Compsci 101 Introduction

August 29-Sept 2 Week					
	Monday	**Tuesday**	**Wednesday**	**Thursday**	**Friday**
PRE-WORK	**8/29**	**8/30** Topics: Introduction to the course Read through Course webpages QZ01 in Sakai	**8/31**	**9/1** Topics: Python, Variables, Operators, String operations Textbook • 1.1-1.5 • 2.1-2.7 • 2.9-2.11 • 9.3 • exercises are optional QZ02 in Sakai	**9/2**
LECTURE/LAB		**First Lecture**			Lab 0 Coming...
ASSIGNMENT		Assign 1 out			

Susan Rodger

August 30, 2022

DO NOT SIT IN THE LAST 8 ROWS

EVER!

Sea turtles hatching

- https://www.youtube.com/watch?v=sZYd0-egqbc

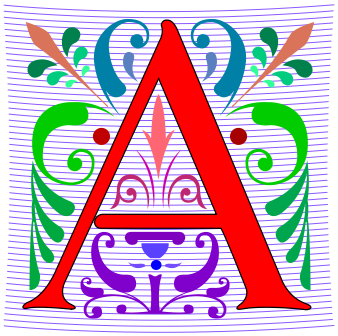
MS. Yesenia Velasco

Teaching Associate

- Right-hand woman - Handles logistics, substitute lectures, and much more!

- Handles accommodations
  - Email her your accommodation letter
  - yvelasco@cs.duke.edu

A is for …



- **Algorithm**
  - Step-by-step instructions realized in a program
- **Abstraction**
  - Hiding things is powerful
  - “What” vs “How”
- **APT**
  - Algorithmic Problem-solving
    Testing
- **API**
  - Application Programming
    Interface - using Libraries

Announcements

- **Check out the calendar on the course website**
  - PRE-WORK – what you must do before the lecture
  - LECT/LAB – will put notes/videos here from the live lecture or for the lab
  - DUE – what is due each week.
  - What has been updated?

- **Assignment 0 is already out!**
- **Lab 0 on Friday**
- **Prelab for Lab1 (install Python)**
- **You will see a link to this video!**

