Python Programming*

CIS 4930 (Section 4)
Piyush Kumar

Handout #1, – Course Information

Course Web Site. http://www.cs.fsu.edu/∼piyush/teach/py18/

Class Mailing List. Announcements for the course, homeworks, reading assignments, programming projects will be available on the course web site or Canvas. Make sure you check both the course web site and the Canvas at least once in two-three days throughout the semester.

Instructor. Piyush Kumar.
URL: http://www.compgeom.com/~piyush.
Office Hours: Monday, 3:15pm to 4:15pm.
Phone: 645-2355
Email: piyush@acm.org
Venue: Office Hours will be held at Love 161 (My Office)

Lectures. Monday, Wednesday at 2:00pm to 3:15pm at LOV 0016.

Teaching Assistant.
Soheila Abrishami
Office Hours: Thursday 2:00 pm - 3:30 pm, LOV 267
Email: abrisham@cs.fsu.edu

Exams. Final exams will be held on May 3, 2018, 12:30pm to 2:30pm. Midterm will be held on February 21, 2018 in class. Both exams will be closed book. You will be tested on knowledge, understanding, and application of material discussed in class. You will also have some questions testing your ability to creatively solve new problems, using techniques discussed in class. The final exam will be comprehensive.

Course Description. This is an intermediate level course in Python. You will be expected to know the material taught in Data Structures. Students are expected to be comfortable with the programming material that is taught in COP3330. Topics covered will include lectures on the Python language and development environment as well as coverage of some select Python modules that demonstrate the versatility of the Python language. In particular, the following topics will be covered: Types and Operations, Functions, Modules and Libraries, text processing, functional programming, object oriented programming, testing, debugging, performance tuning, and algorithm implementations in Python.

Learning Objectives. The objective of this course is to encourage you to learn :

- Solve string manipulation problems, comprehension problems, sequence problems in Python (Chapter 2)
- Explain functions, doctests, coding interfaces, function arguments, LEGB rule, closures, decorators and exception handling (Chapter 3)

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*Preliminary version. I will distribute the final version in the first class.

- Design modules and packages in Python (Chapter 4).
- Apply text processing to real world problems (Chapter 5).
- Write functional programming solutions to problems (Chapter 6).
- Develop oop/design pattern skills with python (Chapter 7 and 8).
- Identify bugs, bottlenecks and untested code (Chapter 9)
- Develop internet applications with python (Homeworks).
- Design and implement new algorithms in python (Chapter 10).
- Acquire the ability to collaborate and work together with other people to implement bigger projects (Homeworks and Project).

Prerequisites. A Grade of B or better in COP 3330 or an equivalent course. You should either be registered in the Data Structures course or have already taken it.

Textbooks. Python Application Programming by Piyush Kumar and Biswas Parajuli. ISBN: 978-0-9981694-0-8 The textbook can be purchased from the following link: https://intelligentrobotics.org/books/ and will be available in August on Amazon. Please also see: http://pybook.rocks/

Software and Hardware Setup: All students are required to have an account on linprog.cs.fsu.edu. You are also required to own a laptop if you are taking this course. The laptop should have a web browser, a wireless card, at least 120 minutes of battery life and an installed version of python 3.5. We will try to help you install python (Operating Systems we can help on are windows, ubuntu, opensuse, archlinux, centos, fedora).

Course Policies

1. **Homeworks:** The best way to learn the material is by solving problems. You are required to work in *pairs*[1], because the best way to understand the subtleties of the homework problems is to argue about the answers. If you do not have a partner, let me know and I'll try to hook you with one. If you want a divorce, you should let me know too. Don't be a leech and let your partner do all the work. Unless you learn how to solve problems, I *promise* that you will get burned on the exams and thus for your final grade.

2. Your solutions will be submitted and judged using an online judging system. They will also be partially hand checked for documentation, style, design, algorithms and data structures when applicable.

3. Since we plan to use automatic judging software, problem solving exercises will have sharp deadlines. **Late assignments** *will not be accepted* because the solutions will be available.

4. It is extremely important that you *start homework assignments early*. The homeworks are very challenging, and if you get behind in your work, you may find it too difficult to catch up. Out of all the graded homework sets, I will drop the min score before calculating the total homework score towards the final grade. Since I drop the lowest score, missing one homework due to an illness should not be a problem.

5. **Grading Criteria 4930 (with project):**
   The grade for CIS 4930 with project will be assigned based on the following percentages:

<div align="center">

CIS 4930 Grading chart (with project)

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[1]Students who have taken any of my previous courses are forbidden to be in the same pair.

