PIC 16, Winter 2018

Week: 1, Day: Monday

Lecture 1M: Introduction to PIC 16

Monday, January 8, 2018

Matt Haberland

Basic Info

- **Instructor:**
  Matt Haberland <haberland@ucla.edu> @ MS 6617A
- **TA:**
  Wonjun Lee <wlee@math.ucla.edu> @ MS 2000
- **Lecture:**
  MWF 11:00a.m. – 11:50 a.m. @ PIC Lab
- **Discussion:**
  TR 11:00a.m. – 11:50 a.m. @ MS 6201
- **Office Hours:**
  M 10:00 a.m. – 10:45 a.m., W 12:25 p.m. – 2:25 p.m.
  F 12:00 p.m. – 12:30 p.m. (Haberland)
  TBA (Lee)

Format

- “Flipped Classroom”
- Prepare at home with readings, code, and short videos
- Code in class
- Lectures in class (sometimes)

Preparatory work is essential to maximize learning

Requirements and Recommendations

- Prerequisite: at least two programming classes
  - You should be comfortable applying basic programming concepts, from operators to classes
  - We're going to learn the fundamentals of Python quite quickly
- Recommended Math Background:
  - It depends.
  - Course will split into two tracks:
    - Mathematical Applications: algebra and calculus
    - "Less-Mathematical" Applications: no special preparation
  - Students with any background can succeed in either track with sufficient interest and work ethic
  - Greater details is available in the document "Regarding Tracks…"

Intended Learning Outcomes

After successfully completing this course, students will be able to write programs in the Python programming language to accomplish a variety of tasks. Some notable assignments:

- Mathematical Applications
  - Add special effects to videos programmatically
  - Create a symbolic math calculator to do your homework
  - Remove the annoying “Woo Guy” from Super Bowl audio
  - Claim as much land as possible with a given length of fence
  - Analyze your friend’s walking gait
  - Teach a computer to read your handwriting

Intended Learning Outcomes

After successfully completing this course, students will be able to write programs in the Python programming language to accomplish a variety of tasks. Some notable assignments:

