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| **Module Title** | **Futuristic Gaming - Building AR and VR Games with Unity** | | |
| **Target Audience** |  | **TOC Creator/SME** | Learning Curve (AB) |
| **MCO Creator** |  |
| **Module Goal** | This module gives a brief knowledge of Gaming in AR and VR platforms using Unity | | |
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| **Content Type** | Theory and Lab | | |

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| 1 | ***Introduction and Setting Up of VR Software in Unity*** | Theory: 1 Hour + Lab: 1 Hours |
| 2 | ***Setting Up a simple VR scene*** | Theory: 1 Hour + Lab: 1 Hours |
| 3 | ***Creating User-Interface in VR*** | Theory: 1 Hour + Lab: 1 Hours |
| 4 | ***Creating a VR player character*** | Theory: 1 Hour + Lab: 1 Hours |
| 5 | ***Input and Hand using controllers*** | Theory: 1 Hour + Lab: 1 Hour |
| 6 | ***Grabbing objects using controllers***  ***And Making Object grabbable*** | Theory: 1 Hour + Lab: 1 Hour |
| 7 | ***Making an Object Distance Grabbable*** | Theory: 1 Hour + Lab: 1 Hour |
| 8 | ***Creating a Intro scene in VR*** | Theory: 1 Hour + Lab: 1 Hour |
| 9 | ***Introduction to Augmented reality and Vuforia*** | Theory: 1 Hour |
| 10 | ***Setting up Vuforia packages for Unity*** | Theory: 1 Hour + Lab: 1 Hour |
| 11 | ***Setting up Augmented Reality and Vuforia Package for iOS*** | Theory: 1 Hour + Lab: 1 Hour |
| 12 | ***Using image target for AR*** | Theory: 1 Hour + Lab: 1 Hour |
| 13 | ***Add object to image target*** | Theory: 1 Hour + Lab: 1 Hour |
| 14 | ***Scaling an object in AR*** | Theory: 1 Hour + Lab: 1 Hour |
| 15 | ***Multi Target in Vuforia*** | Theory: 1 Hour + Lab: 1 Hour |
| 16 | ***Virtual Buttons in Vuforia*** | Theory: 1 Hour + Lab: 1 Hour |
| 17 | ***Introduction to AR foundation*** | Theory: 1 Hour + Lab: 1 Hour |
| 18 | ***Adding AR foundation to a scene with Vuforia engine*** | Theory: 1 Hour + Lab: 1 Hour |
| 19 | ***Plane Tracking Vertical and Horizontal*** | Theory: 1 Hour + Lab: 2 Hour |
| 20 | ***Anchor Points and Environmental Probes*** | Theory: 1 Hour + Lab: 1 Hour |

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| **Topic Title** | **Sub-Topic Title** | **Objective+Time** | |
| ***Session 1 : Introduction and Setting Up of VR software in Unity*** | | | |
| 1.Introduction and Setting up of VR software | 1.1 Introduction to Virtual Reality  1.2 Introduction to Augmented Reality  1.3 How to Develop VR Games and Applications  1.4 Different Types of VR Headset and Platform  1.5 Create a New VR Project with Unity  1.6 Importing the necessary packages for creating VR Application | **1 HR** | |
| ***Lab:*** | **Topics** | **Hours** | |
|  | 1.1 Create a new project using unity  1.2 Import VR packages to the project | **1 HR** | |
| ***Session 2: Setting Up a simple VR scene*** | | | |
| 2.Setting Up a VR scene | 2.1 Creating an environment for the scene  2.2 Creating a character using OVRPlayerController | **1 HR** | |
| ***Lab:*** | **Topics** | **Hours** | |
|  | 2.1 Create a new scene  2.2 Create an environment  2.3 Add OVRplayerController in the scene | **1 HR** | |
| ***Session 3: Creating User-Interface in VR*** | | | |
| 3.Working with UI | 3.1 Working with UI in VR  3.2 Best practices of using UI | **1 HR** | |
| ***Lab:*** | **Topics** | **Hours** | |
|  | 3.1 Create different UI elements in the scene.  3.2 Test the scene in the device and test the user experience | **1 HR** | |
| ***Session 4: Working with VR Player Character*** | | | |
| 4.VR player character | 4.1 Understanding OVRPlayerController  4.2 Understanding OVRCameraRig  4.3 Left and Right Hand anchors | ***1 HR*** | |
| ***Lab:*** | **Topics** | **Hours** | |
|  | 4.1 Place some UI elements inside the Player controller  4.2 Move the character using the controllers and check whether UI elements are moving with the player. | **1 HR** | |
| ***Session 5: Input and Hand using controllers*** | | | |
| 5. Working with Controllers | 5.1 Use hands as controllers | **1 HR** | |
| ***Lab:*** | **Topics** | **Hours** | |
|  | 5.1 Convert hands as controllers | **1 HR** | |
| ***Session 6: Grabbing objects using controllers*** | | |
| 6.Grabbing objects | 6.1 Make the objects grabbable | **1 HR** | |
| ***Lab:*** | **Topics** | **Hours** | |
|  | 6.1 Create some objects and place it on a table  6.2 Try to grab and throw the objects using the controller. | **1 HR** | |
| ***Session 7: Distance Grabbing Objects*** | | | |
| 7.Distance grabbing | 7.1 Steps to take to make an object grabbable from a distance | **1 HR** | |
| ***Lab:*** | **Topics** | **Hours** | |
|  | 7.1 Create an object and make it distance grabbable | **1 HR** | |
| ***Session 8: Creating an Intro Scene in VR*** | | | |
| 8. Creating an intro scene in VR | 8.1 Introduction to UIHelpers  8.2 Working with UI elements | **1 HR** | |
| ***Lab:*** | **Topics** | **Hours** | |
|  | 8.1 Creating Buttons and Text Fields and 8.2 Create Events and Actions Using UIHelpers  8.3 Creating the Final build in .apk format  8.4Transferring it to Oculus Device | **1 HR** | |

