Department: Computer Science & Mathematics

Course Number & Name:	**CSC458– Game Programming**
Class Time and Location	Lectures: MWF 12:00 - 12:50 pm (online delivery)
Instructor name	Dr. Hussein Bakri
Course Coordinator	
Credits Hours	3
Semester	Spring 2022

INSTRUCTOR
Email: hussein.bakri@lau.edu.lb
Office:
Office Hours: F 5 – 7pm or by appointment.

CURRENT CATALOG DESCRIPTION
This course introduces software technologies related to game development, as well as the art and design principles needed to create compelling games. Topics include game history and taxonomy, game play design and the components of a video game experience, software architecture for games, intro to 3D graphics and stereoscopic computer graphics, hardware architecture of contemporary video game platforms, human physical and perceptual limits, game artificial intelligence, multiplayer game design, game physics and intro to real time shading effects.

PRE- OR CO-REQUISITE
CSC310 Data Structures & Algorithms.

TEXTBOOK AND REFERENCES
References will be given to students during the course.

COURSE TYPE
Required ☒   Major's **E**lective ☐   General Elective ☐

COURSE LEARNING OUTCOMES
To become familiar with the fundamentals of computer graphics and Game Programming
To learn how to use the C# library in Game Engines
To be able to produce games from idea to deployment

STUDENT OUTCOMES ADDRESSED IN THIS COURSE

A student completing this course should:
● Appreciate computer graphics and game programming.
● Have a thorough overview of computer graphics and game programming.
● Implements games using the C# library as well as some open-source game engines.
● Demonstrate the ability of building and modifying games and simulators by applying the acquired knowledge.

COURSE GRADING AND PERFORMANCE CRITERIA
Attendance, class work/participation	10%
Homeworks	10%
Project 1 + demos	25%
Project 2 + demos	25%
Final Exam	30%

GUIDELINES FOR THE GRADING SYSTEM

Grade	Quality Points	Guidelines over 100
A	4	≥ 90
A-	3.67	87 – 89
B+	3.33	83 – 86

B	3.0	80 – 82
B-	2.67	77 – 79
C+	2.33	73 – 76
C	2	70 – 72
C-	1.67	67 – 69
D+	1.33	63 – 66
D	1	60 – 62
F	0	≤ 59
P, NP, U ,W, I	No Quality Points	

TOPICS COVERED IN THE COURSE

1. Introduction to Game Engines
2. Unity 3D
3. Geometrical Transformations (2D and 3D).
4. Design Patterns and Singletons
5. Coroutines and MultiThreading
6. Graphics features such as Cameras, Lighting, Particle Systems, Models, textures
7. Real-Time Physics
8. Animations
9. Finite State Machines (FSM)
10. Raycasting
11. Navigation Mesh, Pathfinding, and Intro to AI
12. 2D and Isometric views
13. PostProcessing
14. Pooling and Memory Management
15. Audio
16. UI and User Interactivity
17. Serialization
18. Persistence of data (saving and loading data)
19. Game Design Document & Technical Design Document

ASSESSMENT PLAN FOR THE COURSE
Embedded assessment.

UNIVERSITY ATTENDANCE POLICY

1. Students are expected to attend all classes.
2. For valid reasons, students may miss classes for a maximum that is equivalent to two regular weeks.
3. When exceeding the maximum number of absences, it is the instructor's prerogative to ask the concerned student to stop attending and drop the course. In this case, it is the student's responsibility to drop the course, otherwise a grade of "F" or "NP" will be given.
4. In exceptional justified cases (long illness, etc…), where absences exceed the maximum, the student has to petition to the department Chair to be allowed to stay in the course.
5. Students are held responsible for all the material presented in the classroom, even during their absence.

POLICY ON CHEATING AND PLAGIARISM
Students caught cheating on an exam receive a grade of zero on the exam in their first cheating attempt and receive a warning. Students caught cheating for the second time will receive a grade of "F" in the course and another warning. Plagiarism on assignments and projects is a very serious offense. If plagiarism is detected, a student will have a zero grade, like the cheating case, and a warning. On committing a second offence of plagiarism, an F on the course will be given and another warning. Please carefully review the student code of conduct – academic violations.

Students are expected to attend all classes.

Classes will be via WebEX. Occasionally we might use Zoom or other software in case the university servers are down for whatever reasons.

Blackboard & emails will be the platforms for all our official communications including announcements, lecture notes, projects, homeworks, and any other pertinent material. You are recommended to follow up on these platforms on a daily basis for all the course updates. You are responsible for all announcements via emails. In similar vein, you are responsible for all the material posted on Blackboard.

I _might_ create a Discord server or a Slack channel for faster/instant communications with students. They are like chat systems/Conversations systems that do not involve any usage of phone numbers which is more private & convenient for educational settings. In this case, you are also responsible for all the announcements made on the public channels of these chat platforms.

