Advanced Game Programming COSC 4325.001
Department of Computing Sciences
Spring 2019

A. COURSE INFORMATION

Course number/section:  COSC 4325/001
Class meeting time:  MWF 10:00-10:50 am
Class location:  CS - 111
Course Website:  bb9.tamucc.edu (Blackboard)

B. INSTRUCTOR INFORMATION

Instructor:  Ismail Alihan Hadimlioglu
Office location:  CI - 339
Office hours:  MW 2:00pm - 4:30pm
Telephone:  361-825-3688
E-mail:  ismail.hadimlioglu@tamucc.edu
Appointments:  To schedule your visits properly, please send me an e-mail beforehand

C. COURSE DESCRIPTION

Catalog Course Description
This course will introduce advanced concepts for game programming to the student. Topics will include game physics, game AI, advanced shaders, 3D techniques, multiplayer techniques, and networking. The course will contain lectures and hands-on labs.

Extended Course Description
Through this course you will be able to build on your Game Programming knowledge by trying to implement a Game Engine as a team. This course is vital for students who wish to be a video game developer. Your own game engine will also provide a huge boost to your resume.

D. PREREQUISITES AND COREQUISITES

Prerequisites
COSC 3325 - Game Programming

E. REQUIRED TEXTBOOK(S), READINGS AND SUPPLIES

Required Textbook(s)

Supplies
None
F. STUDENT LEARNING OUTCOMES AND ASSESSMENT

Assessment is a process used by instructors to help improve learning. Assessment is essential for effective learning because it provides feedback to both students and instructors. A critical step in this process is making clear the course’s student learning outcomes that describe what students are expected to learn to be successful in the course. The student learning outcomes for this course are listed below. By collecting data and sharing it with students on how well they are accomplishing these learning outcomes students can more efficiently and effectively focus their learning efforts. This information can also help instructors identify challenging areas for students and adjust their teaching approach to facilitate learning.

By the end of this course, students should be able to:

1. Evaluate components of a typical video game engine
2. Function effectively in your team to implement a video game engine
3. Apply software development and documentation principles as you build the game engine
4. Evaluate efficiency of a video game engine
5. Apply knowledge of mathematics to implement and design various components of a game engine

G. INSTRUCTIONAL METHODS AND ACTIVITIES

New material and concepts will be presented in the classroom through the use of lecture, tutorials and sample programs. Programming assignments will be used to review and reinforce topics covered in the classroom. From time to time online lectures and videos might be assigned to students to show some sample implementations.

H. MAJOR COURSE REQUIREMENTS AND GRADING

To assess theoretical knowledge, two midterms will be provided to the students.

The course utilizes a team project. Individuals in this single team will focus on different aspects of a video game engine and implement an engine from scratch.

I reserve the right to change any assignment, grading scheme, or any other course requirements. I will announce such changes in a timely manner during regular class hours and through Blackboard announcements.

<table>
<thead>
<tr>
<th>ACTIVITY</th>
<th>% of FINAL GRADE</th>
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<tbody>
<tr>
<td>Midterms</td>
<td>20% each (40% total)</td>
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<tr>
<td>Team Project</td>
<td>30%</td>
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<tr>
<td>Assignments</td>
<td>20%</td>
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<tr>
<td>Online Tasks</td>
<td>10%</td>
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## I. COURSE CONTENT/SCHEDULE

