Comp 150
Introduction to Computing
Fall 2018

Course #:	3046
Day/Time:	MWF 1:40 – 2:30
Classroom:	Crown Center 105
Prerequisites:	None
Instructor:	Dr. Channah Naiman
Email:	cnaiman@luc.edu
Office Hours:	Mondays and Wednesdays before class in the lab
TA:	Nikhil Agrawal nagrawal@luc.edu

Description (from catalog)

This course provides a broad survey introducing the many layers of the computer science discipline, emphasizing the computer's role and limitations as a tool for describing, organizing, and manipulating information applicable to many disciplines. Topics include binary logic expressed in electronic circuitry, machine architecture, basic programming in the very accessible language Python, data organization, the potential and limitations of machines, and useful tools.

This course serves as a terminal course for students who want a one-course introduction to the field, as well as a preliminary course to upper-level computer science offerings.

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Prerequisites

None

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Course Objectives and Goals

- To study some of the basic ideas behind computing -- how data are represented in a computer; how a computer processor is built up from simple circuits; how the processor is controlled through low level languages; and the transition from low level languages to high level languages like Python
- To introduce the concepts of algorithms and their analysis and design in the context of a simple yet powerful computer language (Python)
- To implement Python programs with appropriate use of selection repetition functions and data structures
- To learn how to add graphical effects to programs
- To be able to use HTML to construct a web page containing forms and write a Python CGI script to dynamically process information placed in web form
- To perform simple queries against a database, time permitting

Textbooks (and other course materials)

There is no specific text for this course. We will be using resource materials available online.

- For the Python component of the course, we will be using The Hands-on Python Tutorials designed specifically for this course by Professor Andrew Harrington. They are available on the web, both in browsable format and in printable pdf format. Professor Harrington also created detailed videos, to walk you through the tutorials. This is will serve as our "textbook" for the course. Please see below for other free online references for Python.
- Example files are referenced in the tutorials, and you may download them here.
- Class notes for other course components are linked to from the Course Schedule.

Free Online References for Python:

All except the official Python Tutorial are intended for people with no programming background. Some of the others, however, may be for Python 2.X, which has slightly different syntax for reading from the keyboard (raw_input), printing (a statement, not a function), and using an old form of division where / can mean either the // or / of Python 3.2, depending on the types involved.

- http://python.org is the home site for the Python language, where you can find out more and download the latest production version starting with a 3 (3.7 in August, 2018). Caution: an *incompatible* 2.7 version may be listed first in the downloads.
- An interactive web version of How to Think Like a Computer Scientist starts with pretty much the same basics as the Hands-on Python Tutorial, but in a somewhat different order with a different graphics library. It goes much further, allows you to program totally inside the browser, and has embedded videos. There is also an older, somewhat different, non-interactive pdf version.
- http://www.pythontutor.com/ is a wonderful site where you run code in your browser step by step and can save and email a URL reference to any step.
- https://groklearning.com/course/intro-python-1/ is a gentle Python intro, also totally in the browser.
- http://en.wikibooks.org/wiki/Non-Programmer's_Tutorial_for_Python_3 is another introduction to Python basics in different words. No graphics, few major examples, lots of basic syntax.
- Extra Material on IDLE errors messages – this may prove very useful in the future!
- Official Python 3 Tutorial *moves very fast for someone with no programming background*. It covers a lot, going well past our course! This will be a great resources to keep for future reference once you've become Python masters!
- Software Carpentry - Python is an intro for data scientists using the numpy library and the nice development/display environment ipython.
- If you find none of these helpful, there is a much longer list at http://wiki.python.org/moin/BeginnersGuide/Programmers

Tutoring Assistance (free!):

- Tutoring hours by Computer Science TA's (generally first-come-first-served) is posted at http://www.luc.edu/cs/academics/tutoring/. It should start by the second or third week of the semester. The tutors are a great way to get more individualized help for specific needs. If any tutors you visit are NOT familiar with Python, let me know right away!