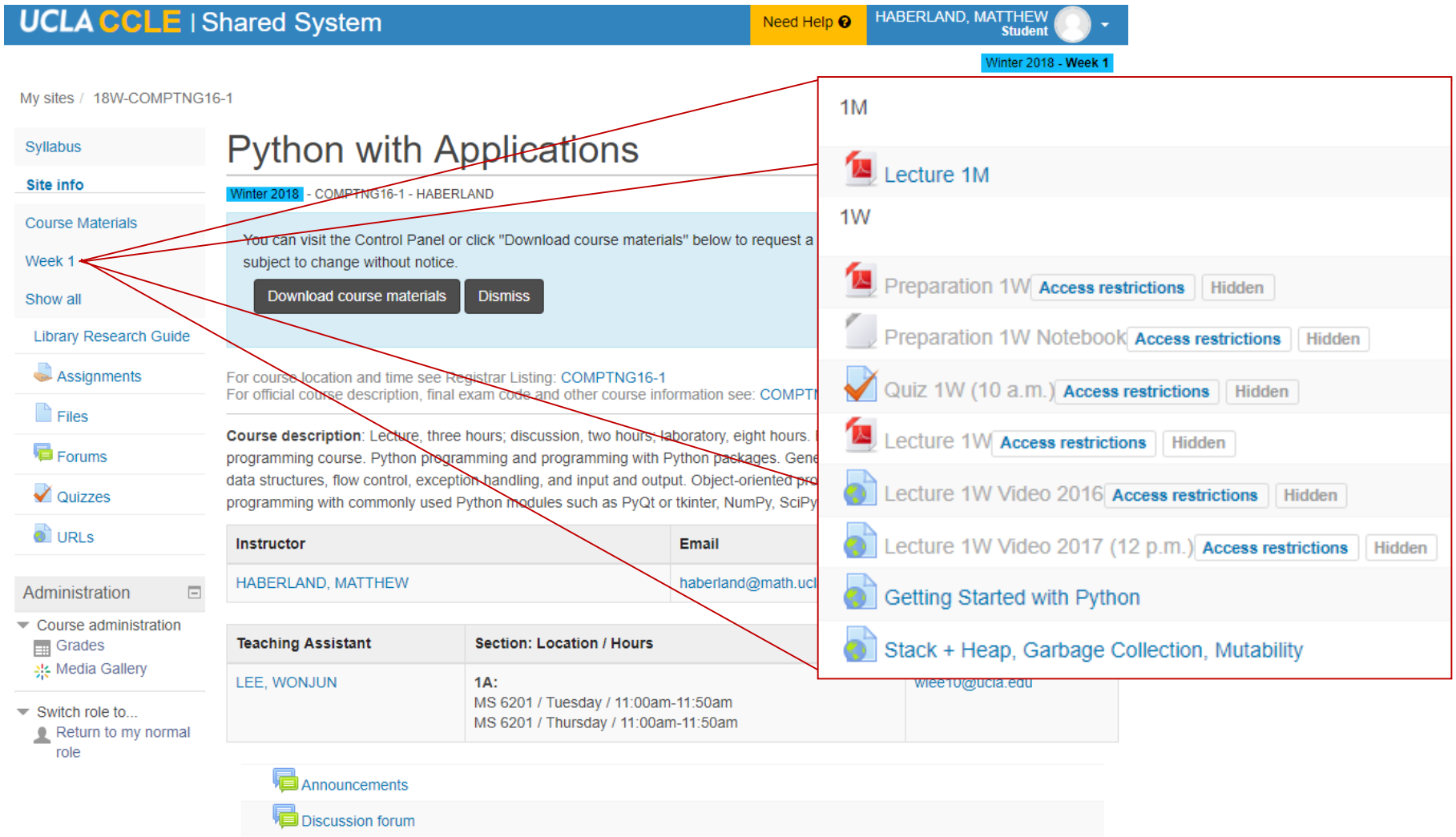
- "Less-Mathematical" Applications
  - Create a skill for Amazon Alexa
    - (Make money without really trying…)
  - Assess cognitive changes of a writer by analyzing his/her vocabulary over time
  - Determine the most popular hours of the Thirsty Ear Pub
  - Use data scraped from the Internet to choose the best Pokemon for your next gym battle
  - Write a chat program

Enrollment

- If not yet enrolled
  - Attend and complete assignments
    - Email me for access to CCLE and PIC lab (if needed)
  - After two weeks, those on wait list will be enrolled automatically
    - So keep checking waitlist
  - Others can be added by late petition if there is space
  - No more PTE numbers (department policy)
- If not enrolled in the lecture/discussion of your choice
  - Attend the one you are assigned if you can
  - Attend the other if you must (for now)
  - We'll see what happens and determine whether we need to be more strict or can be more flexible

(remainder not applicable this quarter)

Website


UCLA CCLE | Shared System
Need Help
HABERLAND, MATTHEW
Student
Winter 2018 - Week 1
My sites / 18W-COMPTNG16-1
Syllabus
Site info
Course Materials
Week 1
Show all
Library Research Guide
Assignments
Files
Forums
Quizzes
URLs
Administration
Course administration
Grades
Media Gallery
Switch role to...
Return to my normal role
Python with Applications
Winter 2018 - COMPTNG16-1 - HABERLAND
You can visit the Control Panel or click "Download course materials" below to request a
subject to change without notice.
Download course materials
Dismiss
For course location and time see Registrar Listing: COMPTNG16-1
Course description: Lecture, three hours; discussion, two hours; laboratory, eight hours.
programming course. Python programming and programming with Python packages. Gene
data structures, flow control, exception handling, and input and output. Object-oriented pro
programming with commonly used Python modules such as PyQt or tkinter, NumPy, SciPy
Instructor
Email
HABERLAND, MATTHEW
haberland@math.ucl
Teaching Assistant
Section: Location / Hours
LEE, WONJUN
1A:
MS 6201 / Tuesday / 11:00am-11:50am
MS 6201 / Thursday / 11:00am-11:50am
wlee10@ucla.edu
Announcements
Discussion forum
1M
Lecture 1M
1W
Preparation 1W Access restrictions Hidden
Preparation 1W Notebook Access restrictions Hidden
Quiz 1W (10 a.m.) Access restrictions Hidden
Lecture 1W Access restrictions Hidden
Lecture 1W Video 2016 Access restrictions Hidden
Lecture 1W Video 2017 (12 p.m.) Access restrictions Hidden
Getting Started with Python
Stack + Heap, Garbage Collection, Mutability