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| ***Session 9: Introduction to Augmented Reality and Vuforia*** | | | | |
| 9. AR introduction | 9.1 Introduction to Augmented Reality  9.2 Different methods for creating AR experiences  9.3 Different methods of creating AR applications using unity | | | **1 HR** |
| **Session *10: Setting up Vuforia Engine for Unity*** | | | | | |
| 10. Login/Register | 10.1 Login/Register in Vuforia Website  10.2 Getting development key  10.3 Importing Vuforia SDK into Unity  10.4 Using License key in unity | | | **1 HR** |
| ***Lab:*** | | **Topics** | **Hours** | | |
|  | 10.1 Get a License key from Vuforia and use that in Unity for creating an AR application | | | **1 HR** |
| **Session *11: Setting up Augmented Reality and Vuforia Package for iOS*** | | | | |
| 11. Setting up Augmented Reality and Vuforia Package for iOS | 11.1 Setting up Augmented Reality in Unity Using iOS  11.2 Downloading XCode and Building AR iOS Application  11.3 Downloading Package from Vuforia Portal for iOS Build | | | **1 HR** |
| ***Lab:*** | **Topics** | | | **Hours** |
|  | 11.2 Downloading Xcode for Windows PC and Building AR iOS Application  11.3 Downloading Package from Vuforia Portal for iOS Build | | | **1 HR** |
| ***Session 12: Using Image Target for AR*** | | | | | |
| 12.Creating image target | | 12.1 Create an Image Target  12.2 Creating an Image for Image Target | **1 HR** | | |
| ***Lab:*** | **Topics** | | | **Hours** |
|  | 12.2 Create an image target and assign the properties for image target behavior component  12.3 Uploading the Image target to Vuforia | | | **1 HR** |
| **Session 13: Add Object to Image Target** | | | | | |
| 13. Adding 3D model | | 13.1 Placing a 3D Model on Image Target | **1 HR** | | |
| ***Lab:*** | | **Topics** | **Hours** | | |
|  | | 13.1 Place a 3d model on the image target and check whether we can see the model on the image target while running the application | **1 HR** | | |

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| **Session 14: *Rotating and Scaling an object in AR*** | | | | | |
| 14. Rotating the object | 14.1 Understanding touch input  14.2 Rotating and Scaling the object using touching and moving the finger | | | | **1 HR** |
| ***Lab:*** | **Topics** | | | | **Hours** |
|  | 14.1 Write the script for rotating and Scaling the object using the finger and check the result | | | | **1 HR** |
| **Session 15: *Create Multi Target System in Vuforia*** | | | | | |
| 15. Create Multi Target System in Vuforia | | 15.1 Preparing and Designing Multi Targets  15.2 Creating and Multi Targets | | **1 HR** | |
| ***Lab:*** | | **Topics** | | **Hours** | |
|  | | 15.1 Setting up Multi target to a scene where Vuforia multiple target will be shown | | ***1 HR*** | |
| **Session 16: Virtual buttons in *Vuforia*** | | | | | |
| 16. Adding Virtual Buttons in Vuforia | | 16.1 What is Virtual Button  16.2Design and Placement of Virtual Buttons | | **1 HR** | |
| ***Lab:*** | | **Topics** | | **Hours** | |
|  | | 16.1 Design and Placement  16.2 Understanding Sensitivity  16.3 Writing Script for Working | | ***1 HR*** | |
| **Session 17: Introduction to AR Foundation** | | | | | |
| 17***.*** Introduction to AR Foundation | | | 17.1 Preparing and Designing Model Target  17.2 Creating Cylindrical Targets | **1 HR** | |

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| ***Lab:*** | | **Topics** | | **Hours** | |
|  | | 17.1 Creating Cylindrical Targets | | **1 HR** | |

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| **Session 18: Adding AR Foundation to a Scene with Vuforia Engine** | | |
| 18 Setting Up AR Foundation | 18.1 Setting up AR foundation to a scene where Vuforia is present | **1 HR** |
| ***Lab:*** | **Topics** | **Hours** |
|  | 18.1 Setting Up AR Founation  18.2 Setting up AR foundation to a scene where Vuforia is present and checking whether everything is working fine | ***2 HR*** |
| **Session 19: *Plane Tracking Vertical*** | | |
| 19. Plane and Tracking Horizontal and Vertical | 19. Plane Tracking of Horizontal and Vertical Object | **1 HR** |
| ***Lab:*** | **Topics** | **Hours** |
|  | 19.1 Uploading and Managing Model in Horizontal and Vertical Model Target  19.2 Applying vertical Settings to the Model | ***2 HR*** |
| **Session 20: Anchor points and Environmental Probes** | | |
| 20. AR Anchor Points and Environmental Probes | 20. Anchor Points Environmental Probes with AR Foundation | **1 HR** |
| ***Lab:*** | **Topics** | **Hours** |
|  | 20. Setup Anchor Points and Environmental Probes using AR Foundation | **1 HR** |