

Game Technology

Course Title: Game Technology
Course No: CSC465
Nature of the Course: Theory + Lab
Semester: VIII

Full Marks: 60 + 20 + 20
Pass Marks: 24 + 8 + 8
Credit Hrs: 3

Course Description:

This course is a practical and conceptual introduction to game design and development including basic ideas of game design, learn to design a game, and working as a game designer. This course will provide ample opportunities to try out concepts and theories to design, develop and test 2D and 3D games. The main platform will be Unity, a cross-platform game editor and engine widely in use by many companies in the game industry.

Course Objectives:

After completion of the course, students will learn

- basics of game development
- to design games
- to work as a game designer
- to use Unity game editor and engine to develop games

Course Contents:

Unit 1: Game Design Basics (12 Hrs.)

Role of the Game Designer: An Advocate for the Player, Passions and Skills, A Playcentric Design Process, Designing for Innovation; Structure of Games: Engaging the Player, The Sum of the Parts, Defining Games, Beyond Definitions; Working with Formal Elements: Players, Objectives, Procedures, Rules, Resources, Conflict, Boundaries, Outcome; Working with Dramatic Elements: Challenge, Play, Premise, Character, Story, World Building, The Dramatic Arc; Working with System Dynamics: Games as Systems, System Dynamics, Interacting with Systems, Tuning Game Systems

Unit 2: Designing a Game (25 Hrs.)

Conceptualization: Where Do Ideas Come From, Alternative Methods, Editing and Refining, Turning Ideas into a Game, Ideas vs. Designs; Prototyping: Methods of Prototyping, Prototyping Your Original Game Idea, Making the Physical Prototype Better, Beyond the Physical Prototype; Digital Prototyping: Types, Designing Control Schemes, Selecting Viewpoints, Effective Interface Design, Prototyping Tools; Playtesting: Playtesting and Iterative Design, Recruiting Playtesters, Conducting a Playtesting Session, Methods of Playtesting, The Play Matrix, Taking Notes, Basic Usability Techniques, Data Gathering, Test Control Situations, Playtesting Practice; Functionality, Completeness, and Balance: What Are You Testing For? Is Your Game Functional? Is Your Game Internally Complete? Is Your Game Balanced? Techniques for Balancing Your Game; Fun and Accessibility: Is Your Game Fun? Improving Player Choices, Fun Killers, Beyond Fun, Is Your Game Accessible?

Unit 3: Working as a Game Designer (8 Hrs.)

Team Structures: Team Structure, Developer's Team, Publisher's Team, Team Profile, All Contribute to the Design, Team Communication; Stages and Methods of Development: Stages, Using Agile Development; Communication your Designs: Visualization, Flowcharts, Tables and Spreadsheets, Concept Art, Description, Formats, Contents, Design Macros; Understanding the New Game Industry: Size, Platform for Distribution, Genres of Gameplay, Publishers, Developers, The Business of Game Publishing; Selling Yourself and Your Ideas to the Game Industry: Getting a Job at a Publisher or Developer, Pitching Your Original Ideas, Independent Production

Laboratory Works:

The Laboratory work includes designing and developing games using Unity game editor and engine.

Recommended Books:

1. Tracy Fullerton, Game Design Workshop: A Playcentric Approach to Creating Innovative Games, Fourth Edition, CRC Press, 2019.
2. The Digital Gaming Handbook, Edited by Roberto Dillon, CRC Press, 2021.