Recommended Textbook

The Internet

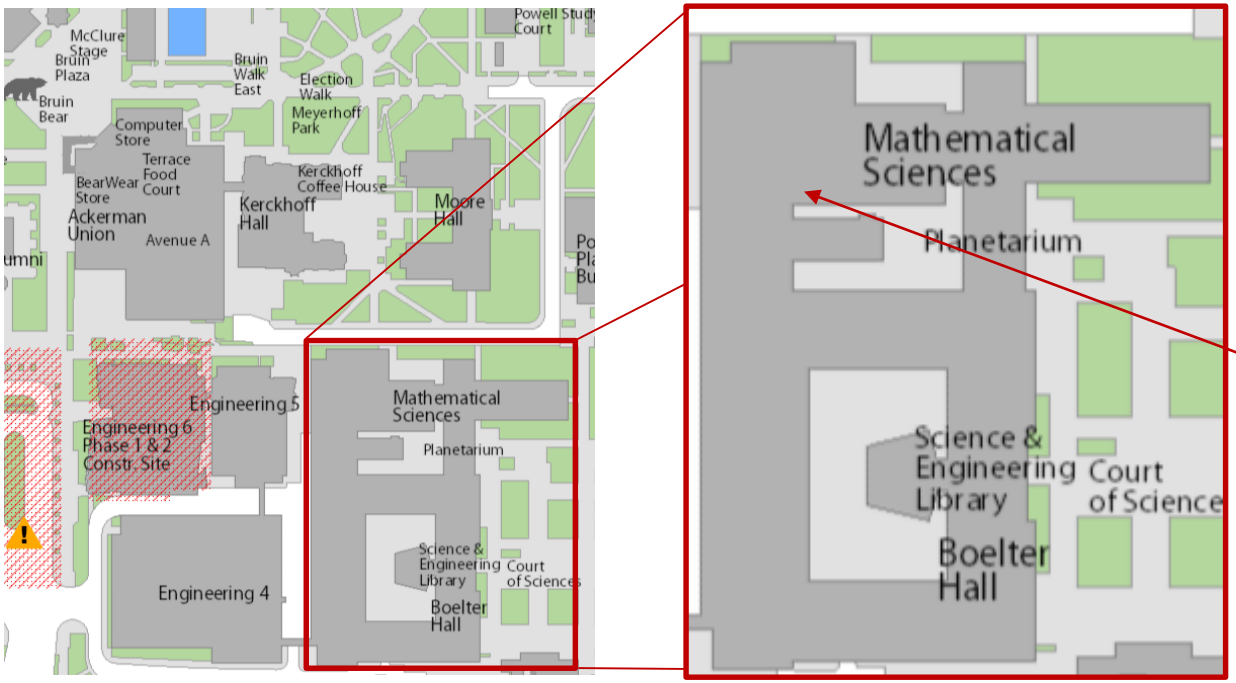
Why?

- Only source that covers all our topics
- Inexpensive
- Readable
- Effective
- Perhaps most importantly: this trains you to teach yourself

"Additionally, Haberland taught me how to use the internet effectively to teach myself code. At first this was stressful because It was hard to not have a powerpoint organizing the information for me, but it is a useful tool because now I can learn different languages on my own using the resources from the internet. Before this class, I did not know how to look up my questions regarding programming. Now the first thing I think to do when I don't understand something is to google it and find something on the internet to explain it to me. This is a more valuable tool than just lecturing."
- Anonymous Course Evaluation, Fall 2016

PIC Lab

http://**www**.pic.ucla.edu/



Typically
(PIC Lab, MS 2000)

