Course Specification
— (Bachelor)

Course Title: Game Programming

Course Code: SE

Program: Bachelor of Software Engineering

Department: Software Engineering

College: Faculty of Computers and Informatics

Institution: Al-Baha University

Version: 1.0

Last Revision Date: 23/4/2024

Table of Contents

A. General information about the course:

1. Course Identification

1. Credit hours: (??)

2. Course type

A.	☐University	☐College	☒ Department	☐Track	☐Others
B.	☐ Required		☒ Elective		

3. Level/year at which this course is offered: (??)

4. Course general Description:

This purpose of this course is to introduces game engine scripting, event driven, and data driven programming, game engine data structures, basic game related graphics and AI concepts. This course also introduction to the development process of computer games. It encompasses the introduction to conceptual game design, games programming as well as testing. The structure and functionality of games will be analysed. The use of game engines and game components, such as 2D sprites, 3D models, as well and sounds and text are introduced and applied. Students will be developing elementary 2D and 3D games as part of the assessment which should contribute to building of a portfolio. It also provides a strong foundation in software engineering, programming; and to work on all major aspects of developing games using the Unity engine. These two purposes are closely tied: a large part of video game development centers on programming and software development, and to be a game developer requires a high level of knowledge in a modern, object-oriented language. Through this course, students will learn programming by working on games, and will learn to write code to run every part of their game, from physics to AI to game servers.

5. Pre-requirements for this course (if any):

6. Pre-requirements for this course (if any):

7. Course Main Objective(s):

The main objective of this course will be to introduce students to the process of 3D game development while exploring the design of alternative games. Throughout this process students will use an iterative design and production process. While the course will contain lectures and discussion, a major portion of the class is lab work and experimentation. Game development, like all creative endeavors, can be a chaotic process. In the end it can be significantly rewarding, but the process will require much self-directed learning and problem solving. While there will be lab time in the course, students are expected to do the majority of their game development work outside of class.

2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	3	100%
2	E-learning	0	0
3	Hybrid • Traditional classroom • E-learning	0	0
4	Distance learning	0	0

3. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	**Lectures**	33
2.	**Laboratory/Studio**	0
3.	**Field**	0
4.	**Tutorial**	0
5.	**Others (specify)**	0
Total		33

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

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
1.0	Knowledge and understanding			
1.1	Write programs for 2D and 3D games.	K1	Lecture, Exercise,	Quizzes, Exams, Assignments
1.2	Program a game for a handheld device	K2	Lecture, Exercise,	Quizzes, Exams, Assignments
2.0	Skills			
2.1	Debug event driven programs.	S1	Exams, assignments, project	Exams, assignments, project
3.0	Values, autonomy, and responsibility			
3.1	Be able to program in a professional quality game engine.	V1	Assignment, project	Assignment, project

C. Course Content

No	List of Topics	Contact Hours
1.	Games Overview; History of Games. History and Generations of Video Games	3
2.	Platforms and Publishing. Industry Facts (ESA). Interface Innovations and Novelties, VR, AR.	3
3.	Game Genre Overview. Game Genres I. Game Genres II. Game Genres III.	3
4.	Principles of Game Design I: Layers of Game Design, Empathy, Motivation, Feedback, Agency, Pacing Principles of Game Design II: Immersion, Realism, Consistency, Freedom. Genre Specific Game Design Fundamentals I: Action, RPG, Adventure. Genre Specific Game Design Fundamentals II: Strategy, Simulation, Sports. Genre Specific Game Design Fundamentals III: Fighting, Casual, God, Educational, Puzzle, online.	3

5.	Trade-Offs in Game Design. Indicators of Poor Game Design. Game Development Cycle. Company Organization and Production Team. Pre-Production.	3
6.	Game Engines, Game Systems and Elements; Map and Level Editors.	3
7.	Games Marketing and Distribution. Legalities of Game Development. Ethical Issues in Video Games (Ethics, Culture, Violence in Games; Responsibilities; ESRB Ratings.)	4
8.	Industry Roles and Careers, Salary Survey. Quality of Life (then and now). What it takes to make an AAA title. Future of Video Games.	4
Total		**33**

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Assignments or Quizzes	3,5,7,9	20%
2.	Midterm Exam	6	20%
3.	Project	10	10%
3.	Final Exam	12	50%

*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	Reality is Broken (2011), by Jane McGonigal. Penguin, ISBN-978-0-14-312061-2 Articles (available through online sources) and games as assigned by the professor.
Supportive References	N/A
Electronic Materials	N/A
Other Learning Materials	N/A

2. Required Facilities and equipment

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	Classroom

Items	Resources
Technology equipment (projector, smart board, software)	**Software and Tools**
Other equipment (depending on the nature of the specialty)	

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	**Student**	- **Survey**
Effectiveness of Students assessment	**Lecturer**	- **Annual report**
Quality of learning resources	**Program Coordinator**	- **Survey** - **Evaluation of test Models** - **Standard sample**
The extent to which CLOs have been achieved		
Other		

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

Assessment Methods (Direct, Indirect)

G. Specification Approval

COUNCIL /COMMITTEE	Curriculum Committee
REFERENCE NO.	
DATE	28 April 2024