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- The university supports an official Tutoring Center in the Sullivan Center. Their phone extension is 8-7708. Their web site is http://www.luc.edu/tutoring. You may need to make appointments in advance for university tutoring. When consulting the university tutoring center hours, remember that, at most, tutors for Comp 150 are only available during some of those times, due to the personal schedule of the tutor(s). We can't guarantee that they will have tutors knowledgeable in Python. In general, COMP students have done better with the department's tutoring service.

Software

- We will be programming in Python, available in the University labs, and as a download to your own computer. There are several choices based on program version and operating system. You should get Python version 3.6.1 or greater for your operating system from the central site http://www.python.org/download. It comes with the graphical interface, *Idle*, which we will use. There are many alternate free Python development environments, like PyCharm, Community Edition, while Idle is particularly simple, and is discussed in the tutorial.
- If you are familiar with Jupyter Notebooks (or iPython), feel free to install Anaconda and use that. We may demonstrate the use of Jupyter notebooks at some point in the class, time permitting.
- Before you install anything, be sure to look at the extra Windows notes or extra Mac notes.

Course Format: There is recent evidence that with all the online resources available, a hybrid approach is useful for on-campus courses. The approach I plan to mostly be doing with you is called *flipping*: flip when you get most of your presentations and do much of your homework, so the presentations are mostly at your convenience, at your speed, as videos/text on your computer or in a lab, and then in class discuss questions you had on the presentations and do much of the harder creative work of synthesizing and using this information, when you have the most direct support from me, TA's, and classmates. Please give me feedback on how this is going and what you think would improve your experience!

There will be an in-class mini-lecture to introduce new topics. In addition, if three people ask the same question, I will offer an explanation to the class on that topic. In general, if you feel that you can benefit from more explanation, sit on the same side as the instructor's desk. If you would prefer to continue working on your own, sit on the opposite side of the room. In this way, those students who want additional lecture support can have it with minimal intrusion to those students who would prefer to work on their own.

For the non-Python topics, there will be short demonstrations/labs in class, in which you are expected to participate.

You are responsible for what goes on in class, even if some of the activity may not be covered in the class notes. If you choose not to attend, that is your prerogative; however, make sure that you find out what you missed.

I am expecting you to look at assigned presentations before class, but *if you want to check on something in a video during class, remember to bring headphones!* To avoid bothering others in labs, the lab machine sound only works through separate speakers. (Use headphones if you listen on your own computer in class, too.)

Class time is valuable and in short supply, so there are some tradeoffs in this approach. You cannot immediately get a question answered by me in the middle of a video presentation. That is offset by the fact that there are several days at least to take in the videos, so if you attend to them early, you have time to get emailed feedback before you finish viewing. It would be helpful if you kept a list of questions as you watch the videos. You may find that some of your questions will be answered as you continue to watch the videos, and some you will want to bring to class.

Cell Phones: Only you know the relative importance of any particular cell phone call, and whether it is important for you to answer a call imediately rather than later. I do want you to be respectful of my class and disrupt it as little as is practical. If you get cell phone calls with fair frequency, be sure to have the ring

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muted before coming to class. If you rarely get calls, you might not mute it ahead, and your cell phone may happen to ring. Get rid of the noise as soon as possible, and do not get flustered. I assume you will move outside the classroom for a conversation. If you get fairly frequent calls that you are likely to consider important answering, sit in a place where your exit and re-entrance are as unobtrusive as possible.

Exams: There are three exams. Tentative dates are:

- Exam #1: 9/19 and 9/21
- Exam #2: 10/24 adn 10/26
- Exam #3: 11/28

The final exam slot is used for Project Presentations.
Exams will cover material discussed in class, reading material on the web, and assignments. Exams will always be cumulative. You are allowed at two 8.5 x 11 inch sides of notes for exams, but no computer or calculator. I emphasize having you process and use information, not regurgitate facts -- put the facts you most forget and still need in your notes. This is very different than many of the requirements some students had in high school, where fact recall may have been key. What you want most to remember is general patterns about the process of breaking problems into pieces and identifying the right process for each piece. The pieces may come in all sorts of combinations, so remembering whole rote sequences is not likely to be helpful. Do not depend on it.

There is a review for each exam posted on the Course Schedule.