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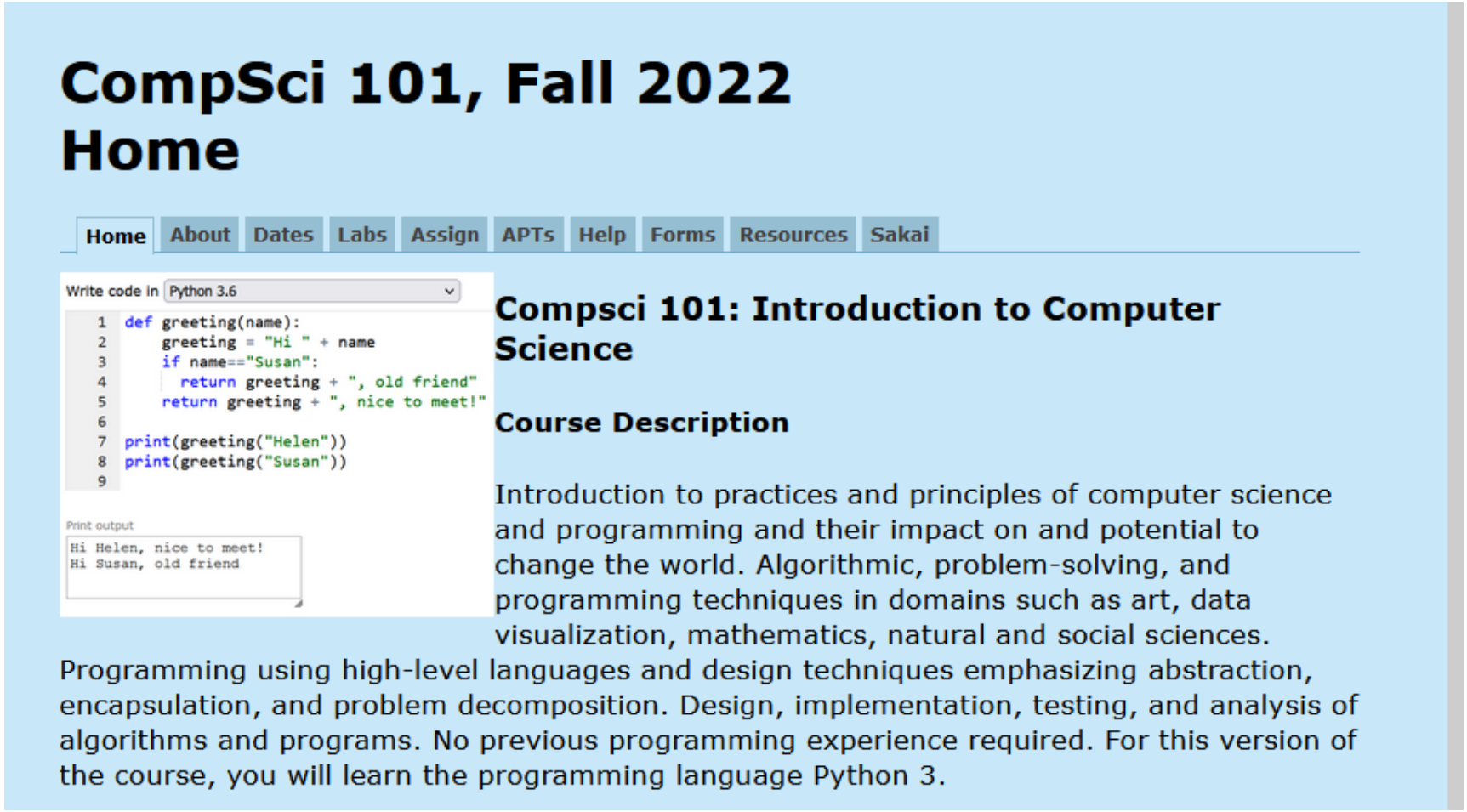
Go over CompSci 101 webpages



CompSci 101, Fall 2022
Home

Home | About | Dates | Labs | Assign | APTs | Help | Forms | Resources | Sakai

Write code in Python 3.6

```
1  def greeting(name):
2      greeting = "Hi " + name
3      if name=="Susan":
4        return greeting + ", old friend"
5      return greeting + ", nice to meet!"
6
7  print(greeting("Helen"))
8  print(greeting("Susan"))
9
```

Print output

```
Hi Helen, nice to meet!
Hi Susan, old friend
```

Compsci 101: Introduction to Computer Science

Course Description

Introduction to practices and principles of computer science and programming and their impact on and potential to change the world. Algorithmic, problem-solving, and programming techniques in domains such as art, data visualization, mathematics, natural and social sciences. Programming using high-level languages and design techniques emphasizing abstraction, encapsulation, and problem decomposition. Design, implementation, testing, and analysis of algorithms and programs. No previous programming experience required. For this version of the course, you will learn the programming language Python 3.

