

Digital Simulation Techniques

ESI 6529, Fall 2012

1. **Catalog Description (3 credit hours)** – Computer programming aspects of digital simulation. Deterministic simulation; stochastic simulation. Use of simulation languages.
2. **Pre-requisites and Co-requisites:** computer programming and probability theory. If you have significant difficulty in understanding the review materials on probability theory in the course website, PLEASE consider taking a probability course before taking this one.

3. Course Objectives

The purpose of this course is to introduce the basic techniques for modeling and simulating industrial systems in the presence of uncertainty. After successfully completing this course, you should:

- Understand the major capabilities and limitations of simulation as applied to industrial problems.
- Be able to apply simulation to model and analyze simple engineering design problems.

Students are required to do a term project, as detailed in a separate handout.

4. Instructor

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- b. Office location: 302 Weil Hall
- c. Telephone: 352-392-1464 ext. 2005
- d. E-mail address: glan@ise.ufl.edu
- e. Class Web site: Sakai
- f. Office hours: Tuesday 10:30-11:30 am; or by appointment

5. Teaching Assistant

- a. Name: Andrew Romich
- b. Office location: Weil 202
- c. Telephone: N/A
- d. E-mail address: aromich222@gmail.com
- e. Office hours: Friday 2:30-4:30pm

6. **Meeting Times:** Tuesday, Period 3 (9:35–10:25 am); and Thursday, Period 3,4 (9:35–10:25, 10:40-11:30am).

7. **Meeting Location:** CSE E122

8. Textbooks and Software Required

W. David Kelton, Randall P. Sadowski and David T. Sturrock, “Simulation Using ARENA”, 5th Edition, McGraw-Hill, 2007. (KSS)

To install a freely available student version of Arena, please follow Appendix D in Page 609 of the above textbook.

9. Recommended Reading

Averill M. Law, “Simulation Modeling and Analysis,” 4th Edition, McGraw-Hill, 2007. (Law)

10. Tentative schedule:

Week	Topic	Chapter
1	Introduction to Simulation; Examples	1,2
2	Basic modeling using Arena	3,4
3	Basic modeling using Arena, Lab class	3,4
4	Basic modeling using Arena	4
5	Input analysis: basic theory and tools	4.6 and slides
6	Exam#1	-
7	Modeling Detailed Operations	5
8	Modeling Detailed Operations, Lab class	5
9	Output analysis: basic theory	slides
10	Output analysis: tools	6,7
11	Entity Transfer, Lab class	8
12	Advanced topics in simulation	slides
13	Exam#2	-
14	Focus on term project and group meetings	-
15	Project presentations	-

11. Attendance and Expectations

Attendance to classes is strongly recommended, as quizzes will be given WITHOUT announcement in advance.

12. Exams

- Exam #1: September 27th
- Exam #2: November 15th
- NO final exam
- Term project report: due on December 4th

13. Grading: Your grade will be based on 2 in-class exams, a few homework assignments and in-class quizzes and a term project. Homework assignments and quizzes may be weighted unequally.

- Homework and quizzes: 30%
- Mid-term exams: 20% (each)

- Term project: 30%

14. Grading Scale:

<i>Grade</i>	<i>Range</i>
A	90-100
B+	85-90
B	80-85
C+	75-80
C	70-75
D+	65-70
D	60-65

In order to graduate, graduate students must have an overall GPA and an upper-division GPA of 3.0 or better (B or better). Note: a B- average is equivalent to a GPA of 2.67, and therefore, it does not satisfy this graduation requirement. For more information on grades and grading policies, please visit:

<http://gradschool.ufl.edu/catalog/current-catalog/catalog-general-regulations.html#grades>

- 15. Make-up Exam Policy:** In general, there will be no makeup exams given. If you must miss an exam for any Institute-approved reason, the grade of the next exam will also count for the missed one. Note that an Institute-approved reason does *not* include “You said you would have an exam around Sep. 24th, so I made plans for Sep. 26th ...”.
- 16. Honesty Policy:** All students admitted to the University of Florida have signed a statement of academic honesty committing themselves to be honest in all academic work and understanding that failure to comply with this commitment will result in disciplinary action. This statement is a reminder to uphold your obligation as a UF student and to be honest in all work submitted and exams taken in this course and all others.
- 17. Accommodation for Students with Disabilities:** Students Requesting classroom accommodation must first register with the Dean of Students Office. That office will provide the student with documentation that he/she must provide to the course instructor when requesting accommodation.
- 18. UF Counseling Services:** Resources are available on-campus for students having personal problems or lacking clear career and academic goals. The resources include:
 - UF Counseling & Wellness Center, 3190 Radio Rd, 392-1575, psychological and psychiatric services.
 - Career Resource Center, Reitz Union, 392-1601, career and job search services.

19. **Software Use:** All faculty, staff and student of the University are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against University policies and rules, disciplinary action will be taken as appropriate. We, the members of the University of Florida community, pledge to uphold ourselves and our peers to the highest standards of honesty and integrity.