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# EECS16A Lab

Welcome! We'll be starting at 8:10 PM.  
Please open the lab notebook using  
<http://tiny.cc/bootcamp-sp21>

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# Today's Agenda

- Quick Poll
- About Us
- About Lab: Policies & Overview
- Jupyter Notebook
- Python Bootcamp

# Survey Time!

# About Us!

# About Lab!

# Semester Outline



Imaging  
Module



Touchscreen  
Module



Acoustic  
Positioning  
Module

# Policies

- Labs for this class are not open section, **you must go to your assigned lab section** .
- Credit for each lab is based on completion and checkoff with a lab TA/ASE during your assigned lab section.
- In a checkoff, you will demonstrate your work from portions of the lab and answer conceptual questions related to the lab. You should aim to get checked off by the end of your lab section.

# Policies

- If (and only if) you attend your lab section for the whole duration but do not finish in time, you may get checked off at the beginning of your next lab section before starting the following lab.



# Lab Grade

Number of Lab Missed	What happens?
0	You get full lab credit - 45/45
1	You get almost full lab credit - 44/45
2	You get most lab credit - 42/45
3	You get half lab credit - 23/45
4	You Fail the class - final letter grade: F

# Buffer Labs

- Some lab sections are “buffer labs.” These occur during several-day periods in which no new labs begin and are offered during all regular lab times.
- If you have already completed all labs for a particular lab module, you do not need to attend the buffer lab for that module.

# Buffer Labs

- During buffer lab periods, you may get checked off for only one missed lab that occurred during that lab module by attending your regular assigned section .
- No other labs can be checked off.
- The eligible labs for makeup for each buffer lab period are indicated on the course schedule.

# Bootcamp Time!

# Jupyter Notebook

A web-based interactive computational environment

- Document containing an **ordered list** of input/output cells
- Can contain code, text, mathematics, plots and rich media
- .ipynb file extension
- But what does this look like?

# Jupyter Notebook

- Ordered list of input & output

Condit

```
In [ ]: # Example  
  
x = 16  
  
if x >  
    pri  
else:  
    pri
```

```
In [ ]: # Example  
  
x = 16  
  
if x >  
    pri  
elif x  
    pri  
else:  
    pri
```

# Jupyter Notebook

- **Ordered** list of **input & output**
- Control/Command + Enter to run current block
- Shift + Enter to run and move forward

## Conditional

```
In [1]: # Example 1:  
  
x = 16  
  
if x > 20: #  
    print('i  
else:  
    print('i  
  
if condition
```

```
In [2]: # Example 2:  
  
x = 16  
  
if x > 20: #  
    print('f  
elif x > 10  
    print('f  
else:  
    print('N  
  
first if con
```

## Loop-Contr

```
In [3]: # Example 3:  
  
i = 0  
while i < 5:  
    print('i  
    i += 1 #  
  
i: 0  
i: 1  
i: 2  
i: 3  
i: 4
```

# Jupyter Notebook

- **Ordered** list of **input** & **output**
- *Order matters!*

```
In [ ]: a = True
```

```
In [ ]: if a:
        print("hello")
else:
        print("goodbye")
```

```
In [ ]: a = False
```



# Jupyter Notebook

- **Ordered** list of **input** & **output**
- *Order matters!*

```
In [1]: a = True
```

```
In [2]: if a:
        print("hello")
        else:
        print("goodbye")
```

hello

```
In [3]: a = False
```

# Jupyter Notebook

- **Ordered** list of **input** & **output**
- *Order matters!*

```
In [1]: a = True
```

```
In [4]: if a:
        print("hello")
        else:
            print("goodbye")
```

goodbye

```
In [3]: a = False
```

# Jupyter Notebook

- **Ordered** list of **input** & **output**
- Asterisk means it's still running or it is queued up to run

Loop-

In [\*]:

```
# Exam
```

```
i = 0
```

```
while
```

```
i
```

Unlike w

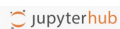
# Jupyter Notebook

- Text/Markdown
- Control/Command + Enter to format current block
- Shift + Enter to format current block and move forward

```
# Table of Contents
* \[Overview\](#overview)
* \[Python\](#python)
  * \[Control Flow\](#ctrl)
  * \[List Comprehension\](#lst)
* \[NumPy\](#numpy)
  * \[Arrays\](#arrays)
  * \[Slicing\](#slice)
  * \[Useful Functions\](#funcs)
* \[Miscellaneous Functions\](#misc)
* \[Questions\](#qs)
```

# Running Jupyter Online

- You can run Jupyter notebooks online using DataHub, without needing to install anything locally
- The DataHub link for each lab is on the course website
- Login with your CalNet credentials (berkeley.edu email)

The JupyterHub logo, featuring a stylized orange 'j' icon followed by the text 'jupyterhub' in a sans-serif font.

