

# **IST256 Syllabus Spring 2024**

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## **Course Information**

IST256: Introduction to Python for the Information Profession

### **Audience: IST256 or IST356?**

This course is for students who are new to computer programming yet desire to learn how it applies to our everyday lives.

- IST256 is for students with little to no programming experience. The course content is 75% python fundamentals and 25% python for data analytics.
- IST356 is for students with prior programming experience. The course content is 25% python fundamentals and 75% python for data analytics.

## **Catalog Description**

Structured program design, development testing, implementation, and documentation of common information system applications using structured programming languages.

Lectures and laboratory.

## **Description**

Due to the prevalence of technology in our lives, learning to program has become the critical skill of the 21st century. Students will learn practical applications of computer programming such as how to automate tasks, manipulate data and solve problems applicable to almost any academic discipline.

## **Learning Outcomes**

At the end of the course, students will be able to:

1. Analyze complex problems by thinking computationally and systematically.

2. Solve practical, real-world problems using a modern computer programming language..
3. Demonstrate the ability to read, write, discuss and code confidently.
4. Understand how to code in teams, collaborate with others and manage source code.
5. Acquire new programming knowledge independently.

## **Large Group and Recitation Sections**

Every student in IST256 is assigned to the main section M001, then one of the recitation sections. You are required to attend both sections every week. Your recitation instructor is responsible for your grades.

## **Office Hours**

Office hours are for asking questions, clearing up doubts and misunderstandings in the coursework and getting advice / guidance on labs and homework. Please do not expect to be tutored during office hours, and please do not work on your homework during our office hours. Each of your instructor's Office Hours will be posted in Blackboard. If you require tutoring, please see the [getting help](#) section below.

## **Understanding Approach Used in this Course**

Learning to program a computer does not come easy for most people. Decades of teaching programming to students like yourself has taught me it requires time, patience, practice and a well-established routine. This is not unlike the same routine required to learn a foreign language or musical instrument. There are times to practice and then times to demonstrate what you have learned.

## **Spaced and Repetitive Practice**

For better or worse, this course grading is designed to force you to practice. There are various activities due each week: readings, labs, and in-class / out-of-class homework activities. These are designed to expose you to programming little each day rather than binging the content once a week. Consuming the material this way gives you multiple

Nobody starts out programming as an expert. It takes practice, experimentation, and repeated failure to get it.

- Please be respectful of your instructor and classmates. You are not competing against each other, you are a community. Not everyone learns at the same pace and we should be kind and respectful to our classmates who struggle.

## Course Resources

### Course Website

Our course website is located at <https://ist256.com> or <https://ist256.github.io>. The course website contains the syllabus, list of due dates, and links to readings, content, videos and tools used in the course.

### Jupyterhub

Our programming environment is a private-cloud web application called Jupyter Hub. <https://v2hub.ischool.syr.edu>. This is the de-facto programming environment of the scientific community. All students have an account; use your SU Microsoft Account (NetID and password) to login. After you login you will see a **library** folder inside that folder is an **ist256** folder. All of the course content (lecture slides, code samples, labs, homework) is available in this folder.

### Textbooks

The following text is **required**:

- *Python for Everybody: Exploring Data In Python 3* by Charles Severance. <https://www.py4e.com/book>. The book is free and available in several formats from the URL provided.
- There are assigned readings which must be completed prior to each large group lecture. The reading can be found in the content section of the website and the course syllabus.
- In addition to the required reading the last 4 units have custom readings authored by your instructor.

Here are some **additional textbook recommendations**. Consider these supplemental resources:

- *Automate the Boring Stuff with Python: Practical Programming for Total Beginners* by Al Sweigert <https://automatetheboringstuff.com/>. Free online resource.
- *A Byte of Python*, <https://www.gitbook.com/book/swaroopch/byte-of-python/details>. Free online resource.
- *Dive into Python* , Mark Pilgrim <http://getpython3.com/diveintopython3/>. Free online resource.
- *Learn python the hard way*, Zed Shaw <http://learnpythonthehardway.org/book/>. Free online resource.
- *Python Practice Book*, Anand Chitpothu <http://anandology.com/python-practice-book/index.html>. Free online Resource.
- *Programming In Python 3*, Zybooks <https://www.zybooks.com/catalog/programming-in-python-3/>. Paid resource, approximately \$60 for the semester.

