CSCI 203: Introduction to Computer Science I

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Spring 2019

Notes are based on works by other professors.

Let's get to know each other …

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learn about me: Google "Xiannong Meng"

Fill out survey form before Wednesday's class
(I'll email it after the class)

What are the majors who are in this course?

APPLIED MATH

ACCOUNTING & FINANCIAL MANAGEMENT

BIOLOGY   CHEMICAL ENGINEERING

COMPUTER SCIENCE & ENGINEERING

ECON & MATH

ENVIRONMENTAL ENGINEERING

MANAGEMENT

MATHEMATICAL ECONOMICS

PSYCHOLOGY

UNDECIDED

What is "computer" or "computer science" as you know?

Grab a piece of paper.

You have 2 minutes to write down 5 to 10 phrases, based on the following prompt:

Describe "computer" or "computer science"

SHARE your writing with your neighbors (4-5 of you), agreeing on one prompt ('computer' or 'computer science'), list top three phrases.

All groups,
SHARE them with class.
Go to **PollEv.com/xiannongmeng758**
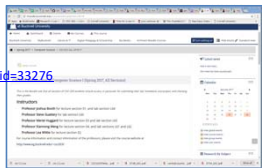
Some of our collective results?

- Language of Computers
- Programming
- Coding
- Computer science is science of computer
- Computer science is the study of computers, how they work, how to use them, and how they effect society
- Use of algorithms to solve problems
- Many more …

CLASS LOGISTICS

Course website:
http://www.eg.bucknell.edu/~csci203

Course Moodle site:
http://moodle.bucknell.edu/course/view.php?id=33276

COURSE STRUCTURE

Mon	Tues	Wed	Thurs	Fri	Sat	Sun
			LABS DUE			HW DUE

LABS

The first two weeks are a bit exception. See the course schedule for details.

HELP STRUCTURES

Mon	Tues	Wed	Thurs	Fri	Sat	Sun
			LABS DUE			HW DUE

LABS

- We will have help sessions, announced soon.
- TLC study groups
- Come to my office hours, or any time I am in office!
- Email or call me.

Python Programming

python

Python (language) and **IDLE** (editor)

Open-source, free from **www.python.org**

Available for Mac, Windows and Linux.

Easy to install.

Check out the "Resources" page from course website for instructions to install the software

We will be using **Python 3**

be sure to get that version...

Demo "Editor" and "Shell"

Editor (IDLE): *typing code* **Shell** window: *running code*

Here, you can save and change programs. Hitting F5 runs your program over in the shell

Here, you can try things out at the command prompt >>>

A Python Program

```
""" Here is a short python program... try it out!
    The comments to the right explain a bit of what's going on """
import random                    # allows use of random things
name = input('Hi... what is your name? ') # assign user's
                                 # input to variable name
print()                          # prints a blank line
if name == 'Rick' or name == 'Dan':  # if Rick or Dan...
    print('I\'m "offline." Try later.')
elif name == 'Hyde':             # if Hyde...
    print("But I wanted to meet Scott!")
else:                            # in all other cases...
    print('Welcome', name, '!')
    myChoice = random.choice( [ 'rock','paper', 'scissors' ] )
    print('My favorite object is', myChoice, "!")
```

Lab 0 on Monday or Tuesday is to *run* and *submit* a similar program

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Writing in Python

syntax   **semantics**   **intent**

How it looks   What it does   What it *should* do

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```

Syntax – How it looks

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    print('Welcome', name, '!')
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    print('My favorite object is', myChoice, "!")
```

Punctuation? Spacing? Color information? Strings? Variables?

Python syntax highlights

for homework 0

```
import random

userChoice = input('Enter something: ')
computerChoice = random.choice(['rock', 'paper', 'scissors'])

if userChoice == 'rock' and computerChoice == 'paper':
    print('You chose', userChoice)
    print('I chose', computerChoice)
    print('The result is', end = '')
    print(' YOU LOSE!')
    print('unless you\'re a CSCI 203 grader,\n then You WIN!')
```

assignment statements always read right-to-left and use ONE equals sign

comparisons use TWO equals signs

colons begin a new block!

Don't print a space. Don't go to next line.

a backslash shows special cases or characters

flattering or flouting CS graders is encouraged!

every block of code must line up!!

if *your test goes here* **:**
Start "branching"
True? Execute the block

elif *your test goes here* **:**
as many as you want –
zero or more
– all mutually exclusive

else:
NO test – still needs a colon
Like **elif**, it is **optional**

Choices

if ... elif ... else

```
if score >= 93:
    print('A')

elif score >= 90:
    print('A-')

elif score >= 60:
    print('Pass')

else:
    print('Aargh!')
```

mutually exclusive blocks

When using
if .. elif .. elif .. else
only one block of code will run:
the *first* one whose condition is **True**

What is Computing Science?

Computer Science – the study of algorithms - their design, implementation, testing, analysis, and impact on society.

But what's an algorithm?

> "It is a methodical, step-by-step procedure,
> a recipe if you will, for solving a problem." – our text

"Computing [Science] is the study of information processes, natural and artificial." Peter Denning, 2010

"The computer is a tool in these studies but is not the object of study." Peter Denning

"Computing is no more about computers than astronomy is about telescopes." Edsger Dijkstra

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FOR Wednesday….

- Bring a lap-top computer if you have one.
- Get Python working on your laptop (see instructions on the course web), you will try out programs on your own computers in classroom.
- Fill out the "About you" form (I'll email you the link).
- Do the assigned readings!