THE NEW SCHOOL
LANG

Eugene Lang College
Code Toolkit: Python
2012; CRN 11855
Fall, 2023
09:00 - 11:40, 6 East 16th Street, Room 602

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by appointment only

Course Description
This course provides a basic introduction to coding for students with no prior experience using the Python computer language. It will introduce the use of computing and algorithms to web design, data analysis and visualization, and game design. Students will complete integrative projects within each of these areas, and leave the class with a strong foundation in the use of Python across a range of applications. Access to a working laptop will be expected throughout the semester. This course fulfills the Integrative Course requirement of the Culture and Media major.

Learning Outcomes
After successful completion of this course, students will:

- have gained a deep understanding of the fundamental concepts of modern computer programs, which may serve as a solid foundation from which to continue learning;
- have gained deep insight into precisely how digital machinery operates when it mediates the socio-cultural patterns of life today, including: design and visual culture, communication, games, economic transactions, social interaction, and others;
- understand software elements such as data types and data structures, including the difference between the two, examples of each, and how to determine which examples to use in a specific situation;
- understand the computer science principle of abstraction, including how to use certain program structures to create modular, reusable code that reduces complexity by hiding implementation details;
- have learned the principles of interactive computer programming, including how write code that is triggered by and responds to user actions and events;
- have learned how digital software can be arranged into a system or separate and discrete components or independent processes, which can interact with each other through network protocols, and client/server architectures;
- develop critical computer science skills, understanding how all the above concepts are situated within a political and socio-cultural landscape;

- have gained a set of skills that may be applied to other parts of their liberal arts education as quantitative research methods, data investigation and visualization, and algorithmic analysis;
- have read a lot, learned a lot, made a lot of stuff, and had a lot of fun.

Assignments

Weekly homework exercises
You will have weekly homework assignments consisting of coding exercises. They will be due the evening before class on Tuesday at 8pm, and you will submit them to your folder in our shared Google Drive. Homeworks will be graded as pass/fail, on a scale of 0 or 1, based on effort. You will not be evaluated weekly on whether your code runs perfectly or has bugs, but rather on whether you engaged the topic and made progress. Occasionally I may give a fraction of a point (e.g. .85) to indicate that the level of completeness is not quite enough. Late submissions will be marked down, but submitting something is always better than submitting nothing, even if late. I will try my best to keep on posting homework grades throughout the semester, but if I fall behind, at the time of the midterm and final I will get caught up so you know where you stand. If at any time you would like more feedback - about one piece of work specifically or about your standing in the class overall - please do not hesitate to ask.

Even though the weekly homework is mainly graded pass/fail, notice from the Final Grade Calculation above that it represents the largest fraction of your final grade. The best way to do well in terms of grading will be to keep up with the weekly homework, and if you don't keep up with the homework it will be difficult to end up with a high grade. The reason I've structured things this way is because I have found that the best way for you to do well in terms of learning is also to keep up with the weekly homework. Our semester will proceed through small steps, but we'll take those steps fairly quickly, and the topics will be like incremental blocks that build on each other, so make sure you understand the concept each week in order to be sure next week will make sense.

Weekly readings and reading responses
We also have readings. These are indicated in the course schedule below and will be posted to the class github. You will be asked to submit a short reading response of about 150 words that mainly consists of quotes from the text that you wish to highlight and some questions or comments based on those passages. These will be submitted in a shared Google Doc that you will create right now and send to me.

I will also pose questions in the Google Doc to serve as a prompt to guide your reading and responses. Like the weekly programming exercises, these will also be due at 8pm the evening before class and will also be graded pass/fail.

Projects
There will be three projects to complete: a book due week 3, a midterm due around week 10, and a final due at the end of the semester. Each project will begin with a 1 page planning document, and will conclude with an accompanying 2-5 page presentation explaining your work, your intentions, challenges you faced, diagrams and planning material, and explanations of your code. The midterm project will offer you a choice between an interactive non-linear narrative, and a data visualization. The final project will be open.