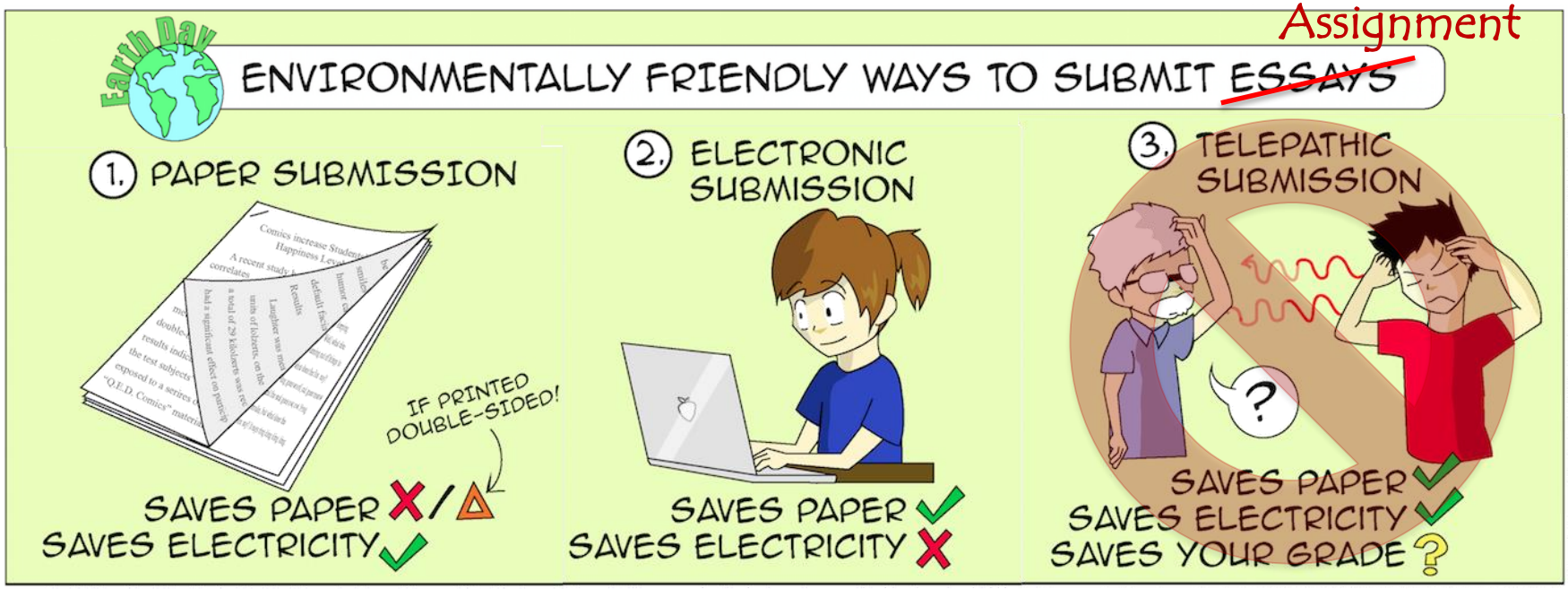
The PIC lab assistant can help fix hardware and software issues, but cannot help with course material.

Evaluation

- Assignments: 60%
  - Assigned almost every class
  - Don't worry! You only have to do about *half* of them.
    - Check "Regarding Tracks…" carefully for schedule
    - All students complete 4W, 5M, and 5W (5F is extra credit)
  - Solutions due on CCLE by the end of the *second* lecture period after assignment.
  - In addition to solution, you must submit a hard copy of a self-assessment at the same time.
  - Credit is typically granted according to your self-assessment, but self-assessments will be audited.
  - Dishonest self-assessments will be treated as a breach of academic integrity. Be honest!

