

Maulana Abul Kalam Azad University of Technology, West Bengal

(Formerly West Bengal University of Technology)

Syllabus for B. Sc. In Gaming

(Effective for Academic Session 2019-2020)

Detailed Syllabus

SEMESTER-I

Paper: Introduction to Game Design and Production

Code: BGD – 101

Contacts Hours / Week: 3T

Credits: 3

Units	Course Content
Unit 1	What is game development, Different type of game and use cases (FPS, RPG, Racing, Fighting, Casual, Money spinner, Casino, Massively Multiplayer Online (MMO) These games are played over a LAN (local area network) or via the Internet. Simulations. Adventure. Real-Time Strategy (RTS) .Puzzle. Action. Stealth Shooter. Combat) Revert Settings, Launching Your First Project, Importing a Project, Switching Between Projects, Customizing The UI
Unit 2	How to do Navigation, Manipulating Objects (Taking different type of objects, How to create invisible object that hides objects behind it, How to position Game Objects, How to place Light Probes)
Suggested Readings:	
<ol style="list-style-type: none">1. https://www.udemy.com/unitycourse2. Fundamentals of Game Design, 3e Paperback – 2015 by Adams (Author)3. Drawing Basics and Video Game Art: Classic to Cutting-Edge Art Techniques for Winning Video Game Design by Chris Solarski	

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Paper: Game Production Basics

Code: BGD – 102

Contacts Hours / Week: 3T

Credits: 3

Units	Course Content
Unit 1	Unity production basics: Lighting, materials, effects, etc. What are game levels, why do you need to design game levels, different game levels for different type of games.
Unit 2	Working with 2D (How to make 2D characters, characters from different countries and style, Asian character vs Western character) Making sprites, Working with vector graphics
Suggested Readings: 1. https://www.udemy.com/unitycourse 2. Fundamentals of Game Design, 3e Paperback – 2015 by Adams (Author) 3. https://www.youtube.com/watch?v=EitYC95uew4 4. https://www.gamedev.net/articles/visual-arts/the-total-eginner%E2%80%99s-guide-to-better-2d-game-art-r2959/	

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Paper: 2D Game Production Advanced

Code: BGD – 103

Contacts Hours / Week: 3T

Credits: 3

Units	Course Content
Unit 1	2D game design pipeline (The market. The audience. The platforms where to publish the game. The competitor, Define the story. Create timelines. Storyboards. Create a paper prototype of your game. Level Design. Game play mechanics. Costs of the game (making and maintenance). Create a game design document.) .
Unit 2	Vector Math in game development (How does game physics work? What is physics simulation? Do you need physics for game design? How does video game code work? What is an engine in a game? what can a vector be useful, How is a vector defined in the game engine, Scalar vector, Use vector to represent a point in space, Orientation of vectors-- Left-hand system vs right-hand system, Multiplications by a scalar, Addition and subtraction, Normal vector, Normalized vector, Cross product, LINEAR INTERPOLATION (LERP)) Use vectors to describe objects and interactions in the game world.(Model space, World coordinate, View space, Coordinate space hierarchy) Play testing, balancing and level design
Suggested Readings: 1. https://www.gamedesigning.org/learn/game-physics/ 2. Fundamentals of Game Design, 3e Paperback – 2015 by Adams (Author) 3. https://assetstore.unity.com/packages/templates/2d-platformer-controller-69772 4. https://www.gamedev.net/articles/visual-arts/the-total-beginner%E2%80%99s-guide-to-better-2d-game-art-r2959/ 5. https://ostindiegames.wordpress.com/2015/01/16/2d-art-pipeline/	

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Paper: 2D Game Production Details

Code: BGD – 191

Contacts Hours / Week: 3P

Credits: 3

Units	Course Content
Unit 1	How to make 2D environment (Form and Shape, Anatomy and Proportions, Perspective, Breaking Down Color, Lighting and Shading) Unity 3D Level Design (Primitives, Textures, Creating Trees, Adding Lights , Adjusting Lighting, Particles, Game Controller, Building A Game C# in game development)
Unit 2	How to make 2D background (Form and Shape, Anatomy and Proportions, Perspective, Breaking Down Color, Lighting and Shading) 2D Character Design (Primitives, Textures, Creating face, expressions, anatomy, body parts, cartoon making)
Suggested Readings: 1. https://www.udemy.com/unitycourse 2. <u>Fundamentals of Game Design, 3e Paperback – 2015 by Adams (Author)</u> 3. https://www.youtube.com/watch?v=EitYC95uew4 4. https://www.gamedev.net/articles/visual-arts/the-total-beginner%E2%80%99s-guide-to-better-2d-game-art-r2959/	

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Paper: Logic and Physics in Game Production & Making UI & UX

Code: BGD – 192

Contacts Hours / Week: 3P

Credits: 3

Units	Course Content
Unit 1	Game physics (How does game physics work? What is physics simulation? Do you need physics for game design? How does video game code work? What is an engine in a game?) Game mechanics - rules and challenges, 2D Platformer Controller. Concept Art, Coloring, Animation.
Unit 2	UI – different UI patterns, Introduction, What Are UI and UX? What Does a Good UI Do? - case study. Games With Poor UIs- bad and good case. Success rates and compilation. Oblivion- case study. Far Cry 3 - case study. Mortal Kombat X- Case Study, Fight of the legends - case study. 2D Platformer – Build with assets.
Suggested Readings: 1. https://gamedevelopertips.com/vector-in-game-development/ 2. https://gamedevelopment.tutsplus.com/tutorials/game-ui-by-example-a-crash-course-in-the-good-and-the-bad--gamedev-3943 3. https://assetstore.unity.com/packages/templates/2d-platformer-controller-69772 4. https://www.gamedev.net/articles/visual-arts/the-total-beginner%E2%80%99s-guide-to-better-2d-game-art-r2959/	

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Paper: Introduction to C# Code in Game

Code: BGD – 193

Contacts Hours / Week: 4P

Credits: 4

Units	Course Content
Unit 1	Collision Detection (Colliders, Colliders as Triggers, Rigidbodies, Adding Physics Forces, Adding Physics Torque, Physics Materials, Physics Joints, Detecting Collisions with On Collision Enter, Raycasting)
Unit 2	C# code on 2D platform game (How Does Unity 3D Use C#? Working with C# script files, What Does C# Look Like? Toolbar, Hierarchy Panel, Scene and Game View, Inspector Panel , Project and Console Panel, Writing C#, Separator Tokens, Operator Tokens, Other Operator Tokens, Literals, Transitive and Non-,Transitive Operations) 2D Platformer, Written part - Analysis, Critic and Description, Class Initialization, New , Constructors
Suggested Readings:	
1. https://gamedevelopertips.com/vector-in-game-development/	
2. https://learn.unity.com/tutorial/3d-physics	
3. http://www.allitebooks.in/learning-c-programming-unity-3d/	