

Branch Name:	Bachelor of Science (Information Technology)
Program Code:	ET110
Semester/Year:	Semester - VI/ Third Year
Subject Title:	Intelligent Game Design
Subject Code:	1ET1100603
Pre-requisite:	Basics of Python Programming, Python Data Analysis

Course Objective: This course enables the students:

- Students will be able understand Unity Engine and its uses
- Ensures that they can implement Design Principles
- Ensures that the student understand Unity Production Pipeline
- Ensures that the students understand Unity Asset pipeline

Teaching and Examination Scheme:

Teaching Scheme (Hours per week)				Evaluation Scheme (Marks)				
Lecture (L)	Tutorial (T)	Practical (P)	Credit	Theory (Marks)		Practical (Marks)		Total (Marks)
				University Assessment	Continuous Assessment	University Assessment	Continuous Assessment	
03	01	02	05	70	30	30	20	150

Subject Contents			
Sr. No	Topic	Total Hours	Weight (%)
1	Definition of a Game and History of Game Design • What is a game and where is it used? • The game creator and the gamer, stakeholders and skill sets required in game design and development • Different formats for games and the history of game design over the years	7	20
2	Principles of Intelligent Game Design (Goals, Challenges, Feedback) • Goals - needs, social interaction, recognition, success • Challenges - risks, creating conflicts and obstacles • Feedback - rewards, punishments	8	25
3	Game Design and Development Process • Process overview from goal setting to testing • User study and research • The big idea • Game mechanics • Storytelling and storyboarding • Character design and development - heroes, enemies, and non-player characters (NPCs) • Environment design and Level design • Game prototyping and testing	7	20

4	Game Technology (Game Engines, AR, VR, and AI) - Game Engines - a contrast between Unity, Unreal, and Cry - Application of AI and new technologies in gaming	8	15
5	Applications of Games and Roles for Gaming Professionals - Gaming Industry overview - role of games in entertainment, advertising, healthcare, education, social impact - Skills sets and roles for game designers, developers and producers in the industry	10	20

List of Reference Books:

1. Virtual Reality, Steven M. LaValle, Cambridge University Press, 2016.
2. Understanding Virtual Reality: Interface, Application and Design, William R Sherman and Alan B Craig, (The Morgan Kaufmann Series in Computer Graphics)". Morgan Kaufmann Publishers, San Francisco, CA, 2002.
3. Developing Virtual Reality Applications: Foundations of Effective Design, Alan B Craig, William R Sherman and Jeffrey D Will, Morgan Kaufmann, 2009.
4. Allan Fowler-AR Game Development, 1st Edition, A press Publications, 2018, ISBN 978-1484236178.
5. Augmented Reality: Principles & Practice by Schmalstieg / Hollerer, Pearson Education India; First edition (12 October 2016), ISBN-10: 933257849
6. Gerard Jounghyun Kim, "Designing Virtual Systems: The Structured Approach", 2005.
7. Doug A Bowman, Ernest Kujiff, Joseph J LaViola, Jr and Ivan Poupyrev, "3D User Interfaces, Theory and Practice", Addison Wesley, USA, 2005.
8. Oliver Bimber and Ramesh Raskar, "Spatial Augmented Reality: Merging Real and Virtual Worlds", 2005.
9. Burdea, Grigore C and Philippe Coiffet, "Virtual Reality Technology", Wiley Interscience, India, 2003.
10. Designing for Mixed Reality, Kharis O'Connell Published by O'Reilly Media, Inc., 2016, ISBN: 9781491962381.
11. Sanni Siltanen- Theory and applications of marker-based augmented reality. Julkaisija – Utgivare Publisher. 2012. ISBN 978-951-38-7449

List of Suggested titles of Experiments:

Implement the following in the Game Design Software:

1. Create a 3D Level with the following setups implemented.
2. Skyboxes
3. Terrains with detailing with rocks, trees, grass, fog, water surface.
4. Object meshes with colliders
5. Lights and Shadows.
6. Create a 3D Level setups implemented:
7. Compile the Scripts and bake the navigation mesh for setting up playable area.
8. Create a 2d platform as per given brief.
9. Create a 3d side scroller for the 3D Level Design.
10. Create an Environmental Open world scene - Medieva Introduction to Matplotlib and Line Plots

Course Learning Outcomes (CLO): On completion of this course, the students will be able to:

CLO	Description	Bloom's Taxonomy Level
CLO1	Understand the components of the virtual reality system	3 Applying 4 Analyzing
CLO2	Describe various input and output devices used for virtual reality	5 Evaluating
CLO3	Apply the different modelling concepts to visual virtualization	4 Analyzing 2 Understanding
CLO4	Analyze the performance of given simple applications related to virtual reality	3 Applying
CLO5	Understand the concepts of the augmented reality system	2 Understanding

Mapping of CLOs with POs & PSOs

Course Learning Outcomes	Program Outcomes (POs)												Program Specific Outcomes(PSOs)			
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
CLO1	M			M										M	M	
CLO2	M	L		M										H	H	
CLO3	H	L	M	H	M									L	M	
CLO4	M	H		L										M	L	
CLO5	H			M	M									H	M	

H: High, M: Medium, L: Low