VGURU TECH ACADEMY

Game Development

Course Syllabus

Level: Beginner

Part 1: Course Description

This beginner course introduces kids to the exciting world of game development. They'll start with the basics of programming using simple C# scripts and explore the fun platform of Roblox. The course covers fundamental concepts like variables, loops, and basic game mechanics. Students will engage in creating simple games, learning the basics of animation and gameplay design. This level sets the foundation for understanding how games are built and programmed.

Part 2: Student Learning Outcomes & Objectives

Student Learning Outcomes

- Understand basic game development concepts
- Create simple games using basic programming
- Develop creativity and problem-solving skills

Course Objectives

To introduce young learners to the basics of game development, focusing on simple programming concepts and creative expression.

Part 3: Topic Outline

Prerequisites
- Basic computer skills
- Interest in games and creativity

- → Session 1: Introduction to Game Development
  - ◆ Overview of game development
  - ◆ Introduction to Roblox
- → Session 2: Basics of Programming
  - ◆ Introduction to basic programming concepts
  - ◆ Simple C# scripting
- → Session 3: Creating Simple Game Mechanics
  - ◆ Basic game mechanics using C# scripting
  - ◆ Simple conditionals and functions
- → Session 4: Exploring Variables and Loops
  - ◆ Understanding variables
  - ◆ Introduction to loops
- → Session 5: Fun with Lists and Nested Loops
  - ◆ Creating lists
  - ◆ Nested loops in game development
- → Session 6: Designing Basic Gameplay
  - ◆ Basic concepts of game design
  - ◆ Creating a simple gameplay experience
- → Session 7: Introduction to Animation
  - ◆ Basics of animation in games
  - ◆ Simple animation control
- → Session 8: My First Game Project
  - ◆ Building a basic game
  - ◆ Review and showcase projects

Level: Intermediate

Part 1: Course Description

Designed for students with basic game development knowledge, this intermediate course delves deeper into more complex programming with C# and introduces Unity 3D. Students will learn about classes, complex conditionals, and recursion. They'll explore advanced game mechanics, design user interfaces, and work on animation control. The course emphasizes creative design and problem-solving, culminating in the development of an intermediate-level game project.

Part 2: Student Learning Outcomes & Objectives

Student Learning Outcomes

- Develop games using intermediate programming techniques
- Understand and implement game mechanics
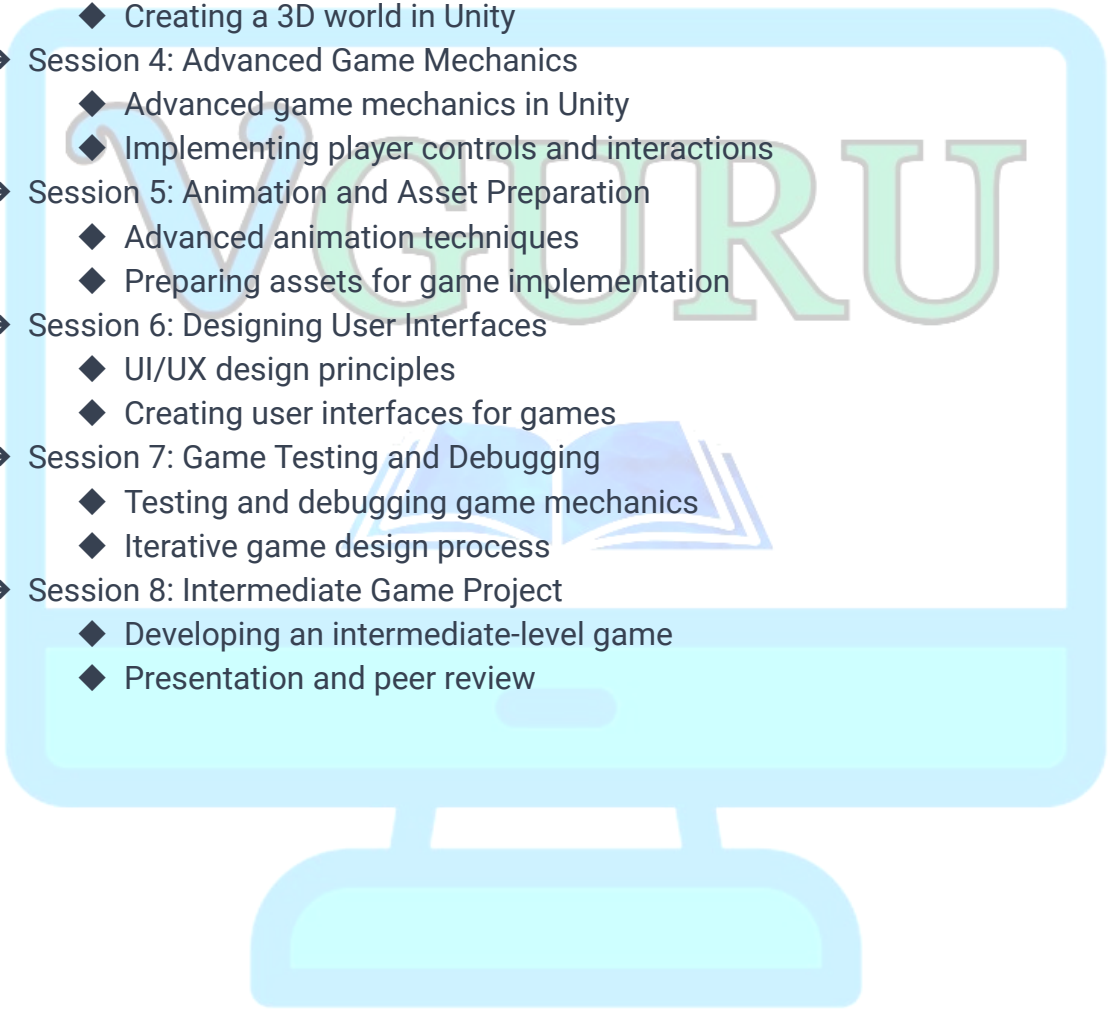- Enhance creative design and problem-solving skills

