

Fayetteville State University
College of Arts and Sciences
Department of Mathematics and Computer Science
CSC 105 - 01: Introduction to Computer Science for Technical Majors
Spring 2012

I. Locator Information:**Instructor: Dr. Kwok C. Wong****Course # and Name: CSC 105, Section 01****Introduction to Computer Science for Technical Majors** **Office Location: SBE 343****Semester Credit Hours: 3.00****Office hours: M,W:12:00 p.m. – 2:00 p.m.****Day and Time Class Meets: M,W,F 2:00 p.m. – 2:50 p.m.****T,R: 4:00 p.m. – 6:00 p.m.****Class Location: SBE 224****Office Phone: (910) 672-1697****Total Contact Hours for Class: 46****Email address: kwong@uncfsu.edu****Final Examination: 2:00 p.m. – 3:50 p.m. Monday, April 30, 2012.**

FSU Policy on Electronic Mail: Fayetteville State University provides to each student, free of charge, an electronic mail account (username@uncfsu.edu) that is easily accessible via the Internet. The university has established FSU email as the primary mode of correspondence between university officials and enrolled students. Inquiries and requests from students pertaining to academic records, grades, bills, financial aid, and other matters of a confidential nature must be submitted via FSU email. Inquiries or requests from personal email accounts are not assured a response. The university maintains open-use computer laboratories throughout the campus that can be used to access electronic mail.

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 is an introduction to the fundamental concepts and skills needed by students who anticipate majoring in computer science or other technical majors such as mathematics or a natural science. Topics include algorithms as models of computational processes, programming fundamentals such as data models and control structures, and the computing environment and its tools, such as basic hardware, editors, compilers, and debuggers. *Prerequisite: none*

III. Disabled Student Services: In accordance with Section 504 of the 1973 Rehabilitation Act and the Americans with Disabilities Act (ACA) of 1990, if you have a disability or think you have a disability to please contact the Center for Personal Development in the Spaulding Building, Room 155 (1st Floor); 910-672-1203.

IV. Textbook and other materials:

1. Required textbook: *Learning Computing with Robots* edited by Deepak Kumar. Free book available online as PDF file from http://wiki.roboteducation.org/Learning_Computing_With_Robots. We will use the most recent (i.e. Fall 2008) version. You can print the PDF file by following the instructions on the same webpage.
2. Required textbook: *Python Programming: An Introduction to Computer Science* by John Zelle, Franklin Beedle & Associates, 2004. ISBN 1-887902-99-6.
3. Optional textbook: *Think Python: An Introduction to Software Design* by Allen B. Downey. Free book available online as PDF file from <http://www.greentepress.com/thinkpython/>. If needed you can print this file too.
4. Required material: at least 6 AA rechargeable batteries and a charger. You must purchase and bring these to labs.
5. Required material: IPRE Robot Kit. These will be handed out to you in class during lab sessions and have to be returned after that lab session is over. Optionally you can purchase one if you want to for \$200.00 from <http://www.amazon.com>.
6. Python Software + IDLE + Myro: This software is already installed in the labs. To install it in your personal computer read the manual at http://wiki.roboteducation.org/Myro_Installation_Manual

V. Student Learning Outcomes – Upon completion of this course, students will:

1. be able to describe the components of a computer
2. be able to use different data types, variables, constants, assignments statements, increment, decrement, arithmetic operations and mathematical functions in programs
3. be able to use control structures including sequence, selection, repetition, and functions
4. be able to create algorithms in pseudocode or flowchart form
5. be able to create simple programs
6. be able to use an IDE to develop and execute programs

VI. Course Requirements and Evaluation Criteria -

a. Grading Scale -

Grade	Total point range	Credit Hours	Quality Points	Meaning
A	90% – 100%	Hours attempted and earned	4 per credit hour;	Exceptionally high
B	80% – 89.99%	Hours attempted and earned	3 per credit hour	Good
C	65% – 79.99%	Hours attempted and earned	2 per credit hour	Satisfactory
D	55% – 64.99%	Hours attempted and earned	1 per credit hour	Marginally passing
F	below 55%	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

b. Attendance Requirements – Students are expected to attend all class meetings, laboratories, and other instructional sessions for this course. Students are also expected to arrive to class on time and remain in class for the entire scheduled period. When students must miss class(es) for unavoidable reasons, i.e., illness, family emergencies, or participation in official university sponsored activities – they are responsible for informing faculty of the reasons for the absences, in advance if possible. Missed assignments, labs, quizzes and exams can only be made up for by explicit permission from the instructor. In order to receive this permission the student has to provide convincing evidence (e.g. doctor's note) that the absence was due to an unavoidable reason. During the first half of the semester/term, faculty will assign an interim grade of "EA," Excessive Absences, for students whose class absences exceed 10% of the total contact hours for the class. Students who receive EA interim grades must either withdraw from the class or resume attendance. Students who resume attendance must consult with the instructor about completion of missed assignments. The EA is not a final grade, so students who are assigned an interim grade of EA, but do not withdraw from the class, will receive a final grade based on the evaluation criteria for the class. **Note: in case FSU must close for an emergency during the semester, instruction will continue using Blackboard.**

c. Graded Assignments and Value of Each Assignment -

- i. Two tests worth 10% each for a total of 20%
- ii. Final test worth 30%
- iii. Six programming projects worth a total of 40%. Some projects will require a review quiz to be completed before attempting the programming assignment.
- iv. Class attendance and participation worth 10%.