Sign in with Calnet ID

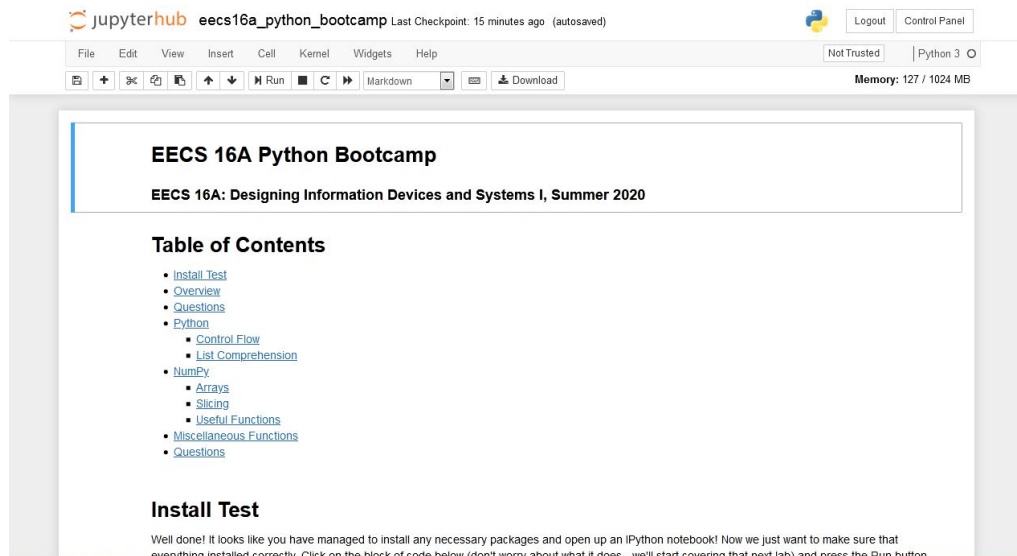
# Running Jupyter Online

- Select the corresponding lab folder in the directory
- Click on the .ipynb file to launch the notebook in another tab
- P.S. Remember to hit logout to make sure your work is saved to the cloud



# Running Jupyter Online

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The screenshot displays the JupyterLab web interface. At the top, the header shows 'jupyterhub' and the current notebook name 'eeecs16a\_python\_bootcamp', along with a 'Last Checkpoint: 15 minutes ago (autosaved)' status. On the right, there are 'Logout' and 'Control Panel' buttons. Below the header is a menu bar with 'File', 'Edit', 'View', 'Insert', 'Cell', 'Kernel', 'Widgets', and 'Help'. A toolbar contains icons for file operations, a 'Run' button, a 'Clear' button, a 'Restart' button, a 'Markdown' dropdown, a 'Download' button, and a 'Memory: 127 / 1024 MB' indicator. The main content area features a title 'EECS 16A Python Bootcamp' and a subtitle 'EECS 16A: Designing Information Devices and Systems I, Summer 2020'. Below this is a 'Table of Contents' section with a list of links: 'Install Test', 'Overview', 'Questions', 'Python' (with sub-links for 'Control Flow' and 'List Comprehension'), 'NumPy' (with sub-links for 'Arrays', 'Slicing', and 'Useful Functions'), 'Miscellaneous Functions', and 'Questions'. The 'Install Test' section is currently selected, showing a message: 'Well done! It looks like you have managed to install any necessary packages and open up an iPython notebook! Now we just want to make sure that everything installed correctly. Click on the block of code below (don't worry about what it does... we'll start covering that next lab!) and press the Run button.'

# Python Bootcamp

- Review Python
  - List comprehension
- Introduction to NumPy - scientific computing in Python
  - NumPy functions: `np.linspace`, `np.eye`, `np.transpose`, `np.linalg.inv`, `np.dot`
  - NumPy objects: arrays, matrices
  - NumPy array slicing, array reshaping
  - All the tools you will need for future labs



# Checking-off Today

- No graded check-off for Python Bootcamp
- Work on Python Bootcamp
- Follow the directions linked at bottom of the lab
  - Fill out Google form
  - Submit checkoff request on Lab Queue (one per group)
- During checkoff:
  - Introduce yourself: **name, major, year, hobbies**
  - Open the Python Bootcamp
  - Demonstrate how to run a code block
  - Find this presentation on the website
- Lab Group Request form: **\*\*\*LINK HERE\*\*\***
- Lab Queue: [lab.eecs16a.org](http://lab.eecs16a.org)