HOUSTON COMMUNITY COLLEGE

Digital Gaming and Simulation

Course Syllabus

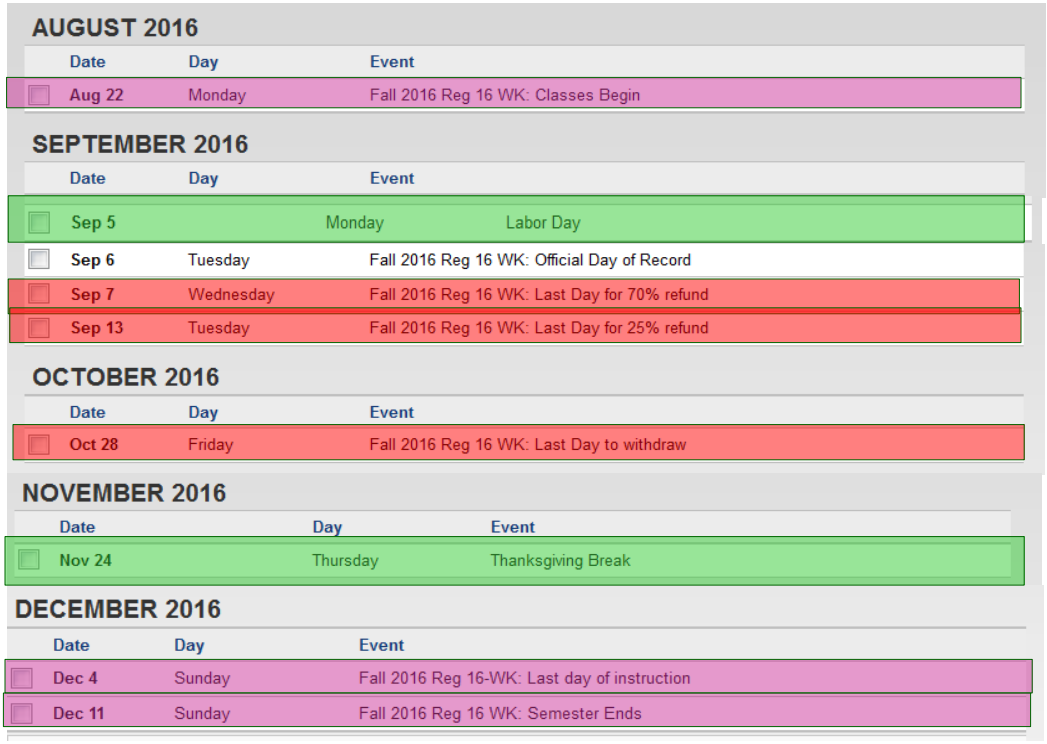
GAME 2319 - Game Engine

Semester with Course Reference Number (CRN)	Fall 2016 CRN: 16125
Instructor contact information (phone number and email address)	Name: **Dr. Reni Abraham** Telephone: (713) 718 – 2067 Email: reni.abraham@hccs.edu (prefer all email communication done through Canvas email service, Inbox)
Office Location and Hours	West Loop (5601 West Loop South, Houston, TX 77081), Room C256 Office hours by appointment.
Course Location/Times	West Loop Campus, Room C121 TuTh 12:00PM – 2:30PM
Course Semester Credit Hours (SCH) (lecture, lab) If applicable	Credit Hours: 3 Lecture Hours: 2 Laboratory Hours: 4 External Hours:
Total Course Contact Hours	96.00
Course Length (number of weeks)	16 weeks
Type of Instruction	Face-to-face and **16** hours of web instruction (Canvas)
Course Description:	Explore game engines and their core functionalities such as rendering engine for 2D or 3D graphics, physics engine, collision detection, sound, scripting, animation, artificial intelligence, networking, streaming, and memory management.
Course Prerequisite(s)	• GAME 2347 or COSC 1437 or GAME 1343
Academic Discipline/CTE Program Learning Outcomes	1. Prepare a design document for a solo game 2. Develop a game or simulation based on the solo design documentation 3. Jointly develop the design documentation for a team project 4. Develop a game or simulation based on the team design documentation
Course Student Learning Outcomes (SLO): 4 to 7	1. For the student to understand the structure of a typical game team and understand the structure of a game engine 2. Different game engines based on genre 3. Understanding of tools used to build a game engine 4. Management of resources used by the game engine in the production of the game 5. How the game loop is continued and how real time simulation is accomplished. 6. How to work with human interface devices. 7. How to deploy, use and understand results of debugging and development tools.

	8. How rendering is accomplished and the steps in the animation pipeline 9. What are the elements of a collision detection system and how rigid body dynamics affect the system 10. What a game play system is and the components of the foundation system
Learning Objectives (Numbering system should be linked to SLO - e.g., 1.1, 1.2, 1.3, etc.)	• For the student to understand the structure of a typical game team and understand the structure of a game engine • Different game engines based on genre • Understanding of tools used to build a game engine • Management of resources used by the game engine in the production of the game • How the game loop is continued and how real time simulation is accomplished. • How to work with human interface devices. • How to deploy, use and understand results of debugging and development tools. • How rendering is accomplished and the steps in the animation pipeline • What are the elements of a collision detection system and how rigid body dynamics affect the system • What a game play system is and the components of the foundation system
SCANS and/or Core Curriculum Competencies: If applicable	• For the student to understand the structure of a typical game team and understand the structure of a game engine • Different game engines based on genre • Understanding of tools used to build a game engine • Management of resources used by the game engine in the production of the game • How the game loop is continued and how real time simulation is accomplished. • How to work with human interface devices. • How to deploy, use and understand results of debugging and development tools. • How rendering is accomplished and the steps in the animation pipeline • What are the elements of a collision detection system and how rigid body dynamics affect the system • What a game play system is and the components of the foundation system
Instructional Methods	Lecture – Lab, web enhanced
Student Assignments	Refer to Canvas
Student Assessment(s)	Refer to Canvas
Instructor's Requirements	• NO late assignments will be give n credit, even if you are absent, unless **previous arrangements** were made with the instructor. Manage your personal life (work, playing games, etc.) wisely.
Program/Discipline Requirements: If applicable	• Students are expected to be on time for class. • If a student is absent for any reason, it is the student's responsibility to find out what was covered in class. • Students will be expected to develop programs where some will be games and simulations using C#. A lot of self-motivation and enthusiasm is needed to complete the work. • Students are not expected to buy their own software. The open lab has all the software needed for the students to complete the work. It is the responsibility of the students to use class time wisely and if work is not completed they are expected to go to open lab and complete the work.

