Norco College

A college of the Riverside Community College District

**GAM-51 – Game Mechanics and Simulation**

**Spring 2018**

**Instructor: Jessiah Ruiz**  **Email: Jessiah.Ruiz@rccd.edu**

**Office/Phone: TMA**  **Office Hours: TBA**

**Class Hours:** Mon, Wed 3:45-5:50pm **Class Location: IT 202**

**Section Code:** 33720

**PREREQUISITE/ADVISORY:**

MAT-35 and CIS/CSC-5 or GAM/CIS-50.

**COURSE DESCRIPTION**:

Introduction to principles and techniques in the areas of mathematics and physics as they apply to various areas of Game Programming. Course focuses on specific concepts in order to provide a specialized, more condensed curriculum about core fundamentals in game engine programming and gameplay scripting.

**STUDENT LEARNING OUTCOMES**:

Upon successful completion of the course, students should be able to:

1. Demonstrate understanding of basic physics and math formulas.

2. Demonstrate ability to translate mathematical/physics equations into functional code. 3. Understand concepts in collision detection and construct it in practical application.

4. Understand concepts in forces, friction, and mass. 5. Understand rotation, torque and center of mass.

6. Understand composite objects and relational/hierarchical dependencies.

7. Use trigonometry, linear algebra, and geometry to solve software related problems.

8. Build applications driven by mathematics and physics concepts in an architecturally sound format.

**TEXTBOOK REQUIREMENTS**:

None

**GRADING: (The number of assignments and quizzes is approximate.)**

**10 Homework X 8 = 100 90-100 = A**

**1 Midterm = 100 80-90 = B**

**1 Final = 100 70-80 = C**

**Lab = 100 60-70 = D**

**60-70 = F**

**Apron total its = 400**

**COURSE POLICIES**

**Drop:** It is the student’s responsibility to withdraw officially from a course.

**Important:** Any student who misses 3 classes may be dropped from the course.

Absence or Late: A student who will be late or absent, must notify the instructor prior to class by e-mail or the instructor's mail box, in order to make up a quiz or exam. NO ADVANCE NOTIFICATION, NO MAKE-UP.

**Honesty Policy:**  Students enrolled in this course are expected to maintain the highest standards of academic integrity and honesty. All turned-in assignments should be exclusive and original work of each student. While students are encouraged to discuss and help each other with homework, copying another student’s homework is cheating. Any copying, plagiarism, or other form of cheating on exams, quizzes, or homework, may subject a student to failure of the assignment/quiz/exam submitted, and/or failure from this course. In addition, other sanctions stipulated by school disciplinary proceedings may apply. If two homework assignments are copies, both students will be considered equally culpable. Such excuses as “living in the same house” or “using the same computer” are not valid excuses. All copying is cheating.

**Drop:** If a student wishes to drop this course, it is the student's responsibility to know the last day to drop, and to turn in the necessary Drop form before the deadline.

Computer Usage in Classroom and Computer

**Lab:** No food or drink allowed. Visiting or downloading objectionable / offensive graphic or text material from the Web is prohibited and cause for failure from the course and / or other disciplinary action.

**Phones / IPods / MP3 players:** Cellular phones, pagers, MP3 players, etc., must be turned off and put away during class. No texting or using phones for any reason during class sessions. Devices with ear pods, like IPods, MP3 players, etc., are not allowed at any time.

**Lectures:** Computer screens must be off during lecture.

Using your computer during lecture is distracting to other students.

**CIS Computer Lab:** Lab hours change each semester. Check with the computer lab for hours.

**CHANGES TO SYLLABUS**

This syllabus is subject to change made by the instructor and posted or distributed during any class session

**Adding this class**

Students wanting to add this section will need to be provided with a four digit add/authorization code. If you receive an add authorization code, you are responsible for completing the add process ***before*** the deadline to add. This deadline can be found in the Schedule of Classes available online. Add codes can be processed through your WebAdvisor account. **If you fail to add the class by the deadline, you are not officially enrolled and college policy prohibits you from continuing to attend class.**

Be aware that your failure to pay fees/fines, to document prerequisites, to clear academic holds, or to navigate personal problems may hinder you from adding this section. Please allow sufficient time to take care of these issues ***before the deadline to add***. Adding this course after the published deadline will require documented extenuating circumstances involving severe illness, accident, or death.