If you must miss an exam, let me know well in advance. Then if you have a good reason we can possibly make other arrangements. I have little sympathy for people who inform me after the fact for no good reason. Exam absences will be veririfed. If they can't be verified, you will not be excused.

No second try: If you have an excuse for not being prepared to take an exam, but decide to take it anyway, you don't get to change your mind after you see a poor grade. Being sick is not a way to get one more chance than everyone else. I may allow you to delay an exam due to illness, but I will not let you be reexamined due to a poor grade.

Academic Honesty

Students are expected to have read the statement on academic integrity available http://www.luc.edu/academics/catalog/undergrad/reg_academicintegrity.shtml This policy applies to the course. The *minimum* penalty for academic dishonesty is a grade of F for that assignment. Multiple instances or a single severe instance on a major exam or assignment may result in a grade of F for the course. All cases of academic dishonesty will be reported to the department office and the relevant college office where they will be placed in your school record. Academic dishonesty includes, but is not limited to, working together on assignments that are not group assignments, copying or sharing assignments or exam information with other students except in group assignments, submitting as your own information from current or former students of this course, copying information from anywhere on the web and submitting it as your own work, and submitting anything as your own work which you have not personally created for this course. If you do wish to use materials that are not your own, please check with me ahead of time and cite you source clearly. When in doubt, ask first!

Materials from this course cannot be shared outside this course without my written permission.

Lateness Policy

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- Late assignments are worth only half credit. This is true even if you have a valid reason for submitting the homework late. That's what the extra fifty points are for. Late assginments must be submitted within one week of the due date for half credit. After one week, you will receive zero points for any unsubmitted assignments.
- You may only have two late submissions. After you use up your two late submissions, anything that you submit after the due date is worth a zero (not half credit).

Online Recording Policy

In this class software will be used to record live class discussions. As a student in this class, your participation in live class discussions will be recorded. These recordings will be made available only to students enrolled in the class, to assist those who cannot attend the live session or to serve as a resource for those who would like to review content that was presented. All recordings will become unavailable to students in the class when the Sakai course is unpublished (i.e. shortly after the course ends, per the Sakai administrative schedule: https://www.luc.edu/itrs/sakai/sakaiadministrativeschedule/). Students who prefer to participate via audio only will be allowed to disable their video camera so only audio will be captured. Please discuss this option with your professor. The use of all video recordings will be in keeping with the University Privacy Statement shown ***below***:

Privacy Statement

Assuring privacy among faculty and students engaged in online and face-to-face instructional activities helps promote open and robust conversations and mitigates concerns that comments made within the context of the class will be shared beyond the classroom. As such, recordings of instructional activities occurring in online or face-to-face classes may be used solely for internal class purposes by the faculty member and students registered for the course, and only during the period in which the course is offered. Students will be informed of such recordings by a statement in the syllabus for the course in which they will be recorded. Instructors who wish to make subsequent use of recordings that include student activity may do so only with informed written consent of the students involved or if all student activity is removed from the recording. Recordings including student activity that have been initiated by the instructor may be retained by the instructor only for individual use.

Religious Holidays

Please let me know within the first two weeks of class if you have a religious holiday conflict with any exam or homework due date so that we can plan on a makeup schedule.

Students with Disabilities

If you have a documented disability and wish to discuss academic accommodations, please contact the Services for Students with Disabilities Office (773-508-3700 and SSWD@luc.edu) as soon as possible. Students with documented disabilities who provide me with a letter from the SSWD office will be fully accommodated as per the terms of the letter. Students who are allowed to take their exams in the SSWD office are encouraged to do so. *Should you choose to take the exam in the classroom, I cannot guarantee that the classroom environment will be quiet enough to provide you with the environment that your disability may require. If you choose to take the exam in the classroom, you are taking that risk.*

Students with Sponsorships and Scholarships

If you require a certain grade in order to satisfy a sponsor or a scholarship requirement, please be sure to monitor your grade on Sakai. I will consider only your performance in this course in calculating grades, using the grading rubric posted in this syllabus. If you cannot achieve a minimum grade that is required by a sponsor or a scholarship, I will not change your grade to help you meet that requirement. This would be unfair to other students, and not reflective of your performance in this course. You are responsible to monitor your grade and to keep apprised of the withdrawal dates posted by the registrar.

