هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission

2023
TP-153

Course Specification
(Bachelor)

Course Title:	Gaming Programming and Development
Course Code:	CSC 1408
Program:	Bachelor in Computer Science
Department:	Computer Science
College:	Computers and Information Technology
Institution:	University of Tabuk
Version:	1.0
Last Revision Date:	27 July 2022

Table of Contents

A. General information about the course:

1. Course Identification

1. Credit hours: 3					
2. Course type					
A.	☐University	☐College	☒ Department	☐Track	☐Others
B.	☐ Required		☒ Elective		
3. Level/year at which this course is offered: Level 7/8-Year 4					
4. Course general Description:					
The course covers fundamentals to the computer game design and development processes. It includes the philosophy of games, the game production process, employee factors for success in the field, and current issues and practices in the game development industry.					
5. Pre-requirements for this course (if any)**:**					
Advanced Programming Methods CSC 1203					
6. Co-requisites for this course (if any)**:**					
NA					
7. Course Main Objective(s):					
• Understand 2D and 3D graphics, vectors, and game physics. • Apply principles of design and game modeling. • Select appropriate game algorithms. • Integrating multimedia systems within a game development process. Developing high quality game Interfaces.					

2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	45	100%
2	E-learning		
3	Hybrid • Traditional classroom • E-learning		
4	Distance learning		

3. Contact Hours (based on the academic semester)

No	Activity	Contact Hours

1.	**Lectures**	45
2.	**Laboratory/Studio**	-
3.	**Field**	-
4.	**Tutorial**	-
5.	**Others (specify)**	-
Total		45

B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Code of PLOs aligned with program	Teaching Strategies	Assessment Methods
1.0	**Knowledge and understanding**			
1.1	Identify and demonstrate the fundamental skills and concepts in game design and development	K2	Lectures	Exams Assignments
1.2	Define game algorithms and assets for a game project	K4		
1.3	Recognize game art assets based on selected technology	K3		
2.0	**Skills**			
2.1	Apply collision and movement actions in games	S1	Lectures Research Activities	Exams Project Assignments
2.2	Analyze features of 2D and 3D games	S2		
2.3	Design art assets that reflect game features	S3		
3.0	**Values, autonomy, and responsibility**			
3.1	Collaborate within a team environment	V2	Project	Project

C. Course Content

No	List of Topics	Contact Hours
1.	2D game (part one): Implement basic 2D graphics, game updates, vectors, and game physics	**3**
2.	2D game (part two): 2D Programming Patterns, 2D Game Engine Architecture, 2D user interfaces	**3**

3.	3D game (part one): Implement 3D graphics with OpenGL, shaders, matrices, and transformations	3
4.	3D game (part two): 3D Programming Patterns, 3D Game Engine Architecture, 3D user interfaces	3
5.	Integrate and mix audio, including 3D positional audio	3
6.	Detect collisions of objects (Part one): detect collisions of objects in a 2D environment, Detect collisions of objects in 3D	3
7.	Detect collisions of objects (Part Two): Axis-aligned bounding boxes, bounding spheres, Using a physics engine	3
8.	Efficiently respond to player input (part one): Input devices, relative motions, input systems architecture , input mapping,	3
9.	Efficiently respond to player input (part two): Enabling a single controller, Analog sticks and triggers, filtering analog sticks in two dimensions, Supporting multiple controllers.	3
10.	Build user interfaces (part one): Font Rendering, The UI Screen Stack, Head-Up Displays (HUDs)	3
11.	Build user interfaces (part two): Localization, working with Unicode, Adding a Text Map, Other Localization Concerns.	3
12.	Improve graphics quality (part one): Improving Texture Quality, Texture sampling and revisited, mipmapping, Anisotropic Filtering	3
13.	Improve graphics quality (part two): Creating a framebuffer object, drawing the Mirror Texture in the HUD, creating a G-Buffer class, Global lighting, Adding point lights	3
14.	Load and save levels and binary game data (part one): Loading Global Properties, loading actors , loading components, Saving global properties	3
15.	Load and save levels and binary game data (part two): Saving actors and components, saving a binary mesh file, Loading a binary mesh file	3
Total		45

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Mid Term 1	6-7	15%
2.	Mid Term 2	11-12	15%
3.	Project	14	20%
4.	Assignments	5, and 13	10%
5.	Final Exam	16	40%

*Assessment Activities (i.e., Written test, oral test, oral presentation, group project, essay, etc.).

E. Learning Resources and Facilities

1. References and Learning Resources

Essential References	Game Programming in C++: Creating 3D Games (Game Design). By Sanjay Madhav. Publisher: Addison-Wesley Professional ;1 st edition (March28 ,2018.(ISBN-10 : 0134597206 ISBN-13 : 978-0134597201
Supportive References	Learning C# by Developing Games with Unity 2021: Kickstart your C# programming and Unity journey by building 3D games from scratch, 6th Edition. By Harrison Ferrone Publisher : Packt Publishing; 6th ed .edition (October 29, 2021)
Electronic Materials	**NA**
Other Learning Materials	**NA**

2. Required Facilities and equipment

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	1. Classroom (40 seats)
Technology equipment (projector, smart board, software)	**1.** White board, data show projector, computer and internet connection.
Other equipment (depending on the nature of the specialty)	**NA**

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of Teaching	Faculty, Program Leaders, and Advisory Board	Both Direct and Indirect
	Students	Indirect
Effectiveness of Students Assessment	Faculty, Program Leaders, Advisory Board, and Independent Opinion	Both Direct and Indirect
Quality of Learning Resources	Faculty, Students, and Advisory Board	Indirect
The Extent to which CLOs have been Achieved	Faculty, Program Leaders, Advisory Board, and Independent Opinion	Direct (as in section B) and Indirect/Surveys
	Students	Indirect
Other	-	-

Assessors (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)

Assessment Methods (Direct, Indirect)

G. Specification Approval

COUNCIL /COMMITTEE	
REFERENCE NO.	
DATE	