COMP/EMGT 155 – Computer Simulation
Course Syllabus – Fall 2008

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<tr>
<th>instructor</th>
<th>Michael Doherty, <a href="mailto:mdoherty@pacific.edu">mdoherty@pacific.edu</a></th>
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<td>CSB 109, 946-3031</td>
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<td>course website</td>
<td><a href="http://www1.pacific.edu/~mdoherty/comp155/index.htm">http://www1.pacific.edu/~mdoherty/comp155/index.htm</a></td>
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<tr>
<td>class meetings</td>
<td>MW 3:30-5:00 WPC 213</td>
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<td>textbook</td>
<td><em>Simulation with Arena, 4th ed.</em>, Kelton, Sadowski and Sturrock</td>
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Course Description: Simulation is the practice of designing a model of an actual or theoretical system, executing that model to observe its behavior and then analyzing the results. This course focuses on computer-based simulation, where the model is implemented as part of a computer program, which can then be executed to compute and record the data which describes the simulated system’s behavior.

Computer simulations may be constructed as stand-alone programs or they may be developed using a variety of simulation environments and toolkits. In either case, the theory and process for developing and analyzing the system model is the same. We will focus on the common theory and processes, and survey available implementation environments.

When using simulations to study real-world systems, ensuring that the simulation is an accurate representation of the systems is essential. We will look at a number of techniques for comparing the behavior of a simulation with the behavior of the real system, in order to quantify the simulation’s accuracy.

Objectives: Students will learn

- a variety of techniques for specifying system models
- theory and techniques available for constructing a simulation from a model
- theory and techniques for determining the accuracy of a simulated system

Prerequisites:

- COMP51 or equivalent programming experience.
- MATH 37 or MATH 39: analysis of results and definition of simulation input data requires basic skills in probability and statistics.
- MATH51: basic understanding of integrals and derivatives is required to understand many physical systems and the corresponding models and simulations.
**Grading:**

Homework: 50%
Term Project: 30%
Quizzes: 10%
Attendance and Participation: 10%

**Homework Assignments:** There will be regular homework assignments, some of which will be paper exercises and some of which will require work on a computer. All assignment submissions must be typeset and printed. No handwritten submissions will be accepted, except in cases where an explicit exception is made in the assignment specification. Whenever possible, assignments will be submitted through Blackboard.

**Term Project:** The term project which will require you to develop and analyze a simulation for some real-world system. The term project will be documented in a report and in-class presentations.

**Reading Assignments:** There will be frequent reading assignments, both from the Arena textbook and from various outside sources. The readings will be important both for completing the homework assignments and for participating in classroom discussions and activities.

**Quizzes:** Periodic short quizzes will be given to verify your understanding of the course material. Quizzes will primarily be based on assigned readings.

**Attendance and Participation:** Class attendance and participation is necessary and expected. There will be numerous group work activities in class, and these activities will be difficult to make up outside of class. Participation requires that you are properly prepared for classroom discussions and activities, and have completed all reading assignments before the relevant class.

Students missing a class are responsible for making up the material discussed in that class on their own. Students are responsible for being aware of any announcements made during their absence.

**Course Web Site and Blackboard:** You should check the course web site regularly for information and updates. Assignment specifications and due dates will be posted on the web site and on Blackboard. Most lecture notes will also be posted on the web site and on Blackboard.

**Late Assignments and Make-up Work:** The only acceptable excuses for missing an assignment due date, lab, quiz or exam are serious illness, death in the immediate family or important professional activities. Illness or death in the family may require documentation. Excuses for professional activities must be approved by the instructor in advance.

Homework assignments and projects are due in class on the assigned due date. Late assignments and projects will be accepted during the class immediately following the due date, with a 20% late penalty.

There will be no makeup exams, except for excused absences, as defined above.

**Individual Work and Collaboration:** Computer professionals usually work in a cooperative environment, yet proper assessment requires that work be done by individuals. To alleviate confusion, the following policy will be followed:

Collaborative work is encouraged. This includes students working together on problem sets, planning solution strategies and helping each other to debug programs. Collaboration must stop short of the writing of program code or English that represents your work. You may not directly copy the work of another
student. It is your responsibility to ensure that the work you submit is an honest representation of your own understanding of the material.

Marginal cases will be resolved by oral examination of the students involved. If they understand the material in the assignment, it will be considered honest collaboration. If they do not, then it will be considered academic dishonesty.

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**Academic Dishonesty:** Cases of academic dishonesty will not be tolerated. On a first offense, the student will be given a written warning and a grade of zero for the work in question. On a second offense, notice will be sent to the student's academic advisor, the Dean of the School of Engineering and Computer Science and the Dean of the student's own school, and the matter will be turned over to the Office of Student Life for resolution.

The following are all considered academic dishonesty:

- Copying program code or homework assignments from another student or presenting someone else's work as one's own.
- Misrepresentation of a program's output or behavior, such as modifying a program's output with a text editor.
- Giving or receiving information during an exam or using unauthorized resources during an exam.

**Honor Code:** The University Honor Code is an essential element of academic integrity. It is a violation of the Honor Code to give or receive information from another student during an examination or to submit all or part of someone else's work as one's own. If a student violates the Honor Code, the faculty member may refer the matter to the Office of Student Life. If found guilty, the student may be penalized with failure of the assignment or the course. The student may also be reprimanded or suspended from the University.

**Students with Disabilities:** Any student with a physical disability or with a learning disability needing accommodations should register with the Office of Services for Students with Disabilities, in Bannister Hall. The office will assist with any needed accommodations. If you have questions or wish to discuss your disability, please feel free to see me directly.