## NetID, Google and Microsoft Accounts

This course will require you to use your Syracuse University provided Google and Microsoft Accounts. Both accounts are based on your NetId. Your Google account is [netid@g.syr.edu](mailto:netid@g.syr.edu) and your Microsoft Account is [netid@syr.edu](mailto:netid@syr.edu). Learn more:

- NetID: <https://netid.syr.edu/>
- Microsoft Account: Login in with your SU email address and NetID password.
- SU Google Account: <https://ols.syr.edu/google-account-for-syracuse-university/>

## 3rd Party Services Used in This Course

This course uses a variety of 3rd party services to supplement and enhance your learning experience. Here's a list of with links to the resources we will use in this course. It is expected you will know how to access each of these resources.

Tool	Purpose	Link	Notes
Blackboard	Announcements, Grades	<a href="https://blackboard.syr.edu">https://blackboard.syr.edu</a>	Sign in with your NetId
JupyterHub	Python Programming, Code Samples, Slides, Labs, HW.	<a href="https://v2hub.iseaschool.syr.edu">https://v2hub.iseaschool.syr.edu</a>	Sign in with your NetId
Microsoft Teams	Chat with classmates / Instructors. Virtual office hours.	<a href="https://teams.is.t256.com">https://teams.is.t256.com</a>	Sign in with your SU Microsoft Account
Polley	In-Class polling for large group sessions.	<a href="https://pollist256.com">https://pollist256.com</a>	Sign in with SU Microsoft Account
Severance Textbook	The popular “Python for Everyone” book.	<a href="https://www.py4e.com/book">https://www.py4e.com/book</a>	Available in a variety of different formats.
Zoom	Videoconferencing tool we use for office hours and student support.	<a href="https://zoom.us">https://zoom.us</a>	Access through Blackboard

Please consult the [Course Links](#) section for details.

## Bring Your Own Device

This course uses the BYOD (Bring Your Own Device) model.

- For Large Group you need a device to ask and answer questions, basically to participate in group chat and polls (Polley). This can be a smartphone, tablet or laptop (Mac, Windows, or Chromebook). Do not try to code along in large group unless you are experienced. It is best to take notes and ask questions.
- For Recitation you need a device for which you can write code in the browser using Jupyter Hub. This should be a laptop computer (Mac, Windows or Chromebook). You will be expected to bring this device to recitation and use it to write code as part of participating in the recitation.
- Since you will code in a web browser using the provided JupyterHub platform, the hardware requirements are minimal. Any laptop, or chromebook should suffice.

## Tutoring

The University offers free group tutoring for this course through the Center for Learning and Student Success (CLASS).

Sign up for tutoring at: <http://myt.syr.edu>.

For more information on individual and group tutoring sessions, please visit: <https://class.syr.edu/academic-support/>

## Methods of Evaluation

### Grading

This course uses a well thought out mix of formative, summative, in-class and out-of-class instruments to assess your knowledge acquisition. A variety of techniques are used to cater to students of different learning styles and assess the course learning outcomes.

