الجامعة الأهلية
AHLIA UNIVERSITY
BAHRAIN

COLLEGE OF INFORMATION TECHNOLOGY
DEPARTMENT OF MULTIMEDIA SCIENCE

COURSE SYLLABUS/SPECIFICATION

CODE & TITLE: **ITMS 313 – Game Development I**
WEIGHT: **(2 - 2 - 3)**
PREREQUISITE: **ITCS 221 and ITCS209**
NQF Level Allocated: **7**
NQF Notional Hours / Credits: **120 notional hours/ 12 NQF credit**

DESCRIPTION:

This course introduces the principles and essential concepts of game development. The course explores game-related concerns such as the game loop, rules, and game object design and implementation. During the course, students will be introduced to modern game platforms, and the effect of their differences, evolution, and limitations, on game programming. Through this course, the student will be able to develop 2D games through the gained tools and techniques. Students will experience the complete game development lifecycle and implementation using a high-level game development framework to design and develop a computer game.

OBJECTIVES:

1. To design the architecture and infrastructure needed to support a complete game project.
2. To design the purposeful 2D game and engaging user experiences.
3. To write clear and efficient code in the programming languages relevant to professional game development, following appropriate coding standards and industry practices.
4. To build systems that employ common approaches to game AI, game physics, game networking, game graphics (2-D), operating systems and file formats.
5. To implement effective design, production and testing techniques (including appropriate project engineering and management) through all phases of game development.
6. Explore the rapidly expanding games industry from various perspectives.

SEMESTER: **ACADEMIC YEAR:**
INSTRUCTOR:
OFFICE TEL:
EMAIL:

INTENDED LEARNING OUTCOMES (ILOS)

A. Knowledge and Understanding		**NQF Descriptor/Level**
A1	Concepts and Theories: *Demonstrate advanced knowledge* of essential concepts and principles related to Game theory and Game Genre.	Knowledge: theoretical understanding [Level 7]
A2	Contemporary Trends, Problems and Research: NA	
A3	Professional Responsibility: NA	

B. Subject-Specific Skills		**NQF Descriptor/Level**
B1	Problem Solving: *Use advanced game skills* to prepare game stories and scenarios.	Knowledge: Practical Application [Level 7]
B2	Modeling and Design: Undertake research to design game using an integrated development environment (IDE).	Knowledge: Practical Application [Level 7]
B3	Application of Methods and Tools: *Apply advanced level* skills *of gaming techniques* to create and destroy game objects	Knowledge: Practical Application [Level 7] Communication, ICT and Numeracy Skills [Level 7]

C. Thinking Skills		**NQF Descriptor/Level**
C1	Analytic: *Critically evaluate* 2D games techniques to develop effective and efficient games.	Generic Problem Solving & Analytical skills [Level 7]
C2	Synthetic: NA	
C3	Creative: *Formulate solutions that are evidence-based* in designing 2D games.	Generic Problem Solving & Analytical skills [Level 7]

D. General and Transferable Skills (Other Skills Relevant to Employability and Personal		**NQF Descriptor/Level**
D1	Communication: *Use advanced skills to communicate* ideas in oral and written form.	Communication, ICT and Numeracy Skills [Level 7]
D2	Teamwork and Leadership: NA	
D3	Organizational and Developmental Skills: *Operate at an advanced level and organize ideas effectively within the allocate time in given assignment or project.*	Competence: Autonomy, Responsibility and Context [Level 7]

D4	Ethical and Social Responsibility: NA	

Course Structures (Outline)						
Week	**Lec**	**Lab**	**ILOs**	**Unit/Module or Topic Title**	**Teaching Method**	**Assessment Method**
1	2	2	A1	Syllabus, Introduction Lab Demonstration	Lecture/ Lab Demonstration	
2	2	2	A1, B1, B3, D1	**Thinking like a designer:** - You are a game designer - Definition of a Game - History of Games **Lab:** - Introduction to Scratch Lab	Lecture/ In-Lab Supervised Work/ Class Discussion	Oral Participation* / In-Lab Exercises
3	2	2	A1	**Game Analysis Frameworks** - Common Frameworks for Ludology - MDA – Mechanics, Dynamics and Aesthetics - Formal, Dramatic and Dynamic Elements **Lab:** - Scratch Lab Game Elements	Lecture/ Lab Demonstration / In-Lab Supervised Work	Oral Participation* / Quiz 1
4	2	2	A1, B1, B3	**The Layer Tetrad:** - The Inscribed Layer - The Dynamic Layer - The Cultural Layer - Responsibility of the Designer **Lab:** - Introduction to Unity Game Engine	Lecture/ In-Lab Supervised Work	Oral Participation* / In-Lab Exercises
5	2	2	A1, B1, B3	**Puzzle Design:** - Puzzles are almost everywhere - Scott Kim on Puzzle Design **Lab:** - Setting up Unity Layout - Puzzle game example	Lecture/ In-Lab Supervised Work	Oral Participation* / In-Lab Exercises

