Fayetteville State University
College of Basic and Applied Sciences
Department of Mathematics and Computer Science
CSC 360-D1 Computer Simulation
Course Syllabus, Fall Semester, 2010

I. Locator Information:

Instructor: Dr. K. C. Wong — Office Location: SBE 343
Course # and Name: CSC360-D1 — Office Phone: 672-1697
Semester Credit Hours: 3

Office hours: M,W: 3:00 p.m. – 6:00 p.m. T, R: 11:00 a.m. – 12:00 p.m.
Other Hours By Appointments
If I am not in, please see Mr. Black at SBE 309. Phone: 910-672-2265 or
Ms. Briggs at SBE 339. Phone: 910-672-1294.

Day and Time Class Meets: Online.. Building and Room Class Meets: **Online**
Total Contact Hours for Class: N/A
Email address: kwong@uncfsu.edu

TEST 1 ..... Wednesday, September 16, 2010
TEST 2 ..... Wednesday, October 13, 2010
TEST 3 ..... Wednesday, November 17, 2010
Final Exam: 10:00 a.m. - 11:50 a.m., Friday, December 10, 2010

FSU Policy on Electronic Mail: Fayetteville State University provides to each student, free of charge, an electronic mail account that is easily accessible via the Internet. The university has established email as the primary mode of communicating with enrolled students about impending deadlines, upcoming events, and other information important to student progression at the university. Students are responsible for reading their email on a regular basis to remain aware of important information disseminated by the university. The university maintains open-use computer laboratories throughout the campus that can be used to access electronic mail.

Students making inquiries via email to FSU faculty and staff about academic records, grades, bills, financial aid, and other matters of a confidential nature are required to use their FSU email account.

Rules and regulations governing the use of FSU email may be found at:
http://www.uncfsu.edu/PDFs/EmailPolicyFinal.pdf

II. Course Description:

This course introduces simulation and modeling of systems with concentration on discrete stochastic systems. Topics include modeling and simulation techniques, monte Carlo methods, queuing models, and computer simulation lagauages such as GPSS,PYTHON and SIMSCRIPT. A simulation project is developed, completed, and presented by each student as a member of a project team.
PREREQUISITE: Undergraduate level STAT 301 Minimum Grade of C

III. Disabled Student Services: If you have a disability or think you have a disability, please contact the Center for Personal Development in the Spaulding Building, Room 155 (1st Floor); 910-672-1203.

IV. Textbook:

Frank L. Severance, SYSTEM MODELING AND SIMUJLATION, An Introduction, Wiley & Sons, Ltd, 2001
Mark Lutz & David Ascher, Learning Python, O'Reilly, 1999

V. Student Learning Outcomes:

Upon completion of this course, the student will be able to:

1. Demonstrate an understanding of the goals and objectives of computer simulation.
2. Demonstrate an understanding of computer simulation processes and procedures
3. Demonstrate a deep understanding of the problems simulated.
4. Change the simulation model by adjusting values of key parameters.
5. Demonstrate the ability to use the Python Interactive and IDLE environment to run programs.
6. Acquire the knowledge on Python's type and operations, statements and syntax, functions, modules, classes, and exceptions.

7. Develop simulation models using a general purpose programming laguage (e.g. Python) to simulate standard problems from the natural sciences,(e.g. Physics, Chemistry, and Biology).
A standard programming language will be used instead of a higher-level simulation language so that students learn how to develop the building blocks used in simulations instead of using a simulation laguage that has those building blocks as pre-existing language constructs. The course will develope simulations of well-known problems from the natural sciences to reinforce concepts in problems. Problems will be chosen that require a graphical or animated presentation to represent change or motion. All problems will also reflect key components of calculus.
8. Use the Python language to simulate event-driven models.

VI. Course Requirements and Evaluation Criteria:

2 highest test scores out of 3 tests totaling 30%
8 progamming assignments totaling 30%
Final Exam 40%
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Semester_Grade_Points(SGP) 100%

Semester Grade	Semester_Grade_Points
A	92% - 100%
B	83% - 91%
C	73% - 82%
D	64% - 72%
F	0% - 63%

Final grades are calculated on a four-point system and affect a student's grade point average as indicated below. The methods and evaluative criteria for determining final grades in the class are delineated above..

