Lok Jagruti Kendra University
University with a Difference

Diploma
in
Gaming & Animation

LJ Polytechnic

Course Code: 025110502

Scripting for Games

Programme / Branch Name			Diploma in Gaming & Animation			
Course Name	Scripting for Games				**Course Code**	025110502
Course Type	HSSC	BSC	ESC	PCC	OEC	PEC

Legends: HSSC: Humanities and Social Sciences Courses BSC: Basic Science Courses
ESC: Engineering Science Courses PCC: Program Core Courses
OEC: Open Elective Courses PEC: Program Elective Courses

1. Teaching and Evaluation Scheme

Teaching Hours / Week / Credits				**Evaluation Scheme**			
L	**T**	**P**	**Total Credit**	**CCE**	**SEE (Th)**	**SEE (Pr)**	**TOTAL**
3	0	4	5	50	50	50	150

Legends:
L: Lectures T: Tutorial P: Practical
CCE: Continuous & Comprehensive Evaluation
SEE (Th): Semester End Evaluation (Theory)
SEE (Pr): Semester End Evaluation (Practical)

2. Prerequisites

- ✓ Basic Knowledge of Object-Oriented Programming.
- ✓ Problem Solving Capabilities.

3. Rationale

Game development has become a significant and growing industry over the past few decades, and its impact can be seen in various aspects of the world. The importance of game development and its impact in the world can be summarized as entertainment, education, military & defense, healthcare as well as social impact. The industry continues to grow and evolve. The major backbone of any game development is scripting or programming applied to it. Hence, scripting is an essential part as well as the stepping stone in the journey of game development. This course is designed for developing these skills. The course contains all the fundamentals from basic to advanced needed to learn scripting for game development. This course deals with fundamental syntactic information about scripting language that will help students to apply the basic concepts, program structure, and principles of game programming paradigms to build games.

4. Objectives

- ✓ The concepts, case studies, principles and relevant soft skills associated with this course are to be implemented so that the learner is able to,
  - Identify the need of a scripting concept from a game development point of view.
  - Identify and apply appropriate scripting concepts.
  - Integrate script into the game environment.

5. Contents

Unit No.	Unit Name	Topics	Learning Outcomes	% Weightage	Hours
1	**Introduction to Scripting**	1.1. Introduction 1.2. Need & Importance of Scripting Language in Games 1.3. Basics of Scripting 1.4. Installation & Troubleshooting of Needed Tools and Resources 1.5. Environment Tour	• Basics and need for scripting or programming in game development. • Installation of various tools. • Being familiar with working environment and IDE.	10	2
2	**Scripting Fundamentals**	2.1. Data Types 2.2. Variables 2.3. Conditional Structures 2.4. Looping Structures	• Knowledge of programming fundamentals and its application in game development.	25	12
3	**Advanced Scripting Fundamentals**	3.1. In-built Functions 3.2. User Defined Functions 3.3. Arrays	• Knowledge of programming fundamentals and its application in game development.	25	12
4	**Object-Oriented Scripting**	4.1. Class and Object 4.2. Inheritance 4.3. Interface	• In-depth knowledge of object-oriented concepts and its application in game development.	30	14
5	**Integrating Script into Gaming Environment**	5.1. Understanding Game Engine 5.2. Tying Scripts to Game Engine 5.3. A Demo Game Walkthrough	• Hands on knowledge of game engine and application of script into game engine.	10	2
			Total Hours		**42**

6. List of Practicals / Exercises

The practical/exercises should be properly designed and implemented in an attempt to develop different types of skills so that students can acquire the competencies/programme outcomes. Following is the list of practical exercises for guidance.

Sr. No.	Practical / Exercises	Key Competency	Hours
1	Install and setup IDE with add-ons for scripting.	Installation and setting up IDE & required add-ons.	2
2	Install, setup and troubleshoot game engine for scripting.	Installation and troubleshooting of IDE & add-ons.	2
3	Illustration of data types and variables through program with user input.	Knowledge of how user input works as well as concept of variables with data types.	4
4	Illustration of various conditional structures through program.	Working mechanism of conditional structures.	6
5	Illustration of various looping structures through program.	Working mechanism of looping structures.	6
6	Illustration of in-built functions through program for scaling, rotation, and translation of an object.	In-depth knowledge of how in-built functions can be useful in object transformation in game.	6
7	Creating user defined function for object movement.	Knowledge of how various user defined function works.	4
8	Implementation of arrays in scripting for game development.	Hands on knowledge of working of arrays in game scripting.	6
9	Implementation of basic object-oriented programming concepts such as class and object.	Knowledge of how class and object work in game development scripting.	4
10	Implementation of various types of inheritance.	In-depth hands-on knowledge of various inheritance types in programming.	8
11	Implementation of interface with valid use case in scripting.	Knowledge of need and working mechanism of interface.	4
12	Implementing various scripts to a game engine.	Hands-on experience of tying scripts to the game engine.	4
		Total Hours	**56**

7. Textbooks

1) C# - The Complete Reference, by Herbert Schildt, Latest Release, McGraw Hill Education.

8. Reference Books

1) Learning C# by Developing Games with Unity 2021: Kickstart your C# programming and Unity journey by building 3D games from scratch, by Harrison Ferrone, Latest Release, Packt Publishing Limited.
2) Learning C# by Developing Games with Unity 3D Beginner's Guide, by Terry Norton, Latest Release, Packt Publishing Limited.
3) Game Programming with Unity and C#: A Complete Beginner’s Guide, by Casey Hardman, Latest Release, Apress.
4) Hands-On Unity 2020 Game Development: Build, customize, and optimize professional games using Unity 2020 and C#, by Nicolas Alejandro Borromeo, Latest Release, Packt Publishing Limited.
5) Mastering Game Design with Unity 2021: Immersive Workflows, Visual Scripting, Physics Engine, Game Objects, Player Progression, Publishing, and a Lot More, by Scott Tykoski, Latest Release, BPB Publications.
6) Unity Game Development Cookbook: Essentials for Every Game (Greyscale Indian Edition), by Paris Buttfield-Addison & Jon Manning & Tim Nugent, Latest Release, Shroff/O'Reilly Publishers & Distributors.

9. Open Sources (Website, Video, Movie)

1) https://learn.unity.com/
2) https://docs.unity3d.com/Manual/index.html
3) https://in.coursera.org/learn/introduction-programming-unity
4) https://www.udemy.com/course/unitycourse/
5) https://www.youtube.com/watch?v=gB1F9G0JXOo
6) https://www.udemy.com/course/the-ultimate-guide-to-game-development-with-unity/
7) https://circuitstream.com/blog/learn-c-for-unity