	Percentage	Variable
Homework	20%	
Project	20%	
Class Participation (in-class)	5%	
Class Participation (online)	5%	$h \in [0, 50]$
In class problem solving	30%	$f \in [0, 50]$
Midterm	10%	
Final	10%	

To Pass: $h \geq 35$ and $f \geq 35$ (Necessary condition).

6. **Grading Criteria 4930 (without project):**
   The grade for CIS 4930 without doing a project will be assigned based on the following percentages:

CIS 4930 Grading chart (without project)

	Percentage	Variable
Homework	10%	
Class Participation (in-class)	5%	
Class Participation (online)	5%	$h \in [0, 20]$
In class problem solving	40%	$f \in [0, 80]$
Midterm	20%	
Final	20%	

To Pass: $h \geq 14$ and $f \geq 56$ (Necessary condition).

Final Grades: Your final grades (letter grades) will depend on your $(h + f) \in [0, 100]$ score. There is no pre-established scale or curve. I will sort all the $(h + f)$ scores for those who pass and assign letter grades to different non-overlapping intervals (The highest level being A and decreasing thereof).

I will use k-means clustering to generate the intervals or use the following intervals (Whichever yields you a *better* grade). This is similar to grading on a curve, but does not fix the percentages of grades allocated.

Percent	Letter	Percent	Letter	Percent	Letter
94-100	A+	84-87	B+	74-77	C+
90-93	A	80-83	B	70-73	C
88-89	A-	78-79	B-	0-69	F

7. **Class Participation:** Participation in class and online, are activities essential to successful learning and should reflect your *reading, analysis, and experience in relation to the topic.* Class participation grading will be broken into two parts:

(a) **Online**: Your discussions online will be graded for 5% of the class grading. This will mainly be for your comments/notes on class slides. While reading slides, we expect you to do research about the material, learn it well, and help others learn the material. Each comment online that is information rich will be counted towards 1% of your class grade. You need to make a minimum of 5 high quality online comments, that will lead to 5% of the total grade. An example of high quality online comment will be provided to you in the class.

(b) **In-Class**: In order to help you review reading material, I will provide some review questions after lectures. This will cover both, material discussed in the current lecture, and material to prepare you for the next lecture. You should be prepared to answer these questions in the next lecture. Apart from this, I will ask other questions in class. You too should feel free to ask questions on material that you do not understand, offer suggestions on improving ideas presented in class, and make other positive contributions to the learning experience in class.

All these will count towards your in-class participation. Evaluation for in-class participation will be determined according to the following descriptions[2]:

Table 1: In-class particiation grading chart

Level of Participation	Description
Excellent (85% - 100%)	Student frequently initiates communication of a class topic with the class and with the instructor, i.e. the student consistently introduces relevant lines of discussion, asks thought provoking questions, and provides elaborated responses to questions posed by instructor or others, in the classroom and on the discussion board. The student always comes prepared to answer review questions.
Good/Satisfactory (70% - 85%)	Student takes an active role in communicating with the class and with the instructor, i.e. the student often contributes relevant information to class discussions and the discussion board. The student often correctly answers questions posed by the instructor.
Below Expectations (0% - 70%)	The student infrequently contributes in class. The student rarely gives correct answers to questions asked in class.

8. Scribing will be worth *approximately* 4 or 5 percentage points of extra credit (This option is only for people who know how to use powerpoint/html/css/js well or are willing to put the effort to learn it).

9. **Course Project:** The course project is a semester wide project which will be assigned towards the beginning of the course. A basic template for the project will be provided. At least 2 and at most 3 students can work on the same project. All course/project work will be BSD Licensed and will be done on a mercurial repository in Bitbucket. We will closely monitor your individual contributions to the project. Your grade for the project will be based on (total of 100 points):

(a) Scope document of the project (1 page writeup, and a webpage for the project). (20 points)

(b) How far you have come compared to the initial scope defined for the project. (10 points)

(c) How much your contribution is (30 points). Defined by (only applies if your project is mainly a coding project):
   - Number of lines of your code
   - If Applicable: Artwork, html/css/js frontend coding
   - How well you understand the complete codebase.
   - Code documentation
   - Testing/Coverage
   - Scripting
   - Initial scoping
   - Other factors decided at the time of scoping

(d) How good your code is. (20 points) (PEP8, code organization, coverage, complexity, test system, build system, documentation)

(e) For the last 20 points: 20% of your ranking will come from how your partner performs in the project. 80% of your ranking will be judged by your individual contributions. You have a

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[2]Based on material prepared by Dr. Cheryl Stratton (at ODDL) and Dr. Ashok Srinivasan (at CS)

big incentive to help out your partner, so that your project succeeds. If its determined in the middle of the semester that one of the partners is not making any progress, a grade of **0** will be assigned to the student, and the partner will be moved to another project.