Projects will be graded based on how well they fulfill the formal requirements stated in the project assignment, and the degree to which they engage with theoretical concepts from readings and discussion. In other words, while the reading discussions are a way to process, digest, and comprehend the readings, the projects are a way to demonstrate an understanding of those readings, and will be graded as such. We won't have any essays or written assignments in this class, in place of this, I would like your project work and write-ups to be a product of your engagement with course concepts both technical and theoretical.

Final Grade Calculation
Weekly homework assignments 30%
Readings and reading discussions 15%
Midterm project 20%
Final project 20%
Participation 15%

Community Agreements
We will develop an agreement for class participation and how to carry yourself inside and outside of the classroom. You will be responsible for following the community agreement and if you violate it you will be called out, asked to leave the room, or kicked out of the discord server.

- **No Trolls**

Content Warnings/Trigger Warnings
A content warning is a stated warning that the content of the immediately following text, video, etc., may upset or offend some people. A trigger warning is a statement at the start of a piece of writing, video, etc., alerting the reader or viewer to the fact that it contains potentially distressing material.

Trigger warnings will be given at the beginning of any section that contains content that might upset or offend some people.

Course Outline
An outline of our course schedule for the semester will be provided on the class website, reviewed on the first day, and is included below.

Week 1 – Thinking like a computer?
- Introductions
- About the course
- What is a program?
- A crash course to git
- Installing some software
- Prompt Engineering 101

Home Work
- Read Marshall McCluhan's The Medium is the Message

Extra Credit
- The Critical Engineering Working Group's THE CRITICAL ENGINEERING MANIFESTO pdf
- Watch Zach Lieberman's talk at EYE0 2012 * https://vimeo.com/47203759

- Read Casey Reas et al. {Software} Structures

Week 2 – Processing?

- The Processing Development Environment ("PDE")
- Drawing with numbers
- The window as a grid of pixels Part I: Python and the Processing platform

Home Work

- Coding Assignment #1 Solve LeWitt's Trapezoid Trapezoid
- Read Lev Manovich's The Language of New Media, Cambridge, MA: MIT Press, 2002. Chapter 1 (pages 18-55)

Week 3 – Adding variance

- Books
- Variables
- Arithmetic (+, -, *, /)
- Introduction to random()

Home Work

- Read Introduction to Shape Grammars
- Coding Assignment #2a : Create a generative pattern Experiment with 2D transforms such as scaling, rotation, mirroring, Iterate on your designs, Use Plenty of Variables
- Coding Assignment #2b : Make your pattern respond to the mouse input (button click and or position)

Week 4 – Adding interactivity

- Code blocks and frames (setup() and draw())
- Debugging (with println())
- Mouse interaction (mouseX and mouseY, pmouseX and pmouseY)
- map()
- User testing (and Export Application)

Home Work

- Coding Assignment #3 : A Clock
- Reading Selections from Matthew Fuller, Software Studies: A Lexicon: Introduction, "Algorithm", "Code", "Programmability", and "Source Code".
- Midterm project assignment Due: Week 8

Week 5 – Making things move

- Conditionals if and else
- Keyboard interaction
- Motion

Home Work

- Coding Assignment #4 One Button Game
- "Data Visualization", from Matthew Fuller's Software Studies: A Lexicon
- Catherine D'Ignazio and Lauren Klein, "Unicorns, Janitors, Ninjas, Wizards, and Rock Stars"

Week 6 – Adding repetition

- Loops

Home Work

- Coding Assignment #5.a: Create a Endless animation using primitives: Circle, Square, Rectangle, Triangles
- Coding Assignment #5.b: Create a Endless animation using found objects
    - !!! MEMEs will be judged by their Dankness
    -

Week 7 – Timing and state

- Timing
- State: a new way to use variables

Week 8 – Working with many things (lists), and modularity (functions)

- Data structures: Lists
- Functions: for project planning, reusability and modularity

Home Work

- Claus Pias, “The Game Player’s Duty: The User as the Gestalt of the Ports”, from Media Archaeology: Approaches, Applications, Implications, Jussi Parikka and Erkki Huhtamo, eds.
- Coding Assignment #6: Data Self-Portrait

Extra Credit

- Alex Galloway, "Gamic Action, Four Moments", chapter 1 (pages 1-38) from Gaming: Essays on Algorithmic Culture.

