III Year II Semester	L	T	P	C
Code: 20AI6662	3	0	0	3

GAME PROGRAMMING (Honors)

COURSE OBJECTIVES:

The student should be made to:

1. Understand the concepts of Game design and development.
2. Learn the processes, mechanics and issues in Game Design.
3. Be exposed to the Core architectures of Game Programming.
4. Know about Game programming platforms, frame works and engines.
5. Learn to develop games.

COURSE OUTCOMES:

Upon completion of the course, students will be able to:

1. Understand 3D Graphics for Game Programming
2. Design of Game Engine with real-time and human interactive devices
3. Design the processes, and use mechanics for game development.
4. Understand the Core architectures of Game Programming.
5. Apply Game programming platforms, frame works and engines and Create interactive Games

UNIT-I

3DGraphics for Game Programming: Transformations, Quaternions, 3D Modeling and Rendering, Ray Tracing, Shader Models, Lighting, Color, Texturing, Camera and Projections, Culling and Clipping, Character Animation, Physics-based Simulation, Scene Graphs.

UNIT-II

Game Engine Design: Game engine architecture, Engine support systems, Resources and File systems, Game loop and real-time simulation, Human Interface devices, Collision and rigid body dynamics, Game profiling.

UNIT-III

Game Programming: Application layer, Game logic, Game views, managing memory, controlling the main loop, loading and caching game data, User Interface management, Game event management.

UNIT-IV

Gaming platforms and Frameworks: 2D and 3D Game development using Flash, DirectX, Java, Python, Game engines - Unity. DX Studio.

UNIT-V

Game Development: Developing 2D and 3D interactive games using DirectX or Python – Isometric and Tile Based Games, Puzzle games, Single Player games, Multi Player games.

TEXT BOOKS:

1. Mike McShaffrfy and David Graham, "Game Coding Complete", Fourth Edition, Cengage Learning, PTR, 2012.
2. Jason Gregory, "Game Engine Architecture", CRC Press / A K Peters, 2009.
3. David H. Eberly, "3D Game Engine Design, Second Edition: A Practical Approach to Real-Time Computer Graphics" 2nd Editions, Morgan Kaufmann, 2006.

REFERENCES:

1. Ernest Adams and Andrew Rollings, "Fundamentals of Game Design", 2nd Edition Prentice Hall / New Riders, 2009.
2. Eric Lengyel, "Mathematics for 3D Game Programming and Computer Graphics", 3rd Edition, Course Technology PTR, 2011.
3. Jesse Schell, The Art of Game Design: A book of lenses, 1st Edition, CRC Press, 2008.