Assess ment Name	Bla ckb oar d Gra deb ook	Type	Le arn ing Ou tco me s	Qu ant ity	P oi nt s E ac h	P oi nt s T ot al	Pct Of Tot al Gra de	How Do I Turn it in?
Exams	E1 - E4	Ass ess men t	1,2, 3	4	2 2/ 2 3	9 0	35%	Taken in Small Group
Projec t	P1 - P4	Ass ess men t	1,2, 3,5	1	4 9	4 9	20%	Project folder on Jupyterhub
Class Codin g Labs	L01 - L13	Pra ctic e	1,2, 3,4	13	3	3 9	15%	Run the submission script at end of the Lab in Jupyterhub
Home work	H01 - H13	Pra ctic e	1,2, 3,4	13	3	3 9	15%	Run the submission script at end of the Homework in Jupyterhub

Assessment Name	Blackboard Gradebook	Type	Learning Outcome(s)	Quantity	Points Each	Points Total	Pct Of Total Grade	How Do I Turn it in?
RecitationCode	S01 - S13	Practice	1,2, 3	13	3	39	15%	Run the submission script at the end of recitation
TOTAL						256		

- For a comprehensive list due dates and times for all assignments, consult the [What's Due?](#) section of the [Course Schedule](#).

## Exams (E1 - E4)

- Exams are high-stakes, summative assessments. They measure the individual's ability to recall, understand, and apply the course material. They are one of two instruments in this course which measures your mastery of the learning outcomes.
- There will be 4 exams in the course.
- Each exam focuses on specific lessons, but due to the nature of the course material, all exams are cumulative.
- Exams are issued in class.
- Exams are closed book. No use of Notes, Jupyterhub, or any outside resources.
- You will have 25 minutes to complete 22 or 23 exam questions.
- Students can bring a one page cheat sheet with typed or hand written notes and/or code samples.
- Questions consist of multiple choice, fill-in-the blank, and short-answer.
- If you require a special testing accommodation, you should schedule to take the exam in the CDS testing center as it will be difficult to accommodate exam time extensions in class.
- There are no make-up exams. Exam dates are posted on the syllabus, please plan accordingly.

## Project (P1 - P4)

- The project is the other high-stakes summative assessment. The goal of the project is to demonstrate your ability as an individual to perform a data analysis in Python. It should represent an accurate culmination of what you have learned in the course.
- You will work on the project individually, be expected to produce working code, and be able to explain it at both a high and detailed level.
- The project is divided into 4 phases; due dates are posted on the course schedule.
- You will receive feedback and advice after the first two deliverables; a project grade after the final deliverable.
- Each project phase must be submitted on Jupyterhub using the provided submission notebook.
- Late submissions are not accepted. We need time to grade.
- The [What's Due](#) section of the syllabus outlines the two exam dates.

## Project Phases

Phase	Name	Deliverables
P1	Data Set Selection	Chose a primary and backup dataset of interest for which you will perform your data analysis. You will receive feedback only.
P2	Exploratory Data Analysis	Write python code to explore your dataset as to understand it and to extract information as to create your data story.
P3	Data Product	Write python code to tell a data story with your dataset. This should allow users to interact with the data and see visualizations.
P4	Demo and Reflection	Demo video of how your data product works and a video reflection of what you learned.

## Criteria for Project Grade

- Complete all project deliverables on time, and to satisfaction as per the requirements. While you receive a grade for P4, work from all other phases are factored into your grade.

- Your code clearly demonstrates what you learned; the code you write is in the style learned throughout the course.
- Take instructor feedback was taken into consideration.
- Journal as your work on your project, recording time and tasks.
- Effective data analysis, coherent data story, evidence of manipulations to source data as to create improvements to the data story.
- Polished final data product that uses interact for inputs.
- In addition, there is a grade limit based on the number of lines of student-written code that is used in the project. Note: copies of code from class or elsewhere do not count. This must be code you wrote yourself that directly impacts the project's behavior.

Lines of student-written code in the project	Maximum Possible grade
100 or more	A+
50 to 100	B+
Under 50	C+

## Grading Scale For Project

Finally, you are assigned a letter grade for your project. This letter grade is translated to a number of points based on this table.

Project Grade	Assigned Points
A+	49
A	47
A-	45
B+	42
B	40
B-	37
C+	35
C	32

Project Grade	Assigned Points
C-	30
D+	27
D	25
D-	20
F	0

Specifics on the project as well as details of each deliverable can be found under your **project** folder in Jupyterhub.