Week 9 – Midterm project work and review as needed

- Review & midterm project work

Week 10 – Midterm project presentations and discussion

- Last Min Bug Fixes w/Dan on the big screen
- Mid Term Presentations

Home Work

- Final project Due: Week 15 – Final projects, Pitches due next week!

Week 11 – Python outside of Processing

- Pitches
- Introduction to Python outside of Processing with VSCode and the command line
- Google Colab and Notebooks
- Data structures: Dictionaries

Week 12 – Data serialization, JSON, and Transformers

- Serialization with JSON
- Large Language Models
- Small Language Models

Homework

- Coding Assignment #7: Turn raw data into a dataset that can train an SLM.

Week 13 – Web protocols

- Scraping and Data with Python
- REST Api

Home Work

- Coding Assignment #8: Scraping the Net
- Alex Galloway and Eugene Thacker, "Protocol and Counter-Protocol", 2003
- Paul Dourish, “Protocols, Packets, and Proximity: The Materiality of Internet Routing”, from Signal Traffic: Critical Studies of Media Infrastructures, Nicole Starosielski and Lisa Parks, eds.

Week 14 – Work Day

- Gut Check - Final Project Work

Week 15 – Final projects

- Last Min Bug Fixes w/Dan on the big screen
- Final project presentations and discussion

Academic Integrity

Compromising your academic integrity may lead to serious consequences, including (but not limited to) one or more of the following: failure of the assignment, failure of the course, academic warning, disciplinary probation, suspension from the university, or dismissal from the university.

Students are responsible for understanding the University’s policy on academic honesty and integrity and must make use of proper citations of sources for writing papers, creating, presenting, and performing their work, taking examinations, and doing research. It is the responsibility of students to learn the procedures specific to their discipline for correctly and appropriately differentiating their own work from that of others. Visit the TNS University Policies A-Z webpage for the full text of the policy.

For resources regarding what plagiarism is and how to avoid it visit the TNS Learning Center website

Intellectual Property Rights: https://www.newschool.edu/provost/faculty-policies/

Grading Policies: http://www.newschool.edu/registrar/academic-policies/

Student Code of Conduct: https://www.newschool.edu/student-conduct/

Course Policies

Responsibility

Students are responsible for all assignments, even if they are absent. Late papers, failure to complete the readings assigned for class discussion, and lack of preparedness for in-class discussions and presentations will jeopardize your successful completion of this course.

Participation

Class participation is an essential part of class and includes: keeping up with reading, contributing meaningfully to class discussions, active participation in group work, and coming to class regularly and on time.

Delays

In rare instances, I may be delayed arriving to class. If I have not arrived by the time class is scheduled to start, you must wait a minimum of thirty minutes for my arrival. In the event that I will miss class entirely, a sign will be posted at the classroom indicating your assignment for the next class meeting.

Lang College Policies:

Attendance

At Lang College, students maximize their learning with peers and faculty when all members of the class are present and engaged in the regular collective work of the course. Attendance and participation lay the foundation for thriving in the classroom, whether in seminar, lecture, lab, studio, or practice-based classes.

Though there can be many justifiable reasons for absence from class, multiple absences impact the learning environment for all students and warrant some grade reduction in an environment where learning is both individual and collective.

Absences will be counted from the first day a student is enrolled in the class. Thus, after three (3) absences in a class that meets twice per week, the instructor will initiate a discussion between the student, the instructor, and Student Success Advisor (SSA) to devise a plan for attending class and meeting expectations for the remainder of the semester. This discussion can take place in person, via Zoom, or via email correspondence. For classes that meet once per week, this discussion will take place after two (2) absences.

For classes meeting twice per week, more than four (4) absences normally mandate withdrawal or a failing grade for the course. For classes meeting once per week, more than three (3) absences normally mandate withdrawal or a failing grade for the course. Any exception to this threshold is dependent upon the above mentioned plan of attendance with the instructor and SSA.

Attendance and participation are required. Failing to show up and take part may result in a lowered grade, and excessive lack of engagement may result in being dropped from the course. Of course, we find ourselves in strange and challenging times! Safety protocols this semester dictate that we all must get tested frequently and positive test results of ourselves or our personal contacts may result in quarantine or isolation.