	• TURN OFF cell phones or place phones on vibrate, away from the desk. • **NO surfing the web unless for class work.** • **At NO time should a student be playing games (PC or portable device) during class time.** • Students will be expected to turn in all work with profession quality. • Students will be expected to be self-motivated and enthusiastic about the work to be completed. • Students will be expected to be encouraging and professional at all times. • If there is a presentation requirement, students will be expected to be in professional attire for all presentations. • Students are expected to respect constructive comments from peers.
HCC Grading Scale:	A = 100- 90 — 4 points per semester hour B = 89 - 80: — 3 points per semester hour C = 79 - 70: — 2 points per semester hour D = 69 - 60: — 1 point per semester hour 59 and below = F — 0 points per semester hour FX (Failure due to non-attendance) — 0 points per semester hour IP (In Progress) — 0 points per semester hour W (Withdrawn) — 0 points per semester hour I (Incomplete) — 0 points per semester hour AUD (Audit) — 0 points per semester hour IP (In Progress) is given only in certain developmental courses. The student must re-enroll to receive credit. COM (Completed) is given in non-credit and continuing education courses. FINAL GRADE OF FX: Students who stop attending class and do not withdraw themselves prior to the withdrawal deadline may either be dropped by their professor for excessive absences or be assigned the final grade of "FX" at the end of the semester. Students who stop attending classes will receive a grade of "FX", compared to an earned grade of "F" which is due to poor performance. Logging into a DE course without active participation is seen as non-attending. Please note that HCC will not disperse financial aid funding for students who have never attended class. Students who receive financial aid but fail to attend class will be reported to the Department of Education and may have to pay back their aid. A grade of "FX" is treated exactly the same as a grade of "F" in terms of GPA, probation, suspension, and satisfactory academic progress. To compute grade point average (GPA), divide the total grade points by the total number of semester hours attempted. The grades "IP," "COM" and "I" do not affect GPA.

Instructor Grading Criteria	<table><tr><th>Items</th><th>Percent</th></tr><tr><td>2D-Project One – [Solo]</td><td>50%</td></tr><tr><td>2D-Project Two – [Small Group]</td><td>75%</td></tr><tr><td>TOTAL</td><td>100%</td></tr></table>Students with all assignments submitted, all quizzes taken, and with 90% or higher attendance would be eligible for a 2% curve at the end of the semester.
Instructional Materials	• External Hard Drive
HCC Policy Statement	
Access Student Services Policies on their Web site:	http://hccs.edu/student-rights
EGLS3 -- Evaluation for Greater Learning Student Survey System	At Houston Community College, professors believe that thoughtful student feedback is necessary to improve teaching and learning. During a designated time near the end of the term, you will be asked to answer a short online survey of research-based questions related to instruction. The anonymous results of the survey will be made available to your professors and department chairs for continual improvement of instruction. Look for the survey as part of the Houston Community College Student System online near the end of the term.

HCC 16-week Calendar	
Final Exam Schedule	**Tuesday, Dec. 6, 2016 at 12:00pm-2:30pm**

Tentative Course Calendar

Week		Topic	
1	Aug. 23, 25	Game Design Document	
2	Aug. 30, Sep. 1	Game Technical Document	
2	**DGS Orientation** **Friday, September 2, 2016 at 1:00pm in room C108** **MANDATORY**		
3	Sep. 6, 8	Project One: Solo	Brainstorming Game Design Document
4	Sep. 13, 15		Game Design Document – Completed Game Technical Document
5	Sep. 20, 22		Production
6	Sep. 27, 29		
7	Oct. 4		**Game Trailer** **Bug Testing – Document & Fix**
7	Oct. 6		**Pitch the Game**
8	Oct. 11, 13	Project Two: Small Group	Brainstorming Game Design Document
9	Oct. 18, 20		Game Design Document – Completed Game Technical Document
10	Oct. 25, 27		Production
11	Nov. 1, 2		
12	Nov. 8, 10		
12	**DGS Spring Advising** **Friday, November 11, 2016 at 1:00pm in room C108** **MANDATORY**		
13	Nov. 15, 17	Project Two	**Game Trailer** **Bug Testing – Document & Fix**
14	Nov. 22		
14	**Thanksgiving Holidays Nov. 24-27, 2016**		
15	Nov. 29, Dec. 1	Project Two	**Pitch the Game**
15	**DGS PROJECT SHOWCASE** **Friday, Dec. 2, 2016, 6:00pm-8:00pm** **ATTENDANCE MANDATORY!!! Professional Attire!!**		
16	Dec. 6	**Postmortem** **Tuesday, Dec. 6, 2016 at 12:00pm-2:30pm**	