**The use of an add/authorization code issued to another student violates the Student Code of Conduct and the student will be referred to the Dean of Student Life for disciplinary action**. **The unauthorized use of an add code is grounds for removal from the course.**

**Dropping this class**

You may withdraw from this course by using WebAdvisor prior to the drop deadline. The deadline is available on WebAdvisor by selecting “My Class Schedule/Deadlines” after logging in. If there is a hold restricting use of WebAdvisor for this purpose, you may bring a completed ADD/DROP card to the Admissions counter of the college and complete the process there. It is the student’s responsibility to drop this class should he/she decide no longer to attend.

**ACADEMIC INTEGRITY:**

Norco College is committed to maintaining academic integrity throughout the college community. Academic dishonesty is a serious offense that can diminish the quality of scholarship, the academic environment, the academic reputation and the quality of a Norco College degree. The Student Handbook states:

In cases of academic dishonesty by a student, a faculty member may

1. Reduce the score on test(s) or assignment(s);
2. Reduce the grade in the course;
3. Fail the student in the course if the weight of the test(s) or assignment(s) warrants course failure;
4. Recommend suspension from the course (see further details in Student Handbook).

Academic dishonesty includes but is not limited to:

1. Plagiarism – the intentional presentation of words, ideas or work of others as one’s own. This includes but is not limited to: copying homework, using a work or portion of a work written or created by another but not crediting the source and using one’s own work completed in a previous class for credit in another class without permission. The usual consequence of academic dishonesty is failure of the course and referral of the case to the appropriate dean for additional disciplinary action. Students may discuss assignments but are expected to complete all work independently.
2. Cheating During Examinations – includes, but is not limited to, unauthorized electronic assistance or devices, copying from another, looking at another student’s exam and opening books when not authorized.  
   Any of these practices could result in charges of academic dishonesty.

**CIS/GAM Lab**:

As a member of this class, you are required to attend the CIS/GAM lab each week. At the lab you will supplement the learning in the primary classroom through assignments generated by your instructor. In addition, you have the opportunity to interact one-on-one with a CIS/GAM faculty member. All CIS/GAM lab classroom policies and procedures are covered in the contract for that area. You will fill out the contract in the CIS/GAM lab classroom during the first week of classes. Please report to the CIS/GAM lab in the Learning Resource Center (LRC) according to the day and time you select during your orientation.

**Accommodations for Disabilities**

Norco College provides services to students with disabilities through the Disability Resource Center (DRC); located in the Center for Student Success Building. To request academic accommodations due to a disability, please visit the DRC or contact the DRC staff at 372-7070. A DRC staff member will confidentially review your concerns with you to determine any required accommodations. Once your accommodations are approved through DRC, please bring your DRC documentation(s) to me so that we may discuss your accommodations.

**Violence on Campus**

Norco College does not tolerate any violence or implied violence. A threat of violence includes any behavior that by its very nature could be interpreted by a reasonable person as intent to cause physical harm to self, another individual, or property. Violence or the threat of violence against or by any **student** or employee of the District or any other person is unacceptable **and will not be tolerated**. Should an individual on District property, who is not an employee or student, or a student or employee of the District, demonstrate or threaten violent behavior, s/he may be subject to criminal prosecution (AP 3510 Workplace Violence and Safety).

If you are a victim of any violent, threatening, or harassing conduct, any witness to such conduct, or anyone receiving a report of such conduct, [. . .] shall immediately report the incident to his/her supervisor of College Safety and Police (951- 222-8171) (AP 3510 Workplace Violence and Safety).

**PART C: OPTIONAL INCLUSIONS**

**DECLARING A PROGRAM OF STUDY**

Declaring your Program of Study in WebAdvisor is important.  Norco College contacts students that have declared a certificate/degree for internships and job opportunities in that specified field.  Also, by declaring your certificate/degree goal, you can use the “Academic Review” tool in WebAdvisor which will calculate exactly what classes you still need to take to finish your certificate/degree and graduate.   If you have questions about a field of study, please schedule an appointment with a counselor to discuss this important issue.

**STUDENT SERVICES**

Norco College offers excellent services for all students. These services include help with disability accommodations, financial aid, finding jobs, academic counseling, health services, veterans services, tutoring and more. Here is a partial list of resources available to you:

• **Disability Resource Center (DRC),** Center for Student Success, (951) 372-7070, [drc@norcocollege.edu](mailto:drc@norcocollege.edu)

• **Veterans Services,** Student Services Building, First Floor, (951) 372-7142, [veterans.services@norcocollege.edu](mailto:veterans.services@norcocollege.edu)

• **Student Support Services,** Student Services Building, (951) 372-7149, [Hortencia.Cuevas@norcocollege.edu](mailto:Hortencia.Cuevas@norcocollege.edu)

• **EOPS/CARE**, (Extended Opportunity Programs and Services/Cooperative Agencies

