



COLLEGE OF INFORMATION TECHNOLOGY
DEPARTMENT OF MULTIMEDIA SCIENCE

COURSE SYLLABUS/SPECIFICATION

CODE & TITLE: ITMS 432 – Game Development II
WEIGHT: (2 - 2 - 3)
PREREQUISITE: ITMS 313
NQF Level Allocated: 8
NQF Notional Hours / Credits: (2 - 2 - 3)

DESCRIPTION: This course focuses on gameplay interaction, artificial intelligence, networking and the use of industry standard middleware, game engines, and APIs. The students will develop a critical approach to the study of gameplay, interaction, and design. Through this course, the student will be able to develop and implement 3D games through the gained tools and techniques.

OBJECTIVES:

- 1.To develop multiple completed games, including 3D games, using common tools, languages, and software for the web, console, PC or mobile platforms.
2. To implement and analyze fundamental data structures and algorithms associated with game applications supporting gameplay mechanics.
3. To demonstrate development skills using multiple programming languages, development environments, and platforms, including advanced and/or experimental topics in game programming.

SEMESTER:
INSTRUCTOR:
OFFICE TEL:
EMAIL:

ACADEMIC YEAR:

INTENDED LEARNING OUTCOMES (ILOS)

Upon successful completion of the course, students should be able to:

A. Knowledge and Understanding		NQF Descriptor/Level
A1	<u>Concepts and Theories:</u> <i>Demonstrate critical knowledge and understanding of essential concepts and principles related to 3D Game theory and game engines.</i>	Knowledge: theoretical understanding [Level 8]
A2	<u>Contemporary Trends, Problems and Research:</u> NA	
A3	<u>Professional Responsibility:</u> NA	

B. Subject-Specific Skills		NQF Descriptor/Level
B1	<u>Problem Solving:</u> <i>Use specialist skills to solve the collections of 3D game problems using 3D techniques.</i>	Knowledge: Practical Application [Level 8]
B2	<u>Modeling and Design:</u> <i>Apply standard research to design a 3D game using an integrated development environment (IDE).</i>	Knowledge: Practical Application [Level 8]
B3	<u>Application of Methods and Tools:</u> <i>Demonstrate creativity in application of dynamic memory management techniques to create and destroy game objects.</i>	<u>Knowledge: Practical Application [Level 8]</u>

C. Thinking Skills		NQF Descriptor/Level
C1	<u>Analytic:</u> <i>Critically analyze to implement 3D game problems using 3D game engines.</i>	Generic Problem Solving & Analytical skills [Level 8]
C2	<u>Synthetic:</u> NA	
C3	<u>Creative:</u> <i>Demonstrate creativity in designing efficient 3D games using 3D game techniques.</i>	Generic Problem Solving & Analytical skills [Level 8]

D. General and Transferable Skills (Other Skills Relevant to Employability and Personal)		NQF Descriptor/Level
D1	<u>Communication:</u> <i>Use Special skills to express and communicate ideas in oral and written form.</i>	<u>Communication, ICT and Numeracy Skills [Level 8]</u>
D2	<u>Teamwork and Leadership:</u> NA	
D3	<u>Organizational and Developmental Skills:</u> <i>Operate specialist level to organize ideas and effectively allocate time in given assignment or project.</i>	<u>Competence: Autonomy, Responsibility and Context [Level 8]</u>
D4	<u>Ethical and Social Responsibility:</u> NA	

Course Structures (Outline)						
Week	Hours		ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
	Lecture	Lab				
1	2	2	A1	Syllabus, Introduction Lab Demonstration	Lecture/ Lab Demonstration	
2	2	2	B1, B2, B3, C1, C3	Introduction: - What is "gameplay?" - Character, camera, control - Game rules - A deeper look at the game engine architecture Lab: - C# - Unity Program	Lecture/ In-Lab Supervised Work/ Class Discussion	In-Lab Exercises
3	2	2	A1, B1, B2, B3, C1, C3	Understanding Classes: - Classes - Class Inheritance Object Oriented Thinking - Object Oriented Metaphor - Object Oriented Boids Implementation	Lecture/ Lab Demonstration / In-Lab Supervised Work	In-Lab Exercises
4	2	2	B1, B2, B3, C1, C3	Agile Mentality: - Manifesto for Agile software development - Scrum methodology - Creating your own burndown charts Lab: -C# Gaming classes and Agile	Lecture/ In-Lab Supervised Work	In-Lab Exercises