d. Policy on Missed or Late Assignments - tests and quizzes missed due to an unavoidable reason can be made up only with the instructor's permission. In order to receive this permission the student has to provide convincing evidence (e.g. doctor's note) that the absence was due to an unavoidable reason. There is a penalty of 5% for each day a project is overdue. Project submissions that are more than a week overdue will not be accepted for grading.

e. Dishonesty in academic affairs – Acts of dishonesty in any work constitute academic misconduct. Such acts include cheating, plagiarism, misrepresentation, fabrication of information, and abetting any of the above. Plagiarism in particular presents pitfalls to be avoided: failure to document any words, ideas, or other contributions that do not originate with the author constitutes plagiarism. Widespread use of the World Wide Web (Internet) requires particular attention to proper documentation practices. Individual course syllabi offer additional clarification about requirements for proper documentation. Actions outlined in the Fayetteville State University Student Handbook under Disciplinary System and Procedures will be followed for incidents of academic misconduct. The handbook may be obtained from the Office of Student Affairs located in the Collins Administration Building. Non-disclosure or misrepresentation on applications and other university records will make students liable for disciplinary action, including possible expulsion from the university.

Please note: If these evaluation criteria must be revised because of extraordinary circumstances, the instructor will distribute a written amendment to the syllabus.

FSU Policy on Disruptive Behavior in the Classroom

The *Code of the University of North Carolina* (of which FSU is a constituent institution) and the *FSU Code of Student Conduct* affirm that all students have the right to receive instruction without interference from other students who disrupt classes.

FSU Core Curriculum Learning Outcome under Ethics and Civic Engagement (6.03): All students will "prepare themselves for responsible citizenship by fulfilling roles and responsibilities associated with membership in various organizations." Each classroom is a mini-community. Students learn and demonstrate responsible citizenship by abiding by the rules of classroom behavior and respecting the rights of all members of the class.

The FSU Policy on Disruptive Behavior (see FSU website for complete policy) identifies the following behaviors as disruptive:

1. Failure to respect the rights of other students to express their viewpoints by behaviors such as repeatedly interrupting others while they speak, using profanity and/or disrespectful names or labels for others, ridiculing others for their viewpoints, and other similar behaviors;
2. Excessive talking to other students while the faculty member or other students are presenting information or expressing their viewpoints.
3. Use of cell phones and other electronic devices
4. Overt inattentiveness (sleeping, reading newspapers)
5. Eating in class (except as permitted by the faculty member)
6. Threats or statements that jeopardize the safety of the student and others
7. Failure to follow reasonable requests of faculty members
8. Entering class late or leaving class early on regular basis
9. Others as specified by the instructor.

The instructor may take the following actions in response to disruptive behavior. Students should recognize that refusing to comply with reasonable requests from the faculty member is another incidence of disruptive behavior.

1. Direct student to cease disruptive behavior.
2. Direct student to change seating locations.

3. Require student to have individual conference with faculty member. At his meeting the faculty member will explain the consequences of continued disruptive behavior.
4. Dismiss class for the remainder of the period. (Must be reported to department chair.)
5. Lower the student's final exam by a maximum of one-letter grade.
6. File a complaint with the Dean of Students for more severe disciplinary action.

Students who believe the faculty member has unfairly applied the policy to them may make an appeal with the faculty member's department chair.

VII. Academic Support Resources – This course uses FSU Blackboard for online dissemination. Students will find most materials online within the Blackboard module for this course. Project submissions and most tests will be implemented through Blackboard so students are required to check the Blackboard course website and their email at least once a day.

VIII. Course Outline and Assignment Schedule –

WEEK	LECTURE TOPICS & ACTIVITIES
FIRST DATES: 01/09	FIRST DAY OF CLASS. INTRODUCTION, COURSE OVERVIEW. INTRODUCTION TO COMPUTING AND ROBOTS
SECOND DATES: 01/11 - 01/13	CONFIGURE & LEARN SOME PYTHON COMMANDS MEET THE ROBOT! PROJECT 1 ASSIGNED
THIRD DATES: 01/17 - 01/20	MOTION RELATED COMMANDS FOR ROBOT PROJECT 2 ASSIGNED
FOURTH DATES: 01/23 - 01/27	FUNCTIONS WITH PARAMETERS, MORE MOTION RELATED FUNCTIONS PROJECT 3 ASSIGNED
FIFTH DATES: 01/30 - 02/03	VARIABLES, ASSIGNMENT STATEMENTS, ITERATIVE STRUCTURES
SIXTH DATES: 02/06 - 02/10	TIME, CONDITIONS, CONDITIONAL LOOPS, SENSING FROM WITHIN PROJECT 4 ASSIGNED TEST 1
SEVENTH DATES: 02/13 - 02/17	SENSING THE WORLD – I
EIGHTTH DATES: 02/20 - 02/24	SENSING THE WORLD – II, STRINGS, LISTS
NINTH DATES: 02/27 - 03/02	SENSING THE WORLD – III, SELECTION STRUCTURES PROJECT 5 ASSIGNED
TENTH DATES: 03/12 - 03/16	MIDTERM BREAK ON 10/17 – 10/18