Grade	Credit Hours	Quality Points	Meaning
A	Hours attempted and earned	4 per credit hour;	Exceptionally high
B	Hours attempted and earned	3 per credit hour	Good
C	Hours attempted and earned	2 per credit hour	Satisfactory
D	Hours attempted and earned	1 per credit hour	Marginally passing
F	Hours attempted – Not earned	0 per credit hour	Failing
FN	Hours attempted – Not earned	0 per credit hour	Failing due to non-attendance. (Student registered, but never attended.)
W	Hours attempted – Not earned	No impact on GPA	Class withdrawal prior to deadline (see Academic Calendar)
P	Hours attempted and earned	No impact on GPA	Satisfactory - Assigned only in classes specified as Pass/Fail
WU	Hours attempted – Not earned	No impact on GPA	Withdrawal from all classes for semester or term
AU	Hours attempted – Not earned	No impact on GPA	Auditing

VII. Student Behavior Expectations:

Policy on Late Assignments - Each assignment must be submitted on time. Up to ten (10) percent of your assignment mark will be deducted for each school day the assignment is overdue. If you need to hand in an assignment late, please notify me ahead of time. Dishonesty on graded assignments will not be tolerated. Although students may discuss assignments with each other, they must neither give nor receive excessive help. Students learn by doing things themselves. Having access to another student's work on the system is definitely not allowed. Duplicate answers are not acceptable. Each student is responsible for disposing of printouts safely (Do NOT simply throw away printouts in a trash can where they can easily be retrieved by anotherperson.) and for protecting their home directory. All students involved in dishonesty (those giving as well as those receiving unallowable help) will be penalized.

VIII. Academic Support Resources:

Support resources for this course are available at the following locations:

(1) Computer laboratories on campus including but not limited to SBE 214 Open laboratory, HTC bldg:
(2) Classrooms: SBE 218, SBE 221, SBE 224 when no class is being held there;
(3) Chestnut Library, Student dormitories**,** Lyon Science Bldg New Wing room 125.

IX. Teaching Strategies

The primary teaching strategy for this course will be Blackboard notes, textbook readings, online discussions, written exercises and programming projects **.**

X. Course Outline and Assignment Schedule

WEEK	TOPICS
1	Administrative details, introduction to Python. Demonstration of simulation programs. How to run programs in COMMAND/IDLE environments.
2, 3	Types and Operations in Python: Numbers, Strings, Lists, Dictionaries, Tuples, and Files. (Assignments #1, #2)
4, 5, 6	Assignment, Expressions, Print, Standard input/output, if Tests, while and for loops, disk input/output. Functions, Definitions and calling, Scopes and Arguments. (Assignments #3, #4)
7, 8	Describing Systems, modeling and simulations. (Assignment #5)
9, 10, 11	Dynamical systems. (Assignment #6)
12, 13, 14	Stochastic Generators.(Assignment #7)
15, 16	Spatial Distributions(Assignment #8)

This schedule is subject to change for the optimum benefit of the class as a whole. Therefore it is important to stay alert and attend class regularly.

XI. Bibliography (The bibliography should be reviewed each year to ensure currency.)

(1) B. P. Zeigler, H. Praehofer, T. G. Kim, Theory of Modeling and Simulation, 2nd Edition, Integrating Discrete Event and Continuous Complex Dynamic Systems, Academic Press, 2000

(2) I. Aleksander and H. Morton, An Introduction to Neural Computing 2nd Edition, International Thomson Computer Press, 1995

(3) Angela B. Shiflet and George W. Shiflet, Introduction to Computational Science, Modeling and Simulation for the Sciences, Princeton University Press, 2006

(4) F. Neelamkavil, Computer Simulation and Modeling, John Wiley & Sons, 1987

(5) M. H. Dunham, Data Mining, Introductory and Advanced topics, Prentice Hall, Pearson Education Inc. 2003

(6) M. Pidd, Computer Simulation in Management Science, John Wiley & Sons, 1984

(7) http://www.Python.org

(8) http://www.VPython.org

(9) http://www.pygame.org

(10) http://www.wmich.edu/ece/sever.html