GenAI TRAININGS

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Course Title:
Games & Art – Game Development Course

Course Level:
 Intermediate

Course Overview
This course provides an introduction to the world of game development, combining both the creative and technical aspects of designing and building interactive games. Students will explore the fundamentals of game design, storytelling, programming, and visual asset integration while learning to develop games using popular game engines such as Unity and Unreal Engine.

The course covers essential topics including game design principles, 2D and 3D game development, game physics, artificial intelligence for games, and user interface design. Participants will also learn programming concepts using C# for Unity and Blueprint/C++ basics for Unreal Engine.

By the end of the course, learners will gain hands-on experience creating interactive games, designing game environments, and integrating visual assets into complete game projects aligned with modern industry practices.

Module 1: Introduction to Game Development & Industry Overview
Topics:
 • Introduction to game development and interactive media
 • History and evolution of the gaming industry
 • Types of games and gaming platforms
 • Game development pipeline and production stages
 • Roles within a game development team
 • Overview of game engines and development tools
 • Understanding player engagement and game mechanics

Module 2: Game Design Fundamentals & Storyboarding
Topics:
 • Principles of game design
 • Understanding gameplay mechanics and player experience
 • Game concept development and idea generation
 • Storytelling in games and narrative design
 • Character design and world-building
 • Storyboarding and game flow design
 • Creating game design documents (GDD)

Module 3: Game Engines – Unity & Unreal Engine Basics
Topics:
 • Introduction to game engines and development environments
 • Overview of Unity Engine interface and tools

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- Overview of Unreal Engine interface and tools
- Scene creation and environment setup
- Managing assets and game objects
- Game engine workflow and project structure
- Importing and managing resources in game engines

Module 4: Programming for Game Development
Topics:
- Introduction to programming concepts for games
- C# scripting basics for Unity game development
- Blueprint visual scripting in Unreal Engine
- Introduction to C++ basics for Unreal development
- Game object behaviors and scripting logic
- Event-driven programming in game engines
- Debugging and testing game scripts

Module 5: 2D & 3D Game Development
Topics:
- Fundamentals of 2D game development
- Designing game characters and environments
- Creating gameplay mechanics in 2D games
- Introduction to 3D environments and models
- Camera control and movement in 3D games
- Lighting and environment setup
- Level design and world building

Module 6: Game Physics & Artificial Intelligence for Games
Topics:
- Introduction to physics systems in games
- Collision detection and rigid body physics
- Gravity and motion simulation
- Creating interactive gameplay mechanics
- Basics of AI in game development
- NPC behavior and decision-making systems
- Pathfinding algorithms and navigation systems

Module 7: UI/UX Design for Games
Topics:
- Principles of user interface design for games
- Designing intuitive game menus and HUDs
- User experience considerations in gameplay
- UI layout and interaction design
- Visual feedback and player interaction

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• Accessibility and usability in game interfaces
• Integrating UI elements into game engines

Module 8: Game Art & Asset Integration
Topics:
• Introduction to game art and visual design
• Creating and importing game assets
• Textures, materials, and visual effects
• Character and environment asset integration
• Asset optimization for performance
• Managing asset libraries in game engines
• Collaboration between artists and developers

Capstone Project: Game Development Project
In the final phase of the course, students will develop a complete game project by applying the concepts learned throughout the program. Participants will design gameplay mechanics, build game environments, integrate visual assets, implement scripting logic, and create an interactive gaming experience using Unity or Unreal Engine.
The project will demonstrate the full game development pipeline from concept and design to implementation and final presentation.

Assessment & Evaluation
Assessment will include:
• Game design assignments
• Programming and scripting exercises
• Game development labs and practical tasks
• UI/UX design implementation for games
• Final game development project and presentation