MIT 15.561
Information Technology Essentials
Fall 2022

Contact Information and Details

Professor: Abdullah Almaatouq (http://amaatouq.io/). Please call me Abdullah.
Email: amaatouq@mit.edu
Office Hours: I will have drop-in office hours directly after class on Tuesdays (Room 412 in E62). You can also email me if it's a private matter and we'll set up a time to chat.

Teaching Assistant: Mohammed Alsobay (https://www.malsobay.com/)
Email: mosobay@mit.edu
Office Hours: Drop-in office hours at 4 PM on Mondays (lounge area surrounding Room 441 in E62), and by appointment.

Class Meeting Times & Locations
T / Th - 1:00PM - 2:30PM
Location: E62-233

Follow-up Questions & Discussion
Please submit your questions and discussion points to the public 15.561 Lecture Discussion Doc. Our answers will be in blue, and further discussion can take place in comments if needed.

Computing
- Please bring a charged laptop and a charger to *every* class
- Please have a gmail account
- Please have a repl.it account (this specific link will add you to our course's organization). They have free accounts.

Grading
- Class participation (including good-faith effort at in-class exercises)
- No exams
- Take-home exercises, equally weighted.
  - Assignments should be submitted on Canvas under the Assignments tab by 11:59 PM ET on the due date. They should be submitted as a link to a Google Document or a link to your repl.it project (the Canvas assignment description will specify which, e.g., Assignment 1 will be a repl.it link). Please be sure that for Google Doc submissions, you have set your sharing settings to anyone with the link so that the teaching team can access your assignment and grade it.

"Manus"
This class is *very* hands-on. Think of each class more like a workshop. We'll talk more about what this means, but the most important thing is that you come to class ready to work.

Who is this course for?

This course is for students that want to unlock the power of computers in ways that are likely new to you. It also tries to develop an appreciation for the kinds of problems computers tend to be good at solving—and those that they are not good at solving!

The course presumes no background in programming — though we'll spend the first half of the course going over general principles of computer languages such as: branching (if/case structure), loops (while/for), functions, input/output. Nearly everything we'll do programming-wise will be done in Python. The point of the programming portion earlier in the class is to have some common foundations and tools in place so we can explore other topics more deeply.

In addition to our fairly practical, hands-on classes, I have arranged several speakers from the tech industry to give guest lectures. This course would be appropriate for anyone who wants to have a deeper understanding of IT and how to take advantage of IT in numerous industries and various managerial roles.

Course Goals and Learning Objectives

- Understand general programming principles (if statements, while/for), functions, input/output, data structures.
- Develop problem-solving skills to translate "English" described business problems into programs written using the Python language.
- Develop a sense of the importance of rigorous experimentation to make decisions that affect business outcomes.
- Understand how to use A/B testing tools to solve business problems, including key aspects of using statistics for business decision-making.
- Gain an understanding of the underlying elements of machine learning systems.
- Develop a sense of the techniques used for evaluating the performance of machine learning models.

Textbooks:

- Griffel, Mattan, and Daniel Guetta. "Python for MBAs." Columbia University Press, 2021.
- Kohavi, Ron, Diane Tang, and Ya Xu. "Trustworthy online controlled experiments: A practical guide to A/B testing." Cambridge University Press, 2020.

Guidelines and Policies

I intend to follow all relevant policies. Let me know if you think I'm missing something.
MIT Sloan Values (https://mysloan.mit.edu/offices/deans/values/Pages/default.aspx)

Course Composition & Calendar (living document)

Session	Date	Lesson	Assign. Note
1	8-Sept	Introduction and Course Overview (slides)	
2	13-Sept	Foundations of IT (slides) (exercise)	
Programming: Mostly Manus			
3	15-Sept	Web: Early history, markup languages and webpages as text (slides) (exercise)	
4	20-Sept	Bonus: Web scraping demo (slides) + In-class work on Assignment + Q&A	Assign. 1
5	22-Sept	Getting Started with Python (slides) (exercise)	
6	27-Sept	Decisions Structures (slides) (exercise)	
7	29-Sept	Repetition Structures (slides) (exercise 1, exercise 2) (class evaluation survey)	
8	4-Oct	Functions and Modules/Packages/Libraries (slides) (exercise) (live programming)	
9	6-Oct	Interactive Python & Dictionaries (slides) + In-class work on Assignment + Q&A	Assign. 2
	11-Oct	No Class - Indigenous Peoples	
10	13-Oct	Introduction to Data in Python (slides) (demo) (exercise)	
11	18-Oct	Exploring, Plotting, and Modifying Data in Python (slides) (demo) (exercise)	
12	20-Oct	Relational Databases SQL I (slides) (online practice tool)	
	20-21 Oct	2022 Conference on Digital Experimentation @ MIT (CoDE@MIT)	
	25-Oct	No Class - Sloan MBA Intensive Period	
	27-Oct	No Class - Sloan MBA Intensive Period	
13	1-Nov	SQL II (slides) (online practice tool) + In-class work on Assignment + Q&A	Assign. 3
14	3-Nov	In-class work on Assignment + Q&A	
IT to Learn: Experimentation & Analysis			
15	8-Nov	Digital Experimentation I: Why Experiment? (slides)	sim. practice
16	10-Nov	Digital Experimentation II: A/B Testing & Analyzing Experiments	survey
IT and the Future: Manus & Mens			
17	15-Nov	Machine Learning & AI (slides)	Assign. 3 due
18	17-Nov	Guest Lecture on AI & Machine Learning - Abubakar Abid - Hugging Face (slides)	Recording
19	22-Nov	Guest Lecture on Data for Good - Alejandro Noriega-Campero - Prosperia (slides)	
	24-Nov	No Class — Thanksgiving Day	
20	29-Nov	Machine Learning & AI II (slides)	
21	1-Dec	In-class work on Assignment + Q&A	
22	6-Dec	Guest Lecture on Blockchain - Guy Zyskind - SCRT Labs (slides)	
23	8-Dec	Guest Lecture on IT & Marketplaces - Mahmoud Ghulman & Aziz Alghunaim - Nash (slides)	
24	13-Dec	Course Wrap-up (slides) / Course evaluation time (subject evaluations)	Assign. 4 due