
MAD-5244 Game Design and Development for iOS + Android

Computer Studies

Course Number:	Co-Requisites:	Pre-Requisites:
MAD-5244	N/A	N/A
Prepared by:	Albert Danison, Outline Creator	
Approved by:	Chris Slade, Dean Computer Studies and International Education	
Approval Date:	Friday, June 8, 2018	
Approved for Academic Year:	2018-2019	
Normative Hours:	60.00	

Course Description

The first half of this course introduces students to the exciting world of game design for mobile devices to the fundamentals of cocos2d game engine to develop games for the iPhone and iPad with title maps, virtual joy pads, and the built in game center. Students will learn the process and best practices of mobile game development, including sprite batching, texture atlases, parallax scrolling, touch and accelerometer input. The second half of this course will focus on game development for the Android platform. Students will learn the fundamentals of design and development of compelling 2D games based on Android SDK, audio and graphics programming, and OpenGL ES. During this course students will develop a game for each platform and upload a game into both the Apple App Store and the Android Market.

Course Learning Outcomes/Course Objectives

- 1. Define the fundamentals of cocos2d for iOS**
 - 1.1 Set up the development environment for cocos2d
 - 1.2 Understand memory management with cocos2d
 - 1.3 Explore iOS devices, memory usage, the iOS simulator and Logging from game development's perspective
- 2. Create games for the iPhone and iPad with title maps, virtual joy pads, the built in game center**
 - 2.1 Work with Nodes and Actions and schedule messages
 - 2.2 Explore iOS devices, memory usage, the iOS simulator and Logging from game development's perspective
- 3. Examine the best practices of mobile game development, including sprite batching, texture atlases, parallax scrolling, touch and accelerometer input**

- 3.1 Work with sprite batching and texture atlases
 - 3.2 Incorporate parallax scrolling
 - 3.3 Explore the retina display
 - 3.4 Work with Sprite animations
- 4. Develop games using the Box2D and Chipmunk physics engines and other cocos2d-related tools and libraries**
- 4.1 Explore basic concepts of physics engines
 - 4.2 Understand limitations of physics engines
 - 4.3 Compare and contrast between Box2D and Chipmunk physics engines
 - 4.4 Use Box2D and Chipmunk to add boxes, define collision detection, and create joints
- 5. Define the fundamentals of game development on Android**
- 5.1 Define OpenGL ES
 - 5.2 Specify per vertex color
 - 5.3 Render bitmaps with OpenGL ES
 - 5.4 Explain indexed vertices
 - 5.5 Explore alpha blending
 - 5.6 Render primitives such as points, lines, strips, and fans
 - 5.7 Apply 2D transformations
 - 5.8 Optimize the performance
- 6. Create, design and develop compelling 2D games based on Android basics, audio, graphics programming and OpenGL ES**
- 6.1 Implement the interfaces for audio, sound, and music
 - 6.2 Implement an input interface to access to the accelerometer, the touchscreen, and the keyboard
 - 6.3 Create and use assets
 - 6.4 Design a game by considering core mechanics, a story, an art style, screens and transitions
- 7. Develop a game for each platform and upload a game into both the Apple App Store and the Android Market**
- 7.1 Explore steps required to deploy a game
 - 7.2 Deploy a game on App Store
 - 7.3 Deploy a game on Android Market

Learning Resources

Resources and Supplies

Required

- Itterheim, S. & Low, A. (2011). Learn cocos2D 2: Game Development for iOS. Apress. 978-1-4302-4416-5
- Zechner, M. & Green, R. (2012). Beginning Android Games. Apress. 978-1-4302-4677-0

Supplemental

- Wordsworth, J. (2013). Pro iOS Game Development. Apress. 978-1-4302-3849-2.
- Harbour, J. (2012). Sams Teach Yourself Android Game Programming in 24 Hours. Sams Publishing. 978-0-6723-3604-1.

Student Evaluation

Tests

4 Tests (equally weighted) @ 10% each

Project

Project - 20%

Assignments

2 Assignments (equally weighted) @ 20% each

Grade Scheme

The round off mathematical principle will be used. Percentages are converted to letter grades and grade points as follows:

Mark (%)	Grade	Grade Point	Mark (%)	Grade	Grade Point
94-100	A+	4.0	67-69	C+	2.3
87-93	A	3.7	63-66	C	2.0
80-86	A-	3.5	60-62	C-	1.7
77-79	B+	3.2	50-59	D	1.0
73-76	B	3.0	0-49	F	0.0
70-72	B-	2.7			

Prior Learning Assessment and Recognition

Students who wish to apply for prior learning assessment and recognition (PLAR) need to demonstrate competency at a post-secondary level in all of the course learning requirements outlined above. Evidence of learning achievement for PLAR candidates includes:

- Not Applicable: Students are not eligible for a Prior Learning Assessment.

Course Related Information

This course will consist of interactive lectures, discussion groups, independent assignments, project based learning and tests. 12 hours per week theory, comprised of interactive lecture and small group activities. 8 hours per week in lab, with demonstrations of principles by the instructor, followed by experiments conducted in small groups, including individual reports of the experiments by each student. Students will also be asked to present their term project findings orally as well as in written format.

Students will be required to complete the following:

Tests 4 @ 10% each Total 40%

Tests are hands-on and will be based on building small snippets of code based on given requirements. Tests may take place during regular lab time.

Assignments 2 @20% each Total 40%

1) Build a game on iOS based on given specifications.

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2) Build a 2D OpenGL ES on Android based on given specifications.

Term Project / Oral Presentation 20%

Prepare both games developed in two assignments and deploy them on Apple App Store and Android Market accordingly.

College Related Information

Academic Integrity

Lambton College is committed to high ethical standards in all academic activities within the College, including research, reporting and learning assessment (e.g. tests, lab reports, essays).

The cornerstone of academic integrity and professional reputation is principled conduct. All scholastic and academic activity must be free of all forms of academic dishonesty, including copying, plagiarism and cheating.

Lambton College will not tolerate any academic dishonesty, a position reflected in Lambton College policy.

Students should be familiar with the Students Rights and Responsibilities Policy, located on the MyLambton website. The policy states details concerning academic dishonesty and the penalties for dishonesty and unethical conduct.

Questions regarding this policy, or requests for additional clarification, should be directed to the Lambton College Centre for Academic Integrity

Students with Disabilities

If you are a student with a disability please identify your needs to the professor and/or the Accessibility Centre so that support services can be arranged for you. You can do this by making an appointment at the Accessibility Centre or by arranging a personal interview with the professor to discuss your needs.

Student Rights and Responsibility Policy

Acceptable behaviour in class is established by the instructor and is expected of all students. Any form of misbehaviour, harassment or violence will not be tolerated. Action will be taken as outlined in Lambton College policy.

Date of Withdrawal without Academic Penalty

Please consult the Academic Regulations and Registrar's published dates.

Waiver of Responsibility

Every attempt has been made to ensure the accuracy of this information as of the date of publication. The content may be modified, without notice, as deemed appropriate by the College.

Students should note policies may differ depending on the location of course offering. Please refer to campus location specific policies:

- Lambton College - Sarnia Campus: <https://www.mylambton.ca/Policies/>
- Lambton College - Non-Sarnia Study Locations: https://www.mylambton.ca/Lambton_in_GTA/Student_Policies/

Note: It is the student's responsibility to retain course outlines for possible future use to support applications for transfer of credit to other educational institutions.