## Class Coding Labs (L01 - L13)

- Each week there will be an out-of-class hands-on lab programming activity.
- The purpose of the lab is to provide guided, hands-on programming practice. Labs are your first opportunity to get your hands on a keyboard and start programming. This is a low-stakes assessment, formative assessment.
- The [What's Due](#) section of the syllabus identifies the lab you should complete.
- You can find the lab activity on JupyterHub.
- This activity must be completed and turned submitted by the due date.
- You may work alone or with a partner as you complete the lab. If you work with another, you should both complete the lab individually, and you should make a note of who your lab partner was when you completed your work. As to not draw attention to a potential academic integrity violation.
- If you are having difficulty completing the lab, you are welcome to review the lab walk-through video which guide you through the more difficult parts of the lab. You are encouraged to only consult the walk-through when you are stuck.

## Rubric for Class Coding Labs

Lab Criteria Definitions:

1. **Code Correct** means all **You Code** sections of the lab are correct.

2. **Code Complete** means all `You Code` sections have an honest attempt to code the problem at hand. Please note this does not imply the code is correct. If the code is not correct, there is an adequate reflection with student questions.
3. **Cells Executed** means all code cells in the lab display evidence they were executed in your lab submission.
4. **Metacognition Complete** means the student made an honest effort to answer the open-ended questions in the lab adequately conveying what you have learned and what still confuses you. This should be evident in the work you have done to complete the lab. We value reflection. It is important to the learning process.

Lab Criteria	Assigned Grade
All 4 criteria met	3
3 criteria met	2
2 criteria met	1
Less than 2 criteria met	0

## Homework (H01 - H13)

- Practice makes perfect. Each week you will be assigned homework to complete outside of class.
- The goal of the homework is practice problem solving with code independently. Throughout the process you should take inventory of your abilities with respect to the material. While it is admirable to get the code correct, that is not the evaluation criteria nor is it the purpose of the homework. You should use the homework as a personal gauge for how well you are grasping the material.
- You can find the the homework assignments on JupyterHub. The [What's Due](#) section of the syllabus identifies the homework assignment you should complete.
- Homework are **individual assignments**. You can collaborate on strategy but you must work alone on the assignment. You must be able to explain the code you write, or it will be considered an academic integrity violation. It's not about getting it right, but it is about making an honest self-assessment!

- For each homework there is an advice video which provides hints and tips for how you can approach the homework assignment. You are encouraged to only consult the video when you are having difficulty with the homework.
- If you get assistance from somewhere else, such as online, or someone else such as a tutor, or the an AI assistant you must divulge that in your submission or it will be considered an academic integrity violation.

## Rubric for Homework

Homework Criteria Definitions:

1. **Code Correct** means an honest attempt was made at a solution and the solution is correct. For incorrect solutions, the code runs, might not be correct, but there is some explanation in the Metacognition section.
2. **Code Well Written** means your code is easy to understand, modular in nature, has aptly named variables, was programmed in the style we learned in class, and demonstrates what you learned that week.
3. **Problem Analysis Complete** problem analysis was complete, identifying the problem's inputs, outputs, and algorithm/plan.
4. **Metacognition Complete** means the student made an honest effort to answer the open-ended questions in the assignment.

Homework Criteria	Assigned Grade
All 4 criteria met	3
3 criteria met	2
2 criteria met	1
Less than 2 criteria met	0

## Recitation Code Assignment (S01 - S13)

Your recitation professor will measure attendance and participation each session through you turning in your recitation code activity. This is the code you work on in class with your classmates. If you are not in class, you will not receive credit. The specific criteria is entirely at the discretion of your instructor, but most likely consists participating in the programming assignment completed in class.

- All suspected academic integrity violation will be reported to the university's office of academic integrity.
- Proposed sanction for violations of a low-stakes assessment such as a homework assignment or lab, is a **grade of zero**.
- Proposed sanction for any violation on a summative assessment such as an exam or the final project is a **grade of F in the course**.

