



COURSE DESCRIPTION FORM: Game Design and Development

INSTITUTION FAST School of Computing, National University of Computer and Emerging Sciences, Islamabad Campus

**PROGRAM(s) TO
BE EVALUATED** BS-SE: Fall-2024

Course Description

Course Code	CS-4046	
Course Title	Game Design and Development	
Credit Hours	3	
Course Instructors	Bilal Khalid Dar	
Grading Policy	Absolute Grading	
Policy about missed assessment items in the course	Retake of missed assessment items (other than sessional/ final exam) will not be held. Student who misses an assessment item (other than sessional / final exam) is awarded zero marks in that assessment item i.e., late submission will not be accepted. For missed sessional/ final exam, exam retake/ pretake application along with necessary evidence are required to be submitted to the department secretary. The examination assessment and retake committee decides the exam retake/ pretake cases.	
Course Plagiarism Policy	Plagiarism in project or sessional/ final exam will result in F grade in the course. Plagiarism in an assignment will result in zero marks in the whole assignments category.	
Prerequisites by Course(s) or Topics	Data Structures	
Assessment Instruments with Weights (homework, quizzes, sessional exams, final exam, assignments, etc.)	Assessment with the weight.	
	Assessment Type	Weight
	Class Participation	03
	Quizzes	12
	Project	15
	Assignments	10
	Sessional Exams 1	12.5
	Sessional Exams 2	12.5
	Final Exam	35
Course Coordinator	Bilal Khalid Dar	
URL (if any)		
Course Catalog Description	The course focuses on the introduction of digital game development process. It involves students in the process of developing two digital games using Unity 3D Game Engine and C# Scripting Language, while discussing the current practices and industry standards of	

	digital game development scene. Students will be introduced will complete game development pipeline and will produce a completely working 2D or 3D game. The course consists of hybrid lectures/labs where students will see (and give) presentations, discuss, and have time to work on their projects and get feedback from the instructor.																										
Textbook(s)	Game Design Theory and Practice, Second Edition, Richard Rousew																										
Reference Material	Theory of Fun for Game Design Unity Game Development Essentials, Will Goldstone																										
Course Goals	<table><tr><th colspan="3">A. Course Learning Outcomes (CLOs)</th></tr><tr><td colspan="3">After course completion, the students shall be able to: <div><div>1. Students will learn the Game Development Process Basics</div><div>2. Students will learn different aspects of game development (design, scripting, modelling, animation) and their application in the projects in industry.</div><div>3. Students will learn High Level Design Document (HLDD), including a prototype and project plan</div><div>4. Learn the basics of using Unity 3D to develop popular game genres along with C#</div><div>5. Students will learn to carry out a medium size project from scratch to end along with team management,</div><div>6. Students will learn to test their developed games and will learn about play test reports.</div></div></td></tr><tr><th colspan="3">B. Program Learning Outcomes (PLOs)</th></tr><tr><td>PLO 1</td><td>Computing Knowledge</td><td>Apply knowledge of mathematics, natural sciences, computing fundamentals, and a computing specialization to the solution of complex computing problems.</td></tr><tr><td>PLO 2</td><td>Problem Analysis</td><td>Identify, formulate, research literature, and analyze complex computational problems, reaching substantiated conclusions using first principles of mathematics, natural sciences, computing, and artificial intelligence.</td></tr><tr><td>PLO 3</td><td>Design/Develop Solutions</td><td>Design solutions for complex computing problems and design systems, components, and processes that meet specified needs with appropriate consideration for public health and safety, cultural, societal, and environmental considerations.</td></tr><tr><td>PLO 4</td><td>Investigation & Experimentation</td><td>Conduct investigation of complex computing problems using research based knowledge and research based methods</td></tr><tr><td>PLO 5</td><td>Modern Tool Usage</td><td>Create, select, and apply appropriate techniques, resources and modern computing and artificial intelligence tools, including</td></tr></table>			A. Course Learning Outcomes (CLOs)			After course completion, the students shall be able to: <div><div>1. Students will learn the Game Development Process Basics</div><div>2. Students will learn different aspects of game development (design, scripting, modelling, animation) and their application in the projects in industry.</div><div>3. Students will learn High Level Design Document (HLDD), including a prototype and project plan</div><div>4. Learn the basics of using Unity 3D to develop popular game genres along with C#</div><div>5. Students will learn to carry out a medium size project from scratch to end along with team management,</div><div>6. Students will learn to test their developed games and will learn about play test reports.</div></div>			B. Program Learning Outcomes (PLOs)			PLO 1	Computing Knowledge	Apply knowledge of mathematics, natural sciences, computing fundamentals, and a computing specialization to the solution of complex computing problems.	PLO 2	Problem Analysis	Identify, formulate, research literature, and analyze complex computational problems, reaching substantiated conclusions using first principles of mathematics, natural sciences, computing, and artificial intelligence.	PLO 3	Design/Develop Solutions	Design solutions for complex computing problems and design systems, components, and processes that meet specified needs with appropriate consideration for public health and safety, cultural, societal, and environmental considerations.	PLO 4	Investigation & Experimentation	Conduct investigation of complex computing problems using research based knowledge and research based methods	PLO 5	Modern Tool Usage	Create, select, and apply appropriate techniques, resources and modern computing and artificial intelligence tools, including
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[illegible]

		6		✓		✓		✓	✓				✓	✓
Topics covered in the course (assume 15-week instruction and 3 contact hours per week)	Topics to be covered: (Tentative)													
	List of Topics		No. of Weeks	Contact Hours	CLO(s)									
	Introduction to Game Development and Different Aspects of Game Development, Game Types, Simulation Emulation		2	6	1									
	Introduction to Unity 3D and C#, Game Engine and IDE		1	3	1,2,3									
	Introduction to Game Life Cycle		1	3	1, 3									
	Game Design Document and Serious Game Design		1	3	2, 3									
	Gaming Prototyping and Story Boarding		1.5	4.5	2, 3									
	2D and 3D Game Development in Unity and Game Structure		0.5	1.5	3,4									
	Game UI and Game Assets		1.5	4.5	3,4,5									
	Game Mechanics and Scripting		3.5	5	3 ,2, 4									
	Game Scene Management		0.5	1.5	3, 4, 2									
	Game Music		0.5	1.5	3, 4, 2									
	Game Animation and Completion		1	3	3, 4, 2									
	Game Marketing		1	3	5									
	Game Testing		1	3	6									
	Total		16	48										
Programming Language for Assignments (if any)	C#													
Class Time Spent (in percentage)	Theory	Problem Analysis	Solution Design	Social and Ethical Issues										
	50	25	20	5										
Oral and Written Communications	Every student is required to submit at least __5__ written reports of typically __5__ pages and make __1__ oral presentation of typically __20__ minutes' duration.													