WITHDRAWAL POLICY

       WI is equivalent to Early Withdrawal

       WP is equivalent to Withdrawal/Pass

       WF is equivalent to Withdrawal/Fail

1. A student who withdraws after the Drop/Add period and by the end of the 5th week of classes (10th day of classes for Summer Modules) will obtain a "WI" on that particular course. The student may process such request directly through the Registrar's Office.

2. A student who withdraws from a course between the 6th week and the end of the 10th week of classes (18th day of classes for Summer Modules) will receive either a "WP" or a "WF". "WP" or "WF" will be determined by the instructor based on the achieved academic performance in that course till the time of withdrawal.

3. The "WI" and the "WP" will not count as a Repeat; whereas the "WF" will count as a Repeat.

4. "WI", "WP" and "WF" will not count towards the GPA calculation.

Deadline for the "WP" and "WF" withdrawal from courses: check university calendar (It is the student's responsibility to drop the course)

https://www.lau.edu.lb/calendar/20212022/

WI is equivalent to Early Withdrawal: Deadline February 21, 2022
WP is equivalent to Withdrawal/Pass: Deadline March 29, 2022
WF is equivalent to Withdrawal/Fail: Deadline March 29, 2022

STUDENT CODE OF CONDUCT – ACADEMIC VIOLATIONS

The following table defines the sanction(s) associated with each violation. In some cases and when the violation is too general, a range of sanctions is set for the pertinent committee to choose from depending on the specifics of each case. As for the second offense, the set sanctions apply regardless whether the violation has taken place in the same course or a different one, within the same semester or not.

Code #	Violation	First Offense	Second Offense
Cheating			
2.2.1	Using material or equipment (including mobile phones, electronic tablets, i-pads, calculators, and other devices) that is not authorized by the instructor in an examination, project, or graded assignment	zero on the deliverable with a warning	F on the course with a warning
2.2.2	Cheating, copying, collaborating with or aiding	zero on the	suspension

Code #	Violation	First Offense	Second Offense
	another Student in a manner not permitted by the instructor on an examination, project, or other graded assignment	deliverable with a warning	
2.2.3	Distributing or aiding in the distribution of previous exams without authorization of the instructor	double warning – suspension	suspension – expulsion
2.2.4	Stealing, reproducing, or circulating an examination or other graded assignment before it has been administered	suspension	expulsion
2.2.5	Impersonating another Student or allowing another Student to impersonate one's self during an examination, presentation, or other graded assignment	suspension for both	expulsion
2.2.6	Impersonating an assistant, staff member, or faculty member for the purpose of (a) proctoring examinations without authorization or permission or (b) obtaining confidential information regarding coursework or examinations	suspension – expulsion	expulsion
2.2.7	Receiving, purchasing or selling a project, paper, or any academic document and presenting it as work other than that of the author	suspension – expulsion	expulsion
2.2.8	Submitting identical papers or coursework for credit in more than one class without the permission of the instructor	zero on the deliverable with a warning	F on the course with a warning
Plagiarism and Copyright Violations			
2.2.9	Failing to attribute language or ideas to their original source by not crediting the original author with an appropriate acknowledgement or citation	zero on the deliverable with a warning	F on the course with a warning
2.2.10	Using photocopied or electronic copies of textbooks, compact disks, films, music, online course materials, and other content beyond the fair use policy within University Premises	warning	double warning
2.2.11	Using copyrighted materials, including in written research reports and papers, without obtaining required permission, if any, from the rights holder	warning	double warning
Unauthorized Sale, Distribution, or Use of Course Materials			
2.2.12	Recording any lecture or presentation for personal use or public distribution without the prior consent of the course instructor. This applies to the unauthorized use of any medium including but not limited to mobile phones, electronic tablets, i-pads recorders, films, and other devices	warning	double warning
2.2.13	Selling academic materials by any Student, club, or group. This includes but is not limited to lectures, course recordings, class notes, and previous exams	warning	double warning

COURSE ONLINE EVALUATIONS

In order to improve the effectiveness of the educational process, all students are expected to submit their course evaluations by the last day of classes.

Students who fail to complete the evaluation of ALL registered courses by the set deadline:

1. will not be able to access their course grades from Banner or Portal until two weeks after the end of the final exams period; and

2. will not be able to request transcripts.

The anonymity of the process and the students will be maintained at all times.

TIPS FOR SUCCESS

- **Attending the classes is mandatory.**
- **Deadlines** for the homeworks and projects **must be respected**.
- **Good time management is essential.**
- **Give the course all the time and dedication it needs.**
- Make-ups and Incomplete: students are not automatically entitled to make-ups; F will be given until reasons (in writing and within one week of absence) are presented and approved.
- You are responsible for all business conducted and announcements made during any scheduled class period, by email or posted over blackboard.
- No mobile phones, electronic gadgets or laptops allowed in the final exam.