

Computer Science 1
Times² STEM Academy
Mr. Herard
Fall 2016 Semester
Room 204

Course Information

Goals: Students will learn about vital algorithms and paradigms from Computer Science and gain an understanding of how those ideas manifest themselves in real world applications. Students will examine thoroughly the Object-Oriented Programming paradigm, and learn about vital algorithms involving sorting, searching, and other tasks. Students will then apply their knowledge toward such tasks as web development, natural language processing, statistical analysis, databases, and physics modeling and animation.

Python is a programming language environment that is renowned among computer scientists, educators, and software engineers as being easy to learn and robust enough for professional coding applications.

Materials: Work in Computer Science will proceed largely through notes and worksheets provided by the teacher during class. No textbook will be assigned.

Students will be required to maintain accounts at three different websites, namely, Trinket.io, Glowscript.org, and PythonAnywhere.com. All of these sites enable users to write, debug, and execute their code within a web browser.

The course will largely follow the outline established by Olin College professor Allen Downey in his book Think Python. Please note that a free version of this text is available at <http://www.greentepress.com/thinkpython/thinkpython.pdf>.

It is required that each student obtain a scientific calculator. Students will be told ahead of time on which days these devices are required. Calculators will not be provided to students during class. Students will not be allowed to use a cell phone or similar device in place of a scientific calculator. A simple four-function calculator will not be sufficient.

Attendance and Behavior: Disciplinary infractions will be posted regularly to the website www.oncoursesystems.com. Students need to keep this in mind as they make the many decisions that constitute their day-to-day behavior in class.

Any student who misbehaves is liable to receive a demerit or a detention depending on the severity of his or her actions.

Examples of Misconduct: Talking, singing, shouting out of turn; use of a cellphone in the building during or after school, use of an electronic music device, or electronic gaming device; eating food or chewing gum during class; getting up and walking about the room; throwing things at other students; horsing around with other students; leaving class without permission; use of a computer for unauthorized purposes (working on assignments for other classes, watching web video), fooling around with the instructor's desk or chair

Grading Policy: Student grades will be determined according to the following chart.

Grade Component	Weight
Participation	10%
In Class Exercises (GoFormative.com)	25%
Computer Lab	20%
Homework	20%
Tests and Projects	25%

Participation: One of the overarching goals of the class is to help students develop good study habits that will also apply to any technical coursework students might encounter in college. To this end, the instructor will periodically give students grades for in class participation and preparedness. This will be em

Homework: Specific policies with regard to any homework that is assigned will be clearly explained. Homework assignments will be graded on a percentage basis given the number of points earned versus the total point value of the assignment.

Tests: Tests will be administered about once every two weeks.

All students are required to take the midterm exam.

Any student who achieves a 93 (A) average on the last day before the start of finals will be exempt from the final exam.

The final cumulative average will be comprised of three parts. Each of the two quarter grades will be worth 45%. The final exam will be worth 10%. (Note: This may be subject to change.)

Projects: Today's young people are witness to a world in which technology entrenches itself in all of our lives in increasingly complex and substantial ways. By gaining an understanding of the core concepts of computing, you can develop insight as to how and why these changes take place.

Each student will be required to complete two projects in the current year. Each student will be assigned a different topic, write a three-and-one-half to four page paper, and make a five minute presentation (with PowerPoint). Students will set up accounts with www.turnitin.com and use the website to submit their work. The grade received for the paper will count as a test grade and the presentation will be worth a quiz grade.

Additional Help: The instructor will usually make himself available at least three times per week after school between 2:30 pm and 5:00 pm. Please let him know beforehand when you wish to come in for extra help.

Main Resource

Downey, Allen B. Think Python. Sebastopol, CA: O'Reilly Media, 2012.

A complete free version of this text is available at
<http://www.greenteapress.com/thinkpython/thinkpython.pdf>.

Month	Week of	Computer Science 1 Topic/Activity
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September	6	Introduction to Computing; Functions; Domain Sets; Function Notations; Composite Functions
	12	Introduction to IDLE; Variables, Expressions, and Statements
	19	Evaluating Logical Expressions; Functions
	26	Turtle Graphics and Interface Design
October	5	Turtle Graphics and Interface Design
	11	Conditionals and Recursion
	17	Conditionals and Recursion
	24	Numerical Base Systems
	31	Numerical Base Systems
November	1	Fruitful Functions
	7	Iteration
	14	Strings
	21	Iteration
	28	Lists and Dictionaries
December	5	Strings
	12	Exploring Data and Statistics
	19	Classes and Objects
January	3	Classes and Methods
	9	Inheritance
	17	Final Exam Review
	23	FINAL EXAMINATION