Resources for Education), Center for Student Success, (951) 372-7128, [eops@norcocollege.edu](mailto:eops@norcocollege.edu)

• **CalWORKs** (California Work Opportunity and Responsibility for Kids), Center for Student

Success

(951) 372-7052, [norcocalworks@norcocollege.edu](mailto:norcocalworks@norcocollege.edu)

• **Learning Resource Center (LRC)**, Wilfred J. Airey Library, First Floor, (951) 739-7896, [lrc@norcocollege.edu](mailto:lrc@norcocollege.edu)

• **Student Health and Psychological Services,** Wilfred J. Airey Library Building, Lower

Level, (951) 372-704, [lisa.mcallister@norcocollege.edu](mailto:lisa.mcallister@norcocollege.edu)

• **Student Financial Services**, Student Services Building, First Floor, (951) 372-7009, [Maria.Gonzalez@norcocollege.edu](mailto:Maria.Gonzalez@norcocollege.edu)

**Special Programs:**

• **Honors Program,** Ana-Marie Olaerts, **(951)739-7815**, [Ana-marie.olaerts@norcocollege.edu](mailto:ana-marie.olaerts@norcocollege.edu)

• **John F. Kennedy Middle College High School,** Cheryl Kretz**,** Counselor, **(951) 738-2200,**

[ckretz@cnusd.k12.ca.us](mailto:ckretz@cnusd.k12.ca.us)

• **Puente,** David Payan, Puente Counselor, (951) 372-7080, [david.payan@norcocollege.edu](mailto:david.payan@norcocollege.edu)

• **Study Abroad,** Jan Schall, Director, (951) 222-8340, [jan.schall@rcc.edu](mailto:jan.schall@rcc.edu)

* **Talented Tenth (T3P),** John Moore, T3p Counselor, (951) 372-7148, [John.Moore@NorcoCollege.edu](mailto:John.Moore@NorcoCollege.edu)

• **STEM SCHOLARS (science, technology, engineering, and mathematics) SCHOLARS** 951-739-7803, [STEM@norcocollege.edu](mailto:STEM@norcocollege.edu)

* **Tutorial Services,** lower-level of Library building, **(951) 372-7143**

**Especially for online courses**

**For technical Assistance**

The 24/7 help desk number for all student and instructor Blackboard-related issues, including streaming media, is **(866) 259-7271**. There is also a new online support portal URL students and instructors can use:  <http://bbcrm.edusupportcenter.com/ics/support/default.asp?deptID=8077>. The District Help Desk for computers, software, etc., is (951) 222-8388. For WebAdvisor assistance, please contact Admissions & Records at 951-372-7003.

Academic honesty is as highly valued at the Online campus, as it is at Norco College’s face-to-face classes. A student must always submit work that represents his or her original words or ideas. If any words or ideas are used that do not represent the student’s original words or ideas, then the student must cite all relevant sources. The student should also make it clear the extent to which such sources are used. Words or ideas that require citations include, but are not limited to, all hardcopy or electronic publications, whether copyrighted or not, and all verbal or visual communication when the content of such communication clearly originates from an identifiable source. At the Online campus, all submissions to any public meeting or private mailbox fall within the scope of works and ideas that require citations if used by someone other than the original author. Academic dishonesty in an Online learning environment could involve the following:

* Having a tutor or friend complete a portion of your assignments
* Having a reviewer make extensive revisions to an assignment
* Copying work submitted by another student to an online venue
* Using information from on-line information services without proper citation

| Schedule | | |
| --- | --- | --- |
|  |  |  |
| [Week of] | Topic | Assignment |
| [1] | Intro | HW1 |
| [2] | Motion, Kinematics  Position, Velocity, Acceleration |  |
| [3] | Motion, Kinematics  Forces, Gravitational Forces, Spring Forces, Frictional Forces | HW2 |
| [4] | Collision Detection  Collision Handling |  |
| [5] | GDC | HW3 |
| [6] | Collision Handling  Conservation of Momentum |  |
| [7] | Collisions  Spatial Partitioning | HW4 |
| [8] | Rigid Bodies  Simple Bodies  Classes not in Session |  |
| [9] | Classes not in Session | HW5 |
| [10] | Destroyable Environments |  |
| [11] | Forces, Springs, Impulses  \*\*Midterm\*\* | HW6 |
| [12] | Rotational Forces  Torques |  |
| [13] | Joints:  Fixed, Hinge, Ball | HW7 |
| [14] | Joint Limits  Ragdolls |  |
| [15] | -- No Class Monday --  Project review | HW8 |
| [16] | Final |  |