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Course Components and Grading

Tutorial, Chapter 1 Exercises	45
Tutorial, Chapter 2 Exercises	45
Tutorial, Chapter 3 Exercises	60
Tutorial, Chapter 4 Exercises	30
Exam #1	150
Exam #2	200
Exam #3	200
Python Project	200
Pip Program	60
Gates Homework	60
Total	1050

- Note that there are 1050 total possible points. Fifty extra points are built-in, to cover "down days", for valid late homework submissions, or to be used for extra credit.
- No further accommodations will be provided. If your personal circumstances are such that you have to miss more than 50 points worth of material, please consider taking the course another semester.
- There are a few extra credit homework problems in some of the assignments. No further extra credit opportunities will be provided. It is neither practical nor fair to the other students.
- Late assignments are worth only half credit. This is true even if you have a valid reason for submitting the homework late. That's what the extra fifty points are for. Late assginments must be submitted within one week of the due date for half credit. After one week, you will receive zero points for any unsubmitted assignments.
- You may only have two late submissions. After you use up your two late submissions, anything that you submit after the due date is worth a zero (not half credit).
- Do not assume that all team members will automatically earn the same grade on the project. Your participation and contribution will be assessed by a combination of your ability to answer questions during the in-class project “walkarounds”, the team participation form, and your knowledge of the project and code before, during and after the project presentation.

Course grades are assigned as follows:

A	93
A-	90
B+	87
B	83
B-	80
C+	77
C	73
C-	70
D+	67
D	63

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Course Schedule

Please note that the official Academic Calendar, found here: www.luc.edu/academics/schedules, has information about all Loyola breaks, the final exam schedules, and other relevant schedule information.

The dates below give the sequence and a general idea of the time spent, though we may get ahead or behind this time schedule at different points, depending on the needs of the class. Links for assignments and exam reviews may be inaccurate (not updated) or missing until their introduction in class.

Under Activities **Prep**: means preparation done *before* class, with your questions always noted for discussion in class! Sometimes extra **In class** activities (besides questions and active use of preparatory reading) are mentioned. Written assignments should be turned in to Sakai by the end of the day listed (11:59PM), unless otherwise noted. The section on Course Materialsdiscusses how to obtain the videos for the listed sections.

Week	Date	Activities	Assignments
1	8/27 8/29 8/31	**In class**: Syllabus, Pair Programming: the idea and administration, introductory notes Form pairs, pictures, introduce Hands-on Python Tutorial**,** Example Files **Followup**: make sure you have completely read the administrative documents introduced above.	
		Prep: Hands-on Python Tutorial through Input/Output 1.10 (most video for one class, with all the introductory material);	
2	9/03	Labor Day--no school	
	9/05 9/07	Catch up and questions: 1.1 - 1.10**Prep**: Python Tutorial functions 1.11, dictionaries 1.12	
3	9/10 9/12 9/14	**Prep**: Python Tutorial 1.13 Loops	
		Prep: Python Tutorial 1.14, hw questions ready!	
		In class: Review materials for Exam #1	
4	9/17	Catch up and questions	
	9/19	Exam 1 (review materials) ("What is printed?")	Chapter 1 Exercises
	9/21	Exam #1, continued (Programming and short answer)	
5	9/24 9/26 9/28	**Prep**: Tutorial 2.1 - 2.2 (2.3)	
		Prep: Tutorial 2.4 , 2.4.1, 2.4.2, 2.4.5	
6	10/01	Prep: Tutorial 2.4.6-8, 2.4.10 (read/demo)	
	10/03	Prep: Tutorial 2.5	
	10/05	Discuss Python Project (finalize teams) **Prep**: Python Tutorial Chapter 3 through 3.1.6	Chapter 2 Exercises
7	10/08	Mid-semester break, no school	
	10/10 10/12	**Prep**: Python Tutorial 3.1.6 - 3.1.7 **Prep**: Python Tutorial 3.1.7 - 3.3.1	
8	10/15 10/17 10/19	**Prep**: Python Tutorial 3.3.2. - 3.3.4 through bounceWhile.py	Chapter 3.1 Exercises Due 10/17
		Chapter 3 Review and Exam Review	