Course overview, logistics

www.cs.duke.edu/courses/fall22/compsci101

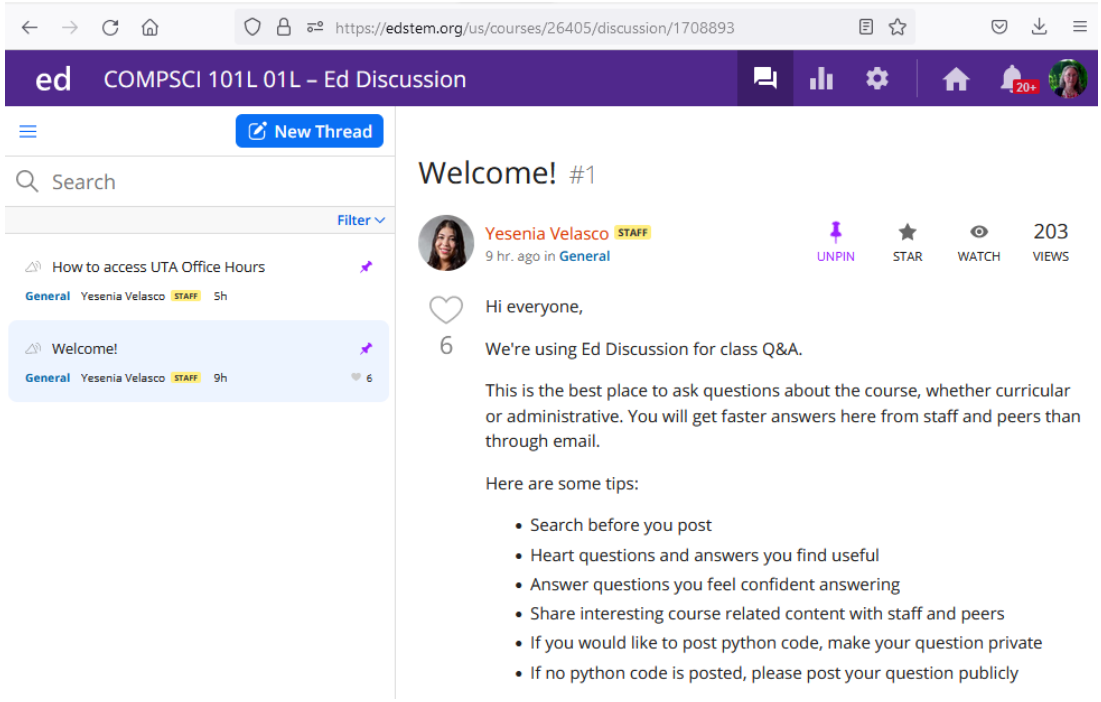
- Programming assignments: APTs and Assignments
  - Acknowledge assistance, to learn to program …
  - Be aware of late policy
- Labs
  - Attend each Friday
- Lecture - Classwork
  - Attend the live lecture - participate
  - If you can't attend you must watch it and participate within 24 hours
- Exams: 3 exams and final
  - All old exams available

What's in Compsci 101?

- **Learning about computing, computer science, and programming**
  - Vocabulary of Python and programming
  - *Power of automation, repetition, scale*
  - Understanding and changing the world
- **Programming using Python**
  - Tools: PyCharm, Libraries, …
  - Using mathematical and scientific techniques
  - Art *and* science of programming

Questions?

- Don’t send us email!!!!!!!!!!!
- Post your questions on Ed Discussion
  - We will answer them there!
  - You should try to answer them too
    - Want to be a UTA one day? Answer questions!
- Post Questions during lecture!



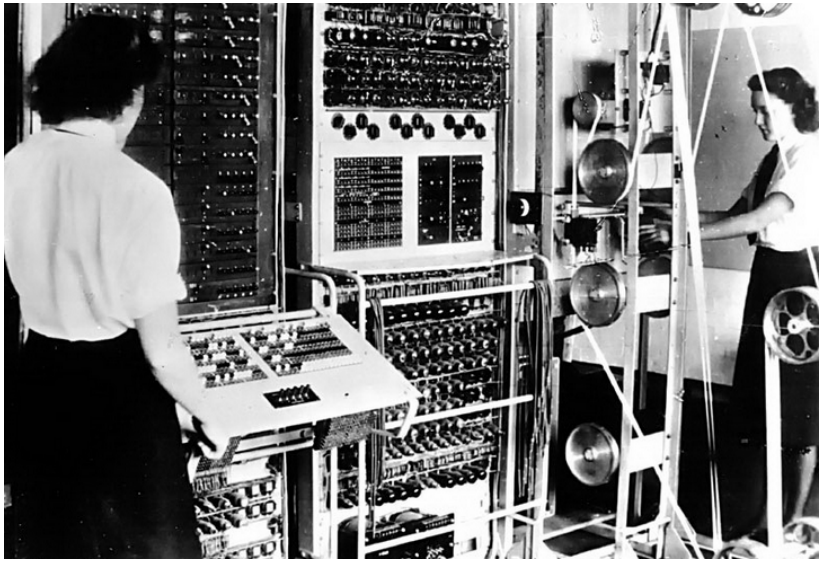
WOTO – Working Together

http://bit.ly/101f22-0830-2

Discuss with others, then everyone fills out their own form.