6	2	2	A1,B1, B3, D1	**Digital Game Industry:** - About the game industry - Game Education - Getting into the Industry - Don't wait to start making games **Lab:** - Digital game example	Lecture/ In-Lab Supervised Work	Oral Participation* / In-Lab Exercises
7	2	2	A1, D1	**Introducing Development Environment - Unity:** - Introducing development environment - Running Unity - Learning Your way Around Unity **Lab:** - Unity Environment	Lecture/ In-Lab Supervised Work	Oral Participation* / Quiz 2
8	2	2	A1, B1,B2, B2, D3	**Introducing Language : C#** - Understanding the features of C# - Reading and understanding C# - Creating a new project - Making a new C# Script - Variables - Unity Variable types - Unity Game objects and components **Lab:** - Basic C# Program	Lecture/ In-Lab Supervised Work	In-Lab Exercises / In-Class Exercises* / Assignment
9	2	2	A1, B1,B3, D1	**Boolean Operations and Conditionals** -Booleans -Comparison operators -Conditional Statements **Lab:** - Simple Programs using C#	Lecture/ In-Lab Supervised Work	Oral Participation* / In-Lab Exercises
10-11	4	4	A1, B1, B2, C1, C3	**Loops** - Introduction to Gaming Loops - Types of Loops - Jump statements within loops **Lab:** - Game designing loops	Lecture/ In-Lab Supervised Work	In-Lab Exercises / In-Class Exercises*/ Major Test (week10)

12-13	4	4	A1, B1,B2, B2, D3	**Lists and arrays** - C# Collections - List - Arrays - Multidimensional arrays - Jagged Arrays - Whether to choose array or list - **Lab :** Summary exercise for list and collections	Lecture/ In-Lab Supervised Work	In-Lab Exercises/ Assignment 2 / Quiz 3 (week13)
14-15	4	4	A1,B1, B2, B3, C1, C3, D1, D3	**Debugging** - Getting started with Debugging - Stepping through code with Unity engine - Summary of Unity C# coding techniques **Lab:** Debugging Unity C# Coding techniques	Lecture/ In-Lab Supervised Work	In-Class Exercises*/ Evaluation of Project Presentation and Report
16	2		A1,B1,B2, C1,C3	All Topics		Final Exam

TEACHING MATERIALS:

TEXTBOOK(S):	Introduction to Game Design, Prototyping and Development From Concept to Playable with Unity and C#, Jeremy Gibson Bond, Addision Wesley. 2nd 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 5.x, Greg Lukosek, Packt Publishing, 2nd Edition, ISBN 978-1-78528-759-6, 2016 Mastering Unity 2D Game Development Second Edition, Ashley Godbold, Simon Jackson, Packt Publishing , 2nd Edition, ISBN - 978-1786463456, 2016

ASSESSMENTS:

Type of Assessment	Description	ILOs	Weighting
Oral Participation	The learners will be assessed in oral participation against their understanding the knowledge, this assessment is formative to support the learners progression throughout the course	A1, D1	Formative
Quizzes	Three written quizzes to be conducted with different question types like: MC, and short- answer. Each quiz is for 30 minutes. The average of best two quizzes will be considered.	A1	5%
Assignments	Assignment to be given to students, worth five marks. The assignment will assess students' skills in modeling, designing a 2D game.	B1, B2, D3	5%
Project	Project consisting of several phases in which the student should model, design, and implement a 2D game for a scenario or story his/ her choice.	B1, B2, B3, C1, C3, D1, D3	20%
Major Test	The major test is a written, in-class 90 minutes test. It will cover topics studied in the first 9 weeks. The test will include several types of questions such as: short- answer, and design and modeling.	A1, B1, B2, C1, C3	20%
Final Exam	The final exam is a comprehensive, written exam and will be of two hours. It will consist of design and modeling, short-answer and essay questions.	A1, B1, B2, C1, , C3	40%
In-Lab Exercises	To assess students skills in using lab exercises and evaluating the skills based on design skills exhibited.	B1, B3	10%
In-Class Exercises	Exercises cover design, modeling and normalization of a database.	B2, C1	Formative

14. Admissions	
Pre-requisites	ITCS 201
Minimum number of students	6
Maximum number of students	20