<table>
<thead>
<tr>
<th>DATE</th>
<th>TOPIC</th>
<th>CHAPTER(S)</th>
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<tbody>
<tr>
<td>January 14 – January 18</td>
<td>Introduction to 4325, Setup</td>
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<tr>
<td>January 21 - January 25</td>
<td>Intro to Game Engines</td>
<td>Chapter 1 &amp; 2</td>
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<td>January 28 - February 1</td>
<td>Fundamentals of Development</td>
<td>Chapter 3</td>
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<td>February 4 - February 8</td>
<td>Engine Support Systems</td>
<td>Chapter 5</td>
</tr>
<tr>
<td>February 11 - February 15</td>
<td>Game Loop and Real-Time Simulation</td>
<td>Chapter 7</td>
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<tr>
<td>February 18, Monday</td>
<td>Exam I Review / Classroom Discussion</td>
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<tr>
<td>February 20, Wednesday</td>
<td>Exam I</td>
<td></td>
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<tr>
<td>February 25 – March 1</td>
<td>Human Interface Devices</td>
<td>Chapter 8</td>
</tr>
<tr>
<td>March 4 - March 8</td>
<td>Tools for Debugging and Development</td>
<td>Chapter 9</td>
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<td>March 11 - March 15</td>
<td>Spring Break</td>
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<tr>
<td>March 18 - March 22</td>
<td>The Rendering Engine</td>
<td>Chapter 10</td>
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<tr>
<td>March 25 - March 29</td>
<td>Animation Systems</td>
<td>Chapter 11</td>
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<tr>
<td>April 1, Monday</td>
<td>Exam II</td>
<td></td>
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<tr>
<td>April 3, Wednesday</td>
<td>Collision and Rigid Body Dynamics</td>
<td>Chapter 12</td>
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<td>April 8 - April 12</td>
<td>Audio</td>
<td>Chapter 13</td>
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<tr>
<td>April 15 - April 19</td>
<td>Gameplay Systems</td>
<td>Chapter 14 &amp; 15</td>
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<tr>
<td>April 22 - April 26</td>
<td>Review</td>
<td></td>
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<tr>
<td>May 1, Wednesday</td>
<td>Final Presentation/Demo</td>
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Note: Changes in this course schedule may be necessary and will be announced to the class by the Instructor.
J. COURSE POLICIES

Attendance/Tardiness
Success in this course depends on your attendance and participation. I do not take attendance every day the class meets yet I might decide to take attendance at some designated days. If you are not in the room in your seat before I start lecturing, you will not be counted as present that day. Attendance and active participation is essential to successfully completing this course. You are expected to know all material presented in class.

Late Work and Make-up Exams
If you notify me immediately about serious and unavoidable circumstances that can be documented (e.g., with a letter from your doctor), I will discuss options for replacing the missing grade. Excused absences due to school sponsored activities, religious observations, family events, etc. should be discussed in advance. Makeup exams will be different from regular exams.
This course uses a late work policy. The following grading scheme will be applied for late labs, assignments, projects and any other submissions:

- 0-1 day: -10
- 1-2 days: -20
- 2-4 days: -40
- 4 days+: No Grade

Extra Credit
Extra credit is not offered so the grading scheme mention in Section H will be used.

Cell Phone Use
You must silence your devices before the class begins.

Laptop Use
You might use your laptops for course-related things such as checking the presentations on your device. You should not work on your labs or assignments in class. The only way you might utilize your laptop is to check the slides I am presenting in class.

Food in Class
Eating in class is not valid so you should eat before or after the lectures outside the class. It is, however, valid to drink water, coffee, sodas, etc. in class unless our classroom is a designated lab.

Missed Exam
It is your responsibility to attend the exams on time. If you miss an exam with no excuse no makeup exam will be provided.

Participation
Participation is vital for your success and therefore, make sure you attend and participate the discussions in class.
K. COLLEGE AND UNIVERSITY POLICIES

- **Academic Integrity (University)**
  University students are expected to conduct themselves in accordance with the highest standards of academic honesty. Academic misconduct for which a student is subject to penalty includes all forms of cheating, such as illicit possession of examinations or examination materials, falsification, forgery, complicity or plagiarism. (Plagiarism is the presentation of the work of another as one’s own work.) In this class, academic misconduct or complicity in an act of academic misconduct on an assignment or test will result in a failing grade.