## Syracuse University Policies

Syracuse University has a variety of other policies designed to guarantee that students live and study in a community respectful of their needs and those of fellow students. These policies apply to this course and can be found at this URL:

<https://academicaffairs.syracuse.edu/important-syllabus-reminders/>

## Course Schedule

Dates	Topic (Click Link for Content and Assigned Readings)
1/16 - 1/21	Course Introduction / Syllabus
1/22 - 1/28	<a href="#">Lesson 01: Introduction to Python Programming</a>
1/29 - 2/4	<a href="#">Lesson 02: Input, Output, Variables and Types</a>
2/5 - 2/11	<a href="#">Lesson 03: Conditionals</a>
2/12 - 2/18	<a href="#">Lesson 04: Iterations</a>
2/19 - 2/25	<a href="#">Lesson 05: User-defined Functions, Modules</a>
2/26 - 3/3	<a href="#">Lesson 06: Strings and Text Processing</a>
3/4 - 3/10	<a href="#">Lesson 07: File I/O and Persistence</a>
3/11- 3/17	SPRING BREAK - NO CLASSES
3/18 - 3/24	<a href="#">Lesson 08: Lists</a>
3/25 - 3/31	<a href="#">Lesson 09: Dictionaries and JSON</a>
4/1 - 4/7	<a href="#">Lesson 10: Pandas I</a>

Dates	Topic (Click Link for Content and Assigned Readings)
4/8 - 4/14	<a href="#">Lesson 11: Pandas II</a>
4/15 - 4/21	<a href="#">Lesson 12: Data Visualization</a>
4/22 - 4/28	<a href="#">Lesson 13: Web API's</a>
4/29 - 5/7	Complete Project

## What's Due?

Use this table to track the due dates of all graded work in this course. Dates and times are Eastern Time Zone.

Date Due	Time Due	Gradebook	Points	Where	What is Due?
1/23/2024	11:59 PM	L01	3	<a href="#">Jupyterhub</a>	01-Intro/LAB-Intro.ipynb
1/24/2024	11:59 PM	S01	3	Jupyterhub	01-Intro/SmallGroup-Intro.ipynb
1/26/2024	11:59 PM	H01	3	Jupyterhub	01-Intro/HW-Intro.ipynb
1/30/2024	11:59 PM	L02	3	Jupyterhub	02-Variables/LAB-Variables.ipynb
1/31/2024	11:59 PM	S02	3	Jupyterhub	02-Variables/SmallGroup-Variables.ipynb
2/2/2024	11:59 PM	H02	3	Jupyterhub	02-Variables/HW-Variables.ipynb
2/6/2024	11:59 PM	L03	3	Jupyterhub	03-Conditionals/LAB-Conditionals.ipynb
2/7/2024	11:59 PM	S03	3	Jupyterhub	03-Conditionals/SmallGroup-Conditionals.ipynb
2/9/2024	11:59 PM	H03	3	Jupyterhub	03-Conditionals/HW-Conditionals.ipynb
2/13/2024	11:59 PM	L04	3	Jupyterhub	04-Iterations/LAB-Iterations.ipynb