Assignments

- Solution code is due on CCLE (digital)
- Self assessment are due in class (paper) on the same day
  - Slightly different from my other classes: self-assessment due *same day*
  - Just as important as my other classes: *no grade without self-assessment*



Evaluation

- Quizzes and Participation: 20%
  - Quizzes on assigned preparation material each class
  - Answer only if you know the answer – incorrect answers penalized for most question types (e.g. multiple choice)
  - Check "Regarding Quizzes…" for more information.
- Final Exam: 20%
  - Thursday, March 22, 3:00 p.m. – 6:00 p.m.
  - In PIC Lab, on PIC Machines
    - Learn to use them

Final letter grades are assigned on an absolute scale, e.g. 90 – 100 A

+/- designations are *typically* assigned corresponding with the top/bottom 3 points of each range

Extra Credit

- Golden Tickets
  - Reward for class participation and attending office hours
  - Worth 1 quiz point (1/10 of a quiz); applicable to quizzes only
  - Hold onto them. Turn in at Final Exam.
- Online Q&A
  - Post a question (meeting certain criteria) in designated assignment on CCLE
  - Worth same as Golden Ticket
- +1% for Course Evaluation
  - Evals are still anonymous; I only see who completed them
  - Maximum allowed by university to encourage reflection on *how* you learn (and to help me improve the course)

Course Grades

- I use CCLE for recording grades on individual assignments
  - Check your individual grades throughout the course
  - Never pay attention to calculated averages; they are meaningless
- Wait two weeks before asking about missing grades
  - After two weeks, check with a friend – is his/her grade up?
    - If not, mention it in class, but don't send an email
    - If so, feel free to email me
- Grades will be calculated offline according to the provided rubric
  - Do calculate your own grade
  - Contact me after final grades are posted if (but only if) there is a discrepancy that would change your grade

Dropportunities

- I will drop:
  - 1 Assignment Grade
  - 2 Quiz Grades
- Unless required by the university, I will not drop for:
  - failure to attend (beginning of course, especially)
  - conflicting class schedule
  - interviews
  - other foreseeable appointments or short-term conflicts
  - injuries or sickness (although I can accept digital submission)
  - religious holidays (although I can administer quizzes in advance)
  - most other excuses.
    - That's what the drops are for.

Expectations

In order to succeed in this course, students are expected to:

- prepare for every class as assigned,
- engage in all scheduled lectures and discussions,
- participate in class activities and complete assignments on time,
- ask questions in class and attend office hours as necessary,
- perform additional study and *practice as necessary* to build confidence in the material, and
- maintain academic integrity.

The course staff firmly believes that all students who follow the above guidelines can succeed in this course.

Learning can be difficult, but we are committed to ensuring that you do!

Academic Integrity

"As a student and member of the University community, you are here to get an education and are, therefore, expected to demonstrate integrity in all of your academic endeavors. You are evaluated on your own merits, so be proud of your accomplishments, and protect academic integrity at UCLA."

(Student Guide to Academic Integrity, http://www.studentgroups.ucla.edu/dos/assets/documents/StudentGuide.pdf)

- When in doubt on HW, ask course staff proactively. Please acknowledge the contributions of all resources (including other students, not including the recommended textbooks and course staff) informally on your solutions.
- Use of unauthorized resources on quizzes and exams is prohibited.

PIC Computers / Basic Computer Skills

- It is essential that you learn to use them
- For example, you must be able to:
  - navigate directories at the command line
  - execute programs (`python`, `conda`) at the command line
  - add directories to the system path
  - use Jupyter notebook
    - determine the working directory
    - load downloaded files
    - locate saved files
  - avoid storing files on the Desktop, downloads folder, and your user folder
  - store files in custom folders on the Z: drive
  - create and decompress `.zip` files
  - distinguish between file extensions and actual file types, and load files using the appropriate program
  - accommodate for the peculiarities of the PIC machines

You're on your own with these things at the final exam.

Tips

- Be aware of everything posted on CCLE – it's a lot
  - Read the syllabus and "Regarding Tracks"
  - Besides preparations, assignments, lecture slides, and tutorials:
    - preparation notebooks, assignment solutions, and videos
- I expect for this to be the most demanding PIC course you have taken
- When I required all students to complete both tracks:
  - it was described as "a fun version of hell"
  - it was considered comparable in difficulty to a typical engineering programming course
- Embrace it! Or consider a different class if you just need to satisfy a requirement.

Remember

- Complete Preparation 1W
- Class in the PIC Lab (beginning Wednesday)
- As usual, there will be a quiz