If students or I are unable to attend class, we may need to use Zoom either to record classes for others to watch later (asynchronously), or to conduct class discussions or lessons together (synchronously). It may happen that some of us may be live in person, while others are connecting over the internet. Please be flexible, compassionate, generous, and kind as we navigate these difficult arrangements.

Please keep in mind that you are responsible for any assignment deadlines even in the event of an absence. Please check with your peers, the class website, and me regarding anything you miss due to absence.

I warmly recognize that not everyone feels as comfortable vocally participating in class situations – and masks will likely make speaking even more difficult than usual. I implore you to keep in mind that your position and perspectives are unique and valuable, and that the class and I will always benefit from your voice and contributions. In short: I always want to hear what you have to say, and your classmates will benefit from it as well. Please speak up – and try your best to make yourself heard through your mask!

Resources
The university provides many resources to help students achieve academic and artistic excellence. These resources include:

- **University Libraries:**
  The New School Libraries provide access to a vast array of print and electronic resources as well as personal research consultations, classroom instruction, and spaces for study and collaboration.

- **University Learning Center:** For assistance with coursework during the semester, I encourage you to schedule free tutoring sessions at the University Learning Center (ULC). Individual appointments in Writing, Software, Computer Programming, Oral Presentations, Math, Time Management and ADHD Coaching are available from 7am-midnight Monday-Friday and 12-5pm on Saturdays. Online appointments are scheduled via WCONLINE and in-person sessions or last minute virtual walk-ins can be requested by emailing learningcenter@newschool.edu. In-person sessions are held at 66 W. 12th St. on the 6th floor. The ULC also offers weekly and biweekly sessions. For a complete list of services and general information, please visit www.newschool.edu/learning-center.

- **Student Disability Services:**
  [In an effort to promote awareness of Student Disability Services and to support inclusive practices, TNS strongly encourages faculty to add the following statement to all course syllabi and to read it on the first day of class]: If you are a student with a disability/disabled student, or believe you might have a disability that requires accommodations, please visit the SDS website and complete the Self ID form. Then, head to Starfish and find a time to meet with Nick Faranda, at a time of mutual convenience. If you have any questions or concerns, please contact Student Disability Services (SDS) at studentdisability@newschool.edu, or 212-229-5626.

- **Archives and Special Collections: Digital Archive Collections**
  The New School Archives and Special Collections holds a wide array of collections in many different formats that may be useful in your academic, artistic, and personal projects, including paper and digital records, audiovisual material, artist's books, zines, and records related to the histories of all divisions of the University. Archivists are available to help with your research and to offer guidance for locating resources specific to your topic. Contact archivist@newschool.edu to get started.

- **Food Assistance**: All current TNS students are eligible to use The New School Food Pantry. Visit this webpage for more information on the food pantry and additional resources.

- **Health and Wellness**: Visit this webpage for information about medical, counseling, and other support services available to New School students.

- **The Student Ombuds Office:** This office provides assistance to students in resolving conflicts, disputes, or complaints on an informal basis. This office is independent, neutral, and confidential.
- **Office of Financial Aid**: Visit this webpage to set up a meeting with a FA counselor. Eligible students may be considered for different types of financial aid such as scholarships, federal grants, federal work study and federal student loans. To be considered for federal student aid, you will need to complete the Free Application for Federal Student Aid (FAFSA) available online at fafsa.gov. The New School's priority deadline to submit the FAFSA is February 15. The FAFSA needs to be submitted annually.
- **Student Bill of Rights**
- **Title IX**

Student Course Ratings

During the last two weeks of the semester, students are asked to provide feedback for each of their courses through an online survey. They cannot view grades until providing feedback or officially declining to do so. Course evaluations are a vital space where students can speak about the learning experience. It is an important process which provides valuable data about the successful delivery and support of a course or topic to both the faculty and administrators. Instructors rely on course rating surveys for feedback on the course and teaching methods, so they can understand what aspects of the class are most successful in teaching students, and what aspects might be improved or changed in future. Without this information, it can be difficult for an instructor to reflect upon and improve teaching methods and course design. In addition, program/department chairs and other administrators review course surveys. See these instructions for completing your course evaluations online.