- **Classroom/Professional Behavior**
  Texas A&M University-Corpus Christi, as an academic community, requires that each individual respect the needs of others to study and learn in a peaceful atmosphere. Under Article III of the Student Code of Conduct, classroom behavior that interferes with either (a) the instructor’s ability to conduct the class or (b) the ability of other students to profit from the instructional program may be considered a breach of the peace and is subject to disciplinary sanction outlined in article VII of the Student Code of Conduct. Students engaging in unacceptable behavior may be instructed to leave the classroom. This prohibition applies to all instructional forums, including classrooms, electronic classrooms, labs, discussion groups, field trips, etc.

- **Statement of Civility**
  Texas A&M University-Corpus Christi has a diverse student population that represents the population of the state. Our goal is to provide you with a high quality educational experience that is free from repression. You are responsible for following the rules of the University, city, state and federal government. We expect that you will behave in a manner that is dignified, respectful and courteous to all people, regardless of sex, ethnic/racial origin, religious background, sexual orientation or disability. Behaviors that infringe on the rights of another individual will not be tolerated.

- **Deadline for Dropping a Course with a Grade of W (University)**
  I hope that you never find it necessary to drop this or any other class. However, events can sometimes occur that make dropping a course necessary or wise. Please consult with your academic advisor, the Financial Aid Office, and me, before you decide to drop this course. Should dropping the course be the best course of action, you must initiate the process to drop the course by going to the Student Services Center and filling out a course drop form. Just stopping attendance and participation WILL NOT automatically result in your being dropped from the class. Please consult the Academic Calendar (http://www.tamucc.edu/academics/calendar/) for the last day to drop a course.

- **Grade Appeals (College of Science and Engineering)**
  As stated in University Procedure 13.02.99.C2.01, Student Grade Appeal Procedures, a student who believes that he or she has not been held to appropriate academic standards as outlined in the class syllabus, equitable evaluation procedures, or appropriate grading, may appeal the final grade given in the course. The burden of proof is upon the student to demonstrate the appropriateness of the appeal. A student with a complaint about a grade is encouraged to first discuss the matter with the instructor. For complete details, including the responsibilities of the parties involved in the process and the number of days allowed for completing the steps in the process, see University Procedure 13.02.99.C2.01, Student Grade Appeal Procedures. These documents are accessible through the University Rules website at http://www.tamucc.edu/provost/university_rules/index.html, and the College of Science and Engineering Grade Appeals webpage at http://sci.tamucc.edu/students/GradeAppeal.html. For assistance and/or guidance in the grade appeal process, students may contact the chair or director of the appropriate department or school, the Office of the College of Science and Engineering Dean, or the Office of the Provost.

- **Disability Services**
  The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please call (361) 825-5816 or visit Disability Services in Corpus Christi Hall 116.
If you are a returning veteran and are experiencing cognitive and/or physical access issues in the classroom or on campus, please contact the Disability Services office for assistance at (361) 825-3816.

http://disabilityservices.tamucc.edu/

- **Statement of Academic Continuity**
  In the event of an unforeseen adverse event, such as a major hurricane and classes could not be held on the campus of Texas A&M University–Corpus Christi; this course would continue through the use of Blackboard and/or email. In addition, the syllabus and class activities may be modified to allow continuation of the course. Ideally, University facilities (i.e., emails, web sites, and Blackboard) will be operational within two days of the closing of the physical campus. However, students need to make certain that the course instructor has a primary and a secondary means of contacting each student.

L. **OTHER INFORMATION**

- **Academic Advising**
  The College of Science & Engineering requires that students meet with an Academic Advisor as soon as they are ready to declare a major. The Academic Advisor will set up a degree plan, which must be signed by the student, a faculty mentor, and the department chair. Meetings are by appointment only; advisors do not take walk-ins. Please call or stop by the Advising Center to check availability and schedule an appointment. The College’s Academic Advising Center is located in Center for Instruction 350 or can be reached at (361) 825-3928.

**GENERAL DISCLAIMER**

I reserve the right to modify the information, schedule, assignments, deadlines, and course policies in this syllabus if and when necessary. I will announce such changes in a timely manner during regularly scheduled lecture periods.