What is Computer Science?

How it started How it's going



Vacuum Tubes 1906

- Control electric current using the vacuum
- Can be used to start/stop, or change the flow based on the current

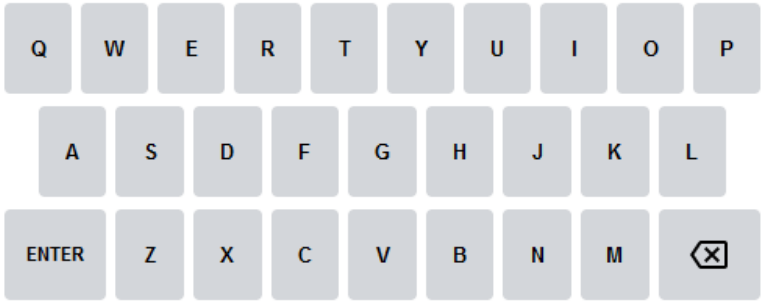
- Off/On→0/1
- 00000011

Prerequisites for Compsci 101

After taking this course you will be able to ….

- Write a program for Wordle
- Write a word finder to help someone solve Wordle

Wordle



Who are you?

- Let's look at survey to see who is taking Compsci 101 in Fall 2022
  - Do you recognize yourself?
  - Is there a stereotypical Compsci 101 student?
  - Is there a stereotypical computer scientist?

- Everyone can succeed! Ideally you won't have lots of experience programming

WOTO: WOrking TOgether

http://bit.ly/101f22-0830-3

Analyze this

Scratch Program?

Scratch Program

- If you want to experiment with this scratch program, here is the link:

https://scratch.mit.edu/projects/94064630/

You don't have to understand this yet!!

What language will we learn?

- http://www.python.org/
- Python is a *multi-paradigm* language
  - Procedural
  - Functional
  - Object-Oriented
- Simple, libraries, widely used
- Guido von Rossom

Python code hello.py

```
1  """
2  Created on 1/6/2022
3
4  @author: Susan H. Rodger
5  """
6
7  if __name__ == '__main__':
8      print("Hello CompSci 101!")
```

OUTPUT:

Python Code, second program

```
6   def greeting(name):
7       print("Hello " + name)
8
9   if __name__ == '__main__':
10      greeting("CompSci 101!")
11      greeting("Beenie, Keeah and Moe")
```

OUTPUT:

Duke Connection: Fred Brooks '53

- What Would FB Say?

"The most important single decision I ever made was to change the IBM 360 series from a 6-bit byte to an 8-bit byte, thereby enabling the use of lowercase letters. That change propagated everywhere."

- "Fred Brooks" by Copyright owned by SD&M (www.sdm.de) - Request for picture sent by email to Fred Brooks by uploader (Mark Pellegrini; user:Raul654) Fred sent this photo back, along with contact information for Carola Lauber at SD&M, who gave copyright permission.. Licensed under CC BY-SA 3.0 via Wikimedia Commons - https://commons.wikimedia.org/wiki/File:Fred_Brooks.jpg#/media/File:Fred_Brooks.jpg

Why is programming fun?

Fred Brooks

- First is the sheer joy of making things
- Second is the pleasure of making things that a useful
- Third is the fascination of fashioning complex puzzle-like objects of interlocking moving parts
- Fourth is the joy of always learning
- Finally, there is the delight of working in such a tractable medium. The programmer, like the poet, works only slightly removed from pure thought-stuff.