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9	10/22	Chapter 3 catch up and questions	
	10/24 10/26	Exam 2 (review materials)	Chapter 3.2--3.3.4 Exercises Due 10/24 before class
10	10/29	**Prep:** Python Tutorial Chapter 4 through 4.3, web programming	
	10/31 11/02	**Prep**: Python Tutorial 4.4.4	
11	11/05	**Prep**: Bases and Binary Arithmetic in binary web notes (videos N2, N3A, N3B, N3C-E)	Submit any independent planfor the Python Project
	11/07 11/09	**Prep**: Pip assembler through 4E in web notes (videos N4, N4A, N4B, N4C, N4D, N4E)	
12	11/12 11/14 11/16	Prep: Pip If-else in assembler (Videos N4F, N4G, N4H)	Chapter 4 Exercises
		Prep: gatesand Boolean algebra (N5A-D) through Gates Applet **Prep**: Gates and Boolean Algebra (N5E-I)	
13	11/19	Homework and Projects	Pip Program
	11/22 11/24	Thanksgiving	
14	11/26	Homework and Projects	Gates HW due in class, or by midnight in Sakai
	11/28	Exam #3: (review materials)	
	11/30	Project Work	
15	12/03 12/05	Project Work	
	12/07	Project Presentations	
16	12/13	Project Presentations Thursday, 1:00 - 3:00 p.m.	Python Project Due

Important Dates:
Here are some dates from the LUC academic calendar**:**

Fall Semester's Open Registration ends at Midnight	Sun	Aug. 26
Fall Semester Begins	Mon	Aug. 27
Late registration and registration change period begins, late registration fees apply	Mon	Aug. 27
Late and change registration ends, Last day to withdraw without a "W" grade	Mon (Tues, if Labor day)	Sept. 4 (Tues)
Labor Day weekend begins, Classes that begin at 4:15 p.m. or later do not meet	Fri	August 31

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Last day to withdraw from class(es) with a Bursar credit of 100% - dates maintained by Bursar	Sun	Sept. 9
Labor Day, Classes do not meet	Mon	Sept. 3
Classes resume after Labor Day	Tues	Sept. 4
Last day to convert from credit to audit or vice versa, Last day to request or cancel pass/no pass option	Mon	Sept. 10
Last day to withdraw from class(es) with a Bursar credit of 50% - dates maintained by Bursar	Sun	Sept. 23
Last day to withdraw from class(es) with a Bursar credit of 20% , zero credit therafter - dates maintained by Bursar	Sun	Sept. 30
Application for Degree. Last day to file, for degrees being awarded at the end of the Spring Semester and the Summer Term of the following year.		Oct. 1
Last day for students to submit assignments to change an "I" mark, from the preceding Spring and Summer Terms, to a letter grade. Faculty may set earlier deadlines.	Fri	Oct. 5
Mid-Semester Break: No classes	Mon & Tues	Oct. 8 - 9
Classes resume after Mid-Semester Break	Wed	Oct. 10
Last day to withdraw with a grade of "W," After this date the penalty grade of "WF" is assigned	Fri	Nov. 2
Spring Registration Begins	Mon	Nov. 5
Thanksgiving Break: No classes	Wed- Sat	Nov. 21 - Nov. 24
Classes Resume	Mon	Nov. 26
Fall Semester classes end	Saturday	Dec. 8
Final Exams	M.Tu.W*.Th.Fr.Sa	Dec. 10 - Dec. 15
*Study Day Wednesdays: No daytime exams will be held.		

Professor Notes

What you get out of this class is what you put in it. You can simply learn how to pass the class and continue on with your education, or you can be engaged and begin learning how to think like a computational scientist and problem-solver. I promise you that this will enhance your time here at Loyola and your careers in the future. Check out these articles about the importance of computational thinking in the sciences and society as a whole:

- https://www.wired.com/2017/03/biologists-teaching-code-survive/
- https://www.researchgate.net/publication/303792583_Computational_Thinking_The_Skill_Set_of_the_21st_Century

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