Date Due	Time Due	Gradebook	Points	Where	What is Due?
2/14/2024	11:59 PM	S04	3	Jupyterhub	04-Iterations/SmallGroup-Iterations.ipynb
2/14/2024	11:59 PM	E1	23	Small Group	E1: Exam 1 (Focus on Lessons 1-3)
2/16/2024	11:59 PM	H04	3	Jupyterhub	04-Iterations/HW-Iterations.ipynb
2/20/2024	11:59 PM	L05	3	Jupyterhub	05-Functions/LAB-Functions.ipynb
2/21/2024	11:59 PM	S05	3	Jupyterhub	05-Functions/SmallGroup-Functions.ipynb
2/23/2024	11:59 PM	H05	3	Jupyterhub	05-Functions/HW-Functions.ipynb
2/27/2024	11:59 PM	L06	3	Jupyterhub	06-Strings/LAB-Strings.ipynb
2/28/2024	11:59 PM	S06	3	Jupyterhub	06-Strings/SmallGroup-Strings.ipynb
3/1/2024	11:59 PM	H06	3	Jupyterhub	06-Strings/HW-Strings.ipynb
3/5/2024	11:59 PM	L07	3	Jupyterhub	07-Files/LAB-Files.ipynb
3/6/2024	11:59 PM	S07	3	Jupyterhub	07-Files/SmallGroup-Files.ipynb
3/6/2024	11:59 PM	E2	23	Small Group	E2: Exam 2 (Focus on Lessons 4-6)
3/8/2024	11:59 PM	H07	3	Jupyterhub	07-Files/HW-Files.ipynb
3/19/2024	11:59 PM	L08	3	Jupyterhub	08-Lists/LAB-Lists.ipynb
3/20/2024	11:59 PM	S08	3	Jupyterhub	08-Lists/SmallGroup-Lists.ipynb
3/22/2024	11:59 PM	H08	3	Jupyterhub	08-Lists/HW-Lists.ipynb

Date Due	Time Due	Gradebook	Points	Where	What is Due?
3/26/2024	11:59 PM	L09	3	Jupyterhub	09-Dictionaries/LAB-Dictionaries.ipynb
3/27/2024	11:59 PM	S09	3	Jupyterhub	09-Dictionaries/SmallGroup-Dictionaries.ipynb
3/29/2024	11:59 PM	H09	3	Jupyterhub	09-Dictionaries/HW-Dictionaries.ipynb
4/2/2024	11:59 PM	L10	3	Jupyterhub	10-Pandas-I/LAB-PandasI.ipynb
4/3/2024	11:59 PM	S10	3	Jupyterhub	10-Pandas-I/SmallGroup-PandasI.ipynb
4/3/2024	11:59 PM	E3	22	Small Group	Q3: Exam 3 (Focus on Lessons 7-9)
4/5/2024	11:59 PM	H10	3	Jupyterhub	10-Pandas-I/HW-PandasI.ipynb
4/9/2024	11:59 PM	L11	3	Jupyterhub	11-Pandas-II/LAB-PandasII.ipynb
4/10/2024	11:59 PM	S11	3	Jupyterhub	11-Pandas-II/SmallGroup-PandasII.ipynb
4/12/2024	11:59 PM	H11	3	Jupyterhub	11-Pandas-II/HW-PandasII.ipynb
4/12/2024	11:59 PM	P1	0	Jupyterhub	project/P1.ipynb
4/16/2024	11:59 PM	L12	3	Jupyterhub	12-Visualization/LAB-Visualization.ipynb
4/17/2024	11:59 PM	S12	3	Jupyterhub	12-Visualization/SmallGroup-Visualization.ipynb
4/19/2024	11:59 PM	H12	3	Jupyterhub	12-Visualization/HW-Visualization.ipynb
4/23/2024	11:59 PM	L13	3	Jupyterhub	13-WebAPIs/LAB-Webapis.ipynb
4/24/2024	11:59 PM	S13	3	Jupyterhub	13-WebAPIs/SmallGroup-Webapis.ipynb

Date Due	Time Due	Gradebook	Points	Where	What is Due?
4/24/2024	11:59 PM	E4	22	Small Group	E4: Exam 4 (Focus on Lessons 10-12)
4/26/2024	11:59 PM	H13	3	Jupyterhub	13-WebAPIs/HW-Webapis.ipynb
4/29/2024	11:59 PM	P2	0	Jupyterhub	project/P2.ipynb
5/7/2024	11:59 PM	P3	0	Jupyterhub	project/P3.ipynb
5/7/2024	11:59 PM	P4	49	Jupyterhub	project/P4.ipynb