5	2	2	B1, B2, B3, C1, C3	Game Prototype Examples: Prototype-1 : Apple Picker <ul style="list-style-type: none"> - Purpose - Coding - GUI and Game management Lab: Apple Picker Design and Development	Lecture/ In- Lab Supervised Work	In-Lab Exercises
6	2	2	A1, B1, B2, B3, C1, C3, D1, D3	Prototype-2 : Mission Demolition <ul style="list-style-type: none"> - Game Prototype concepts - Art Assets - Coding the Prototype Lab: <ul style="list-style-type: none"> - Mission Demolition 	Lecture/ In- Lab Supervised Work	Lab Project 1 /In-Lab Exercises
7-8	4	4	B1,B2,B3, C1,C3	Prototype-3 : Space SHMUP <ul style="list-style-type: none"> - Getting started - Setting the Scene - Making the hero ship - Adding Some Enemies - Setting Tags, Layers and Physics - Making Enemies Damage the Player - Shooting - Adding Power Ups - Resolving Race Conditions in Code - Making Enemies Drop Powerups - Programming other enemies - Adding Particle effects and background Lab: <ul style="list-style-type: none"> - Space SHMUP Game prototype Design and implementation 	Lecture/ In- Lab Supervised Work	In-Lab Exercises
9	2	2	B1, B2, B3, C1, C3	Prototype 4: Prospector Solitaire <ul style="list-style-type: none"> -Getting Started, Build Settings -Importing images -Constructing cards -Prospector game 	Lecture/ In- Lab Supervised Work	Lab Test1 / In-Lab Exercises

9	2	2	B1,B2,B3, C1,C3	Prototype 5 Bartok: <ul style="list-style-type: none"> - Getting Started - Build Settings - Coding Bartok - Summary Lab: -Bartok game design	Lecture/ In- Lab Supervised Work	In-Lab Exercises
10-11	4	4	B1, B2, B3, C1, C3	Prototype 6 Word Game: <ul style="list-style-type: none"> - Word Game Prototype - About the word game - Passing the word list - Setting up the game - Laying out the screen - Adding interactivity - Adding Scoring - Adding Animation - Adding Color - Adding Summary Lab: Word Game Design and Implementation	Lecture/ In- Lab Supervised Work	In-Lab Exercises
12-13	4	4	B1, B2, B3, C1, C3	Prototype 7 Quick Snap <ul style="list-style-type: none"> - Getting Started - Quick Snap prototype - Building the scene - Coding the Game - Summary Lab: Quick Snap game design and implementation	Lecture/ In- Lab Supervised Work	Lab Test2 (week13) / In-Lab Exercises
14-15	4	4	A1, B1, B2, B3, C1, C3, D1, D3	Prototype 8 Omega Mage <ul style="list-style-type: none"> - Getting started - Building the scene - The mage character - Mouse interaction - Movement - The inventory and selecting elements - Casting the fire ground spell - Changing rooms - Spawning Enemies - Abstracting enemy 	Lecture/ In- Lab Supervised Work	Lab Project2

16	2	A1, B1, B2, C1, C3	All Topics		Final Exam
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TEACHING MATERIALS:

TEXTBOOK(S):	Introduction to Game Design, Prototyping and Development From Concept to Playable with Unity and C#, Jeremy Gibson Bond, Addison Wesley. 2 nd ed., ISBN-13: 978-0134659862, 2018
HANDOUT(S):	PowerPoint slides available on Moodle i.e. http://www.ahlia.edu.bh/moodle
REFERENCE(S):	Learning C# by Developing Games with Unity 2019, Harrison Ferrone, PACT Publishing 4th Edition, ISBN- 1789532051, 2019 Unity Game Development Cookbook, Paris Buttfield-Addison, Jon Manning and Tim Nugent, O'Reilly Media Inc, First Edition, ISBN:978-1-491-99915-8,2019

ASSESSMENTS:

Type of Assessment	Description	ILOs	Weighting
Lab Tests	The student will be assessed through two practical tests, which will take two hours each. In each test, the students will be asked to develop a C# Unity game program for solving a game problem.	B1, B2, B3, C1, C3	40%
Lab Projects	Two lab projects to be given, each worth 10%. The project could cover any topic in the course.	A1, B1, B2, B3, C1, C3, D1, D3	20%
Final Exam	Final exam will be for two hours, including all types of question: short answers questions, true/false, problem solving, etc.	A1, B1, B2, C1, C3	40%
In-Lab Exercise	Exercises will help the students in understanding	B1, B3, C1	Formative
Overall			100%

14. Admissions	
Pre-requisites	ITMS 313
Minimum number of students	8
Maximum number of students	25