The grading will be done twice, once near the midterm and once near the final exam. At both milestones, a complete evaluation will be done.

10. **Missed exam Policy:** If you miss an exam with a justified emergency, we will take the average of the other exams/quizzes as the grade of your missed one.

11. **Grade of 'I' Policy:** The grade of 'I' will be assigned only under the following exceptional circumstances:

    - The final exam is missed with an accepted excuse for the absence. In this case, the final exam must be made up during the first two weeks of the following semester.
    - Due to an extended illness or other extraordinary circumstance, with appropriate documentation, the student is unable to participate in class for an extended period. In this case, arrangements must be made to make up the missed portion of the course prior to the end of the next semester.

12. **Academic Honor Policy:** The Florida State University Academic Honor Policy outlines the Universitys expectations for the integrity of students academic work, the procedures for resolving alleged violations of those expectations, and the rights and responsibilities of students and faculty members throughout the process. Students are responsible for reading the Academic Honor Policy and for living up to their pledge to . . . be honest and truthful and . . . [to] strive for personal and institutional integrity at Florida State University. (Florida State University Academic Honor Policy, found at http://fda.fsu.edu/Academics/Academic-Honor-Policy.). For this class in particular:

    - Every student must write his/her own code and homework. Showing your code or homework to members of other teams, giving it to them, or making it accessible to them (e.g., by making the files world-readable) is academic dishonesty. You are responsible for ensuring that your code/documentation/results and homeworks are adequately protected and not accessible to others. Change permissions of your working directory to 0700 (chmod 0700 {directory}).
    - Consulting code from a textbook, or from the Internet, in order to understand specific aspects of your assignment is fine. However, *copying entire code or large parts of such code will be considered academic dishonesty.* If you borrow small parts of code from these sources, you must acknowledge this in your submission and additionally you must clearly understand and be able to explain how the code works.

    Once again: There is no excuse for cheating in any circumstances. See me before you even *contemplate* cheating.

13. **Recording Devices:** Switching on a camera or microphone for recording of any kind is prohibited in this class. Florida's wiretapping law is a "two-party consent" law. Florida makes it a crime to intercept or record a "wire, oral, or electronic communication" in Florida, unless all parties to the communication consent.

14. **Americans With Disabilities Act**: Students with disabilities needing academic accommodation should:

    (a) register with and provide documentation to the Student Disability Resource Center; and

    (b) bring a letter to the instructor indicating the need for accommodation and what type.

    Please note that instructors are not allowed to provide classroom accommodation to a student until appropriate verification from the Student Disability Resource Center has been provided.

    This syllabus and other class materials are available in alternative format upon request.

    For more information about services available to FSU students with disabilities, contact the:

    ```
    Student Disability Resource Center
    874 Traditions Way
    ```

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108 Student Services Building
Florida State University
Tallahassee, FL 32306-4167
(850) 644-9566 (voice)
(850) 644-8504 (TDD)
sdrc@admin.fsu.edu
http://www.disabilitycenter.fsu.edu/
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15. **Syllabus Change Policy:** The syllabus is guide to the course and subject to change with advanced notice.

16. **University Attendance Policy:** Excused absences include documented illness, deaths in the family and other documented crises, call to active military duty or jury duty, religious holy days, and official University activities. These absences will be accommodated in a way that does not arbitrarily penalize students who have a valid excuse. Consideration will also be given to students whose dependent children experience serious illness.

Course Schedule: Below is a list of topics that will be covered in this course (14 Weeks):

1. Python, a brief tutorial

2. Version Control Systems: Git/Mercurial

3. Project discussions

4. Types and Operations

5. Functions

6. Modules and libraries

7. Text processing

8. Functional Programming

9. OOP

10. Python Objects

11. Testing, debugging, Tuning

12. Algorithms in Python

13. Project Presentations

14. Project Presentations

We will also try to invite industry experts and goto Workshops (if available) to learn related things to this class. This will be announced at least 2 weeks before they are scheduled.

The Python language changes every 6 months, when a new major or minor release is introduced. This might change the course schedule during the semester.