ELEVENTH DATES: 03/19 - 03/23	REACTIVE BEHAVIORS, SELECTION STRUCTURES REVISITED
TWELFTH DATES: 03/26 - 03/30	COMPUTER GAMES, GRAPHICS – I
THIRTEENTH DATES: 04/02 – 04/04	GRAPHICS – II AND OBJECT ORIENTED PROGRAMMING, MORE COMPUTER GAMES PROJECT 6 ASSIGNED
FOURTEENTH DATES: 04/09 – 04/13	SOUNDS, TEST 2
FIFTEENTH DATES: 04/16 – 04/20	INTRODUCTION TO IMAGE PROCESSING
SIXTEENTH DATES: 04/24 – 04/27	REVIEW

Final exam for graduating seniors 04/23 – 04/28
 Last day of classes is 04/27
 Final exam for students not graduating 04/28 – 05/04

- 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.

IX. Teaching Strategies – This course has both lecture and lab sessions that will be held in the same class room. Lab sessions are mostly discussion oriented, interactive problem solving sessions. Lecture, while also discussion oriented will provide theoretical knowledge that supports the lab sessions and project work. This course is about programming with robots as a teaching context, so timely and successful completion of programming projects is of the highest importance.

X. Bibliography -

1. "Object-Oriented Programming in Python" Michael Goldwasser, David Letscher. ISBN: 0136150314. Prentice Hall Publishing. (October 2007)
2. "Introduction to Computing and Programming Using Python: A Multimedia Approach" Mark Guzdial. ISBN:0131176552
3. "Core Python Programming" Wesley J. Chun. ISBN: 0132269937 (2nd ed.); 0130260363 (1st ed.). Prentice Hall PTR / Pearson Education
4. "Dive Into Python: Python for Experienced Programmers" Mark Pilgrim. ISBN: 1590593561, Apress.
5. "Learning Python" Mark Lutz. ISBN: 0596513984, O'Reilly & Associates, 701 pages (October 2007)
6. "The Quick Python Book" Daryl Harms, Kenneth McDonald. ISBN: 1884777740, Manning Publications, (October 1999)
7. "Learn to Program Using Python" Alan Gauld. ISBN: 0201709384, Addison-Wesley, (December, 2000)
8. "Programming Python (Third Edition)" Mark Lutz. ISBN: 0596009259, O'Reilly & Associates, (August, 2006)
9. "Python Standard Library" Fredrik Lundh. ISBN: 0596000960, O'Reilly & Associates, (February 2001)
10. "Web Programming in Python: Techniques for Integrating Linux, Apache, and MySQL" George K. Thiruvathukal, John Shafae and Thomas Christopher. ISBN: 0130410659, Prentice Hall, (October, 2001)
11. "Programming With Python" Tim Altom with Mitch Chapman. ISBN: 0761523340, Prima Publishing, (October 1999)
12. "Python Developer's Handbook" Andre Lessa. ISBN: 0672319942, Sams, (December 2000)

13. "Python How to Program" Harvey M Deitel, Paul J Deitel, Jonathan Liperi, Ben Wiedermann. ISBN: 0130923613, Prentice Hall, (2002)
14. "Text Processing in Python" David Mertz. The free text is available at: <http://gnosis.cx/TPiP/>
15. "Python Programming Patterns" Thomas Christopher. ISBN: 0130409561. Prentice-Hall, 2001
16. "Python Programming for the absolute beginner" Michael Dawson. ISBN: 1592000738. Premier Press,(2003)
17. "A Byte of Python" Swaroop C H. This book can be read online or downloaded from <http://www.byteofpython.info/>
18. "Practical Python" Magnus Lie Hetland. ISBN: 1590590066, APress (August 2002)
19. "Beginning Python: From Novice to Professional" Magnus Lie Hetland. ISBN: 1-59059-519-x, APress (September 2005)
20. "Computer Programming is Fun!" David Handy, Handy Software and Publishing (April 2005)
21. "Problem Solving with Algorithms and Data Structures" Brad Miller and David Ranum. ISBN: 1590280539, Franklin Beedle & Associates, December 2005
22. "Python First: The Joy of Success" Atanas Radenski. ISBN: 978159526-713-9, Llumina Press, April 2007