required assessment.

Semester:	Winter 2019	Professor Name:	Arben Tapia
Section Code:	001	Contact Information:	eMail: atapia2@my.centennialcollege.ca Ext: 3586
Meeting Time & Location:	Mon.:8:30-10:20 AM, Room E2-16 Fri.:4:30-06:20 PM, Room E2-16	Office Hours:	After class or by appointment
Last Date to Drop Course:	3/15/2019		

Topical Outline (subject to change):

Week	Topics	Readings/Materials	Weekly Learning Outcome(s)	Instructional Strategies	Evaluation Name	Evaluation Date
1	Introduction to 2D Assets	Photoshop/GIMP materials, TextPacker utility, Tiled utility, Unity importing.	. Define the need for assets in general, 2D assets in particular . Introduce the above tools . Work with tools and create various assets.	Lecture, hands on demo, classwork	Class Work	Week 1
2	Textures	TextPacker utility	. Introduce the above tool(s) . Work with tool and create various assets.	Lecture, hands. on demo, classwork	Class Work	Week 2
3	Maps Importing to Game Engine(s)	Tiled utility Unity importing	. Introduce the above tool(s) . Work with tool and create various maps. . Import maps in Unity	Lecture, hands. on demo, classwork	Assignment#1	Week 3
4-6	Introduction to 2D Animations of 2D Characters 2D spritesheets	Photoshop/GIMP/InkScape	. Work with tool(s) and create various 2D spritesheets. . Import 2D spritesheets in Unity	Lecture, hands on demo, classwork	Class Work	Week4
5	2D Characters	Photoshop/GIMP/InkScape	. Work with tool and create 2D characters at various levels of detail . create the corresponding spritesheet(s) . Import the character(s)(spritesheet(s)) in Unity	Lecture, hands. on demo, classwork	Class Work	Week 5
6	2D Animations	GIMP/InkScape/Photoshop	. Work with tool(s) and create a 2D animation of the characters . create the corresponding animation spritesheet(s) . Import the animation(s)(spritesheet(s)) in Unity	Lecture, hands. on demo, classwork	Assignment#2	Week 6
7	MidTerm test - practical	weeks 1-6	Weeks 1-6	Test	Test#1	Week7
8-10	Group Project introduction	Blender	. Work with tool(s) and get acquainted with Blender(s) interface	Lecture, hands on demo, classwork	Class Work	Week 8

Week	Topics	Readings/Materials	Weekly Learning Outcome(s)	Instructional Strategies	Evaluation Name	Evaluation Date
	3D tools introduction . Interface					
9	Group Project introduction 3D modeling	Blender	. Work with tool(s) and create 3D model(s) of the characters/objects . Export to 3D model file(S)/Import the model(s) in Unity	Lecture, hands on demo, classwork	Class Work	Week 9
10	. UV Mapping . Curves and NURBS	Blender	. Work with tool(s) and create unwrapped UV maps of the 3D model(s) . Work with tool(s) and create curves and NURBS	Lecture, hands on demo, classwork	Assignment #3	Week 10
11	3D Character Rigging	[LB2ED] Part V (Ch11)	. Character Rigging . Basic Process, Armatures, Bones, Constraints; Practical Demo (Eye, Leg, Torso and Head, Arm and Hand) . Mirroring, Skinning	Lecture, hands on demo, classwork	Lab Assignment	Week11
12	3D Character Animation	[LB2ED] Part V (Ch12)	. Character Animation . Keyframes . Animation Editors (Timeline, Dope sheet, Graph editor, Non-Linear Animation or NLA . Animating a Walk Cycle (Actions, Poses, Walk Cycle)	Lecture, hands on demo, classwork	Lab Assignment	Week12
13	Audio with Audacity, Wwise and Unity.	Audacity Playing and Manipulating Sounds, [U4CB] Ch6, [U5CB].	. Role of Audio in Game Design . Various Techniques of using Audio in a Unity project and Web	Lecture, hands on demo, classwork	Lab Assignment	Week13
14	Final Project delivery and presentations	All	all	Group work, research, Presentations	Project Delivery and presentations	Week 14