SARVAJANIK UNIVERSITY
Sarvajanik College of Engineering and Technology
Master of Computer Applications

MCA Semester III

Subject Name: Game Designing and Development with Unity **Subject Code:** MTCA14310

Type of course: Professional Elective Course

Prerequisite: Basic knowledge of C#, Mathematical Fundamentals

List of Courses where this course will be prerequisite:
Advance Game development

Rationale: Game Designing and Development with Unity helps in understanding the basics of the game development. This helps the graduate write efficient code while developing their own 2D-3D games easily.

Teaching and Examination Scheme:

TEACHING SCHEME				Theory Marks			Practical Marks		Total
L	T	P	C	TEE	CA1	CA2	TEP	CA3	
3	0	4	5	60	25	15	60	40	200

CA1: Continuous Assessment (assignments/projects/open book tests/closed book tests **CA2:** Sincerity in attending classes/class tests/ timely submissions of assignments/self-learning attitude/solving advanced problems **TEE:** Term End Examination **TEP:** Term End Practical Exam (Performance and viva on practical skills learned in course) **CA3:** Regular submission of Lab work/Quality of work submitted/Active participation in lab sessions/viva on practical skills learned in course

Content:

Sr. No.	Content	Teaching Hrs.	Module Weightage
1	**Introduction:** Basics of Unity, Development Tools, Software Development Lifecycles, Introducing Unity, Unity Concepts, Sprites, views.	**06**	**13%**

	Primitive Data and Math: Data Types and Variables, Mathematical Operations, Variable Scope and Access, Displaying Data, Easy Input Handling in Unity, Logical Expressions, "if/else" Statements, "switch" Statements, Arrays, for and foreach Loops, while Loops.		
2	**Introduction to Scripting and Game Design Strategies:** C# Language Concepts, Game Loops and Functions, Game Requirements, Game Mechanics, Storytelling and Progression, Design Documents, Unity Buttons and other controls, Perspectives.	**10**	**23%**
3	**Gaming basics:** Creating and Destroying Objects, Activating and Deactivating Objects, Rigidbody Components, Unity Colliders, Scripting Collision Events, Sorting Layers, Tagging Game Objects, Collision Layers, Prefabs, Setting Boundaries.	**14**	**30%**
4	**Exceptions and Debugging:** Run-Time Exceptions, Finding Run-time Errors, Using the Debugger.	**04**	**08%**
5	**Animation and other effects:** Simple Unity Animation, Animator States, Animations and Colliders, Scrolling Game Mechanics, Parallax Effects, Scrolling Game Mechanics, Wrapping Background, Moving Cameras, Mini-Maps, Sound Files.	**11**	**26%**

Suggested Specification table with Marks (Theory):

Distribution of Theory Marks					
R Level	**U Level**	**A Level**	**N Level**	**E Level**	**C Level**
20	20	20	10	15	15

Legends: R: Remembrance; U: Understanding; A: Application, N: Analyze and E: Evaluate C: Create and above Levels (Revised Bloom's Taxonomy)

Note: This specification table shall be treated as a general guideline for students and teachers. The actual distribution of marks in the question paper may vary slightly from above table.

Reference Books:

Sr. no.	Title of book /article	Author(s)	Publisher and details like ISBN	Year of publication	Publication Edition

1	Game development with Unity	Michelle Menard and Bryan Wagstaff	Stacy L. Hiquet	2015	2nd Edition
2	Introduction to Game Design, Prototyping, and Development	Jeremy Gibson Bond	Addison-Wesley	2015	3rd Edition

Course Outcomes:

Sr. No.	CO Statement After learning this subject, students will be able to	Marks % weightage
CO-1	Ability to develop gaming applications based on object oriented concepts in Unity	36%
CO-2	Ability to understand Game Design	30%
CO-3	Ability to create gaming applications with exception handling	8%
CO-4	Ability to create gaming applications with animations	26%

Mapping with POs:

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PS O1	PS O2	PS O3
CO-1	3	3	0	1	2	0	0	0	0	0	2	1			
CO-2	3	3	0	0	2	0	0	0	0	0	2	0			
CO-3	3	3	0	0	2	0	0	0	0	0	2	0			
CO-4	3	3	0	1	2	0	1	0	1	0	2	1			
Rationale*															

Rationale*: Explaining why it is matching this particular program outcome

List of Open learning website:
https://unity.com

List of Open Source Software:

- Unity hub

FOR LAB SESSIONS:

List of Experiments:

Sr. No.	Problem Statements
1	To create game objects and game loops.
2	To use game objects, sprites, views.
3	To demonstrate exception handling.
4	To use event handling mechanism.
5	To create a simple game with appropriate animations.

Major Equipment Needed: Unityhub & unity editor