UNIVERSITY OF MALTA
L-Università ta' Malta

MALTA UNIVERSITY CONSULTING

Game Development using Unity 3D
(30 hours)

Course registration fee: €205/students €185

Dates: November: 11, 12, 18, 19, 25, 26 **Time: 5.30pm to 08.30pm**
December: 2, 3, 9, 10
Venue: Computer Lab, Institute of Digital Games, University of Malta

Game Development using Unity 3D is a course being offered by Malta University Consulting Ltd in collaboration with the Institute of Digital Games, University of Malta

Who should attend: Everybody who wants to learn how to make digital games using Unity, one of the leading game engines on the market. **The participants should be familiar with object oriented programming principles, and should know an object oriented programming language e.g. C#, C++, Java, etc...**

Learning outcomes

- Knowledge of the workflow required to build games, both in 2D and 3D
- Familiarisation with the Unity IDE
- Proficiency in using the Unity game engine
- Importing, managing and using assets during game development
- Use of the Unity API

Benefits to you: This course will give you a head start in the booming digital games industry. It is a first step for those who would like to work in this industry. You will learn to use Unity, which is one of the most popular game engines available, and which can publish games on multiple platforms, such as web deployment, mobile devices (Android, iOS, Windows, Blackberry), game consoles and PCs (Windows, MacOS, Linux).
During the course you will have the opportunity to work hands-on and develop your own basic game, under the tuition of the instructor.

Course delivery: The course is intended to demonstrate the basic concepts of game development, and also to familiarise the participants with the Unity interface. It will also, through the use of hands-on exercises show the fundamental concepts and tools that are essential to work with this game engine.
Each session will have a 'workshop' part in which the participants will work on creating their own games, writing the scripts required to create game mechanics in the Unity engine.
The course requires the participants to have prior knowledge of at least one object oriented programming language. C# will be used throughout this course, however knowledge of other OO languages, such as Java or C++, shall also be accepted as a fulfilment of this prerequisite.

Course Tutor: Mr Marvin Zammit has recently opened a local digital game development studio that produces indie games for the international market, following his interest in the subject and attendance to a number of software programming courses in this field. He is a visiting lecturer at the Faculty of Engineering of the University of Malta, lecturing modules on electronics, and holds a Bachelors and Masters degree in Physics from the same University. He has also lectured Information and Technology and Systems modules at STC Training. Previously, he spent 13 years working at Methode Electronics Malta Ltd as Product Development Principal of the Electronics Division.

Certification: Participants who attend at least 80% of the sessions will be awarded a Certificate of Attendance issued by Malta University Consulting Ltd in collaboration with the Institute of Digital Games, University of Malta

Contact Information: For further information kindly contact Malta University Consulting Ltd, Robert Mifsud Bonnici Street Lija. Tel: 21 240746/99829244; e-mail: maria.bugeja@muhc.com.mt; website: www.muhc.com.mt

PROGRAMME

Session 1

- Games categorisation, game mechanics and planning
- Introduction to the Unity game engine
- Starting a new project – 2D vs 3D
- The interface
    - Toolbar
    - The Scene View
    - The Project View
    - The Hierarchy View
    - The Inspector
    - The Game View
    - Customisation

Session 2

- Assets
- Scenes
- Game Objects
- Components and Scripts
- Prefabs and instances
- Parent-Child relationships
- Cameras
- Rigid Bodies and the Physics Engine
- Collision detection
- Layers and tags
- Importing Graphics and Models
- Introduction to 2D games
    - "Flat" 3D vs the 2D engine
    - Sprites and sprite sheets

Session 3

- Animation
    - Mecanim vs Legacy systems
    - Animation States and Controllers (Mecanim)
    - Animation events
    - Creating 2D animations

Session 4

- The MonoBehaviour class structure
- The update functions
- Initialisation functions

- Variables and the Inspector View
- Capturing Input

Session 5

- Accessing Components
- Communicating with other GameObjects
- Positions, rotations, velocities and forces
- Creating movement and functionality

Session 6

- Collisions and triggers
- Adding Components
- Instantiating GameObjects
- Delaying actions using yield and coroutines

Session 7

- 3D games
- Materials, Textures, and Shaders
- Lighting
- errain
    - Creating Terrain
    - Detailing Terrain
    - Texturing Terrain
    - Creating your own terrain

Session 8

- Render Settings
- 3D animations and blending
- Animation layers
- Triggering procedures through animation

Session 9

- The GUI overlay
- The GUI and GUILayout classes
- Programming the GUI

Session 10

- Audio
    - Listeners and sources
    - 2D and 3D sounds
    - Music and sound effects
    - Importing audio files
- Deploying games on multiple platforms