Course Objectives

To build upon foundational game development skills, introducing more complex programming and design concepts.

Part 3: Topic Outline

Prerequisites

- Completion of beginner-level or basic understanding of game development
- Ability to create simple games

- Session 1: Advanced Programming with C#
  - Complex conditionals and functions in C#
  - Introduction to recursion
- Session 2: Exploring Classes and Objects
  - Understanding classes in C#
  - Object-oriented programming concepts
- Session 3: Introduction to Unity
  - Basics of Unity 3D
  - Creating a 3D world in Unity
- Session 4: Advanced Game Mechanics
  - Advanced game mechanics in Unity
  - Implementing player controls and interactions
- Session 5: Animation and Asset Preparation
  - Advanced animation techniques
  - Preparing assets for game implementation
- Session 6: Designing User Interfaces
  - UI/UX design principles
  - Creating user interfaces for games
- Session 7: Game Testing and Debugging
  - Testing and debugging game mechanics
  - Iterative game design process
- Session 8: Intermediate Game Project
  - Developing an intermediate-level game
  - Presentation and peer review

Level: Advanced

Part 1: Course Description

Aimed at students with a solid foundation in game development, this advanced course covers sophisticated topics in programming and design. Students will master advanced C# scripting, explore professional game design principles, and develop 3D games using Unity. They'll learn about realistic animation, game engines like Buildbox, and the processes of building, deploying, and publishing games. The course culminates in a capstone project where students create a comprehensive game, showcasing their advanced skills.

Part 2: Student Learning Outcomes & Objectives

Student Learning Outcomes
- Master advanced game development concepts
- Develop complex, multifunctional games
- Gain an understanding of professional game development processes

Course Objectives
To refine and expand game development skills, focusing on advanced programming, complex game design, and real-world applications.

Part 3: Topic Outline

Prerequisites
- Completion of Intermediate Level or strong understanding of game development
- Experience in programming and using game development tools

→ Session 1: Advanced Game Programming
  ◆ Advanced C# scripting techniques
  ◆ Complex game logic and algorithms
→ Session 2: Professional Game Design
  ◆ Advanced game design principles
  ◆ Creating engaging gameplay experiences
→ Session 3: 3D Game Development
  ◆ Building 3D games in Unity
  ◆ Advanced 3D modeling and world creation
→ Session 4: Realistic Animation and Control
  ◆ Sophisticated animation techniques
  ◆ Realistic animation control in games
→ Session 5: Game Engines and Buildbox
  ◆ Exploring different game engines
  ◆ Game development with Buildbox
→ Session 6: Building and Deploying Games
  ◆ Game-building and deployment processes
  ◆ Cross-platform game development
→ Session 7: Publishing and Marketing Games
  ◆ Testing, publishing, and marketing games
  ◆ Understanding the gaming industry
→ Session 8: Capstone Game Development Project
  ◆ Developing a comprehensive game project
  ◆ Final presentation and critique