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CT-206   Scripting Languages

Professor: Zane Harvey Email: zwharvey@captechu.edu Phone: (412) 709-2184	Office Hours: Friday 1:00 PM – 3:00 PM ET Dates/Times: Tues/Thurs 12:00 PM – 1:15 PM ET Location: Laurel Campus - McGowan Academic Center, M102

Fall 2020

Course Description:

Introduces students to the use of scripting and the scripting languages of Perl and Python. Linux shell scripting, PHP, and the R programming will also be introduced in a limited capacity. The class will cover the use of scripting to solve short problems, to automate routine tasks, to integrate across pieces of software, and to prototype code ideas. The merits of code-complete design versus on-the-fly coding as well as coding and code documentation styles will be discussed. Tasks involving input/out, regular expressions, and file operations are included. Students are expected to fully script solutions for real-world tasks assigned as part of the course. The course will spend time developing skills in Python that are required for Artificial Intelligence applications – advanced Python libraries for Data Science and Artificial Intelligence will be covered. Case studies in data science and Artificial Intelligence will be reviewed. Prerequisites: CS-130 or permission of instructor.

Course Objectives and Expectations

Students will learn the basics of both Perl and Python programming language. In particular, much of the Python ecosystem for numerical and scientific computing will be introduced. Data structures, functions, regular expressions, files, string manipulation,

pattern matching, and control structures will be covered. The R programming language will be introduced, including popular libraries for machine learning.

Time and Locations

Classes will be held on ground (McGowan Academic Center – M102) on Tuesday and Thursday from 12:00 PM – 1:15 PM ET.

Required Software:

- Anaconda Python Distribution with Spyder and Jupyter Notebooks (Python version 3)
    www.anaconda.com
- Perl Interpreter and Padre IDE
- R and R Studio

Texts:

- Online documentation for Perl and Python

- Learning Perl, 7th edition (2011)
  Schwartz/Foy/Phoenix ISBN-13: 9781449303587
  Publisher: O'Reilly Media

- Introduction to Python for Computer Science and Data Science
  Paul Deitel, Harvey Deitel. ISBN-13: 978-0135404676
  . Publisher: Pearson

Course Schedule

The assigned readings will be from online documentation or Learning Perl. Readings should be completed in advance of the class sessions. The reading for each week should be completed before the Class session for that week. Additional assigned readings will be provided in class as directed by the Professor. The supplemental readings are for students who wish to cover advanced and additional material – the material contained therein will be discussed in class lectures.

Week	Main Topic/Event	Other Notes
1	Syllabus/Intro/Basics/Software Setup	Chapter 1 Learning Perl, Supplement: Chapter 1 Deitel
2	Intro, Scalar Data	Chapter 2 Learning Perl, Supplement: Chapter 2 Deitel

3	Lists and Arrays	Chapter 3 Learning Perl, Supplement: Chapter 3 Deitel
4	Subroutines	Chapter 4 Learning Perl, Supplement: Chapter 4 Deitel
5	Input and Output	Chapter 5 Learning Perl, Supplement: Chapter 5 Deitel
6	Hashes	Chapter 6 Learning Perl, Supplement: Chapter 6 Deitel + **Exam 1**
7	RegEx	Chapter 7 Learning Perl, Supplement: Chapter 7 Deitel
8	Matching with RegEx	Chapter 8 Learning Perl, Supplement: Chapter 8 Deitel
9	Processing Text with RegEx	Chapter 9 Learning Perl, Supplement: Chapter 9 Deitel
10	More Control Structures	Chapter 10 Learning Perl, Supplement: Chapter 10 Deitel
11	Perl Modules	Chapter 11 Learning Perl, Supplement: Chapter 11 Deitel + **Exam 2**
12	File Tests	Chapter 12 Learning Perl, Supplement: Chapter 12 Deitel
13	Directory Operations	Chapter 13 Learning Perl, Supplement: Chapter 13 Deitel
14	Strings and Sorting	Chapter 14 Learning Perl, Supplement: Chapter 14, 15Deitel
15	Smart Matching/Process Management	Chapter 15 Learning Perl, Supplement: Chapter 16 Deitel
16	Supplemental Info and Take Home Final Exam	Chapter 16 Learning Perl, Supplement: Chapter 17 Deitel + **Final Exam**

Three Exams:

Week of October 5th – Take Home Exam 1

Week of November 9th - Timed Exam in Canvas

Week of December 14th - Take Home Final

Grading

Grading Components:

> Projects: 40% (Various reports will be requested throughout the semester, graduate students will be requested to submit extra reports)
>
> Exam 1 (Take home): 10%
>
> Exam 2 (Timed in Canvas): 10%
>
> Final (Take home): 20%
>
> HW: 15%
>
> Attendance: 5%

Late homework and assignments will be accepted with a 50% penalty for up to one week after due date. After one week from due date, the student will receive a score of 0.

Course Requirements

Prerequisites: CS-130

Participation

Participation will be tracked via your attendance in Canvas class sessions.

Homework

Homework will be due on the indicated due date in Canvas. Late homework will receive 50% credit.

Examinations

Exam 1 and the Final Examination will be take home exams. Exam 2 will be a timed exam in Canvas.

<u>Communication</u>

Emails, phone calls, text. Canvas Appointments are suggested.

<u>Academic Integrity</u>

Every Student is expected to be familiar with Capitol Technology University's Code of Academic Conduct including (but not limited to) the issues of cheating, plagiarism, etc. All cases of suspected academic dishonesty will be reported to the appropriate school officials, and disciplinary action may result, following investigation by a judiciary committee. Some of the core concepts are given here:

DEFINITION AND EXPECTATIONS OF ACADEMIC INTEGRITY:
Cheating – intentionally using or attempting to use unauthorized materials, information or study aids in any academic exercise. Examples include, but are not limited to, submitting another student's work as your own, using books or notes during closed book tests.
Fabrication – intentional and unauthorized falsification or invention of any information or citation in an academic exercise. Examples include, but are not limited to, changing collected data to meet the hypothesis, listing a research source that does not exist, listing a quote that does not exist.
Facilitating academic dishonesty – intentionally or knowingly helping or attempting to help another to violate any provision of this code. Examples include, but are not limited to, giving any individual other than the professor your completed assignment, suggesting ways to cheat or plagiarize.
Plagiarism – The Technology University plagiarism policy may be found online at http://www.captechu.edu/resources/lib/writingguide/plagarism.html
Self-Plagiarism – submitting the same paper or assignment for more than one class for a grade without the professor's knowledge or permission.
Complicity – failing to report the incidents of academic dishonesty to the professor, department chair, Dean of Academic Affairs, or the Vice President for Academic Affairs.
Code of Conduct – the academic integrity code is incorporated into the Capitol Technology University's Code of Conduct Standards.
<u>Judicial Process</u>

Any incidents should be reported to the appropriate Department Chair with written documentation. The Department Chair will forward academic integrity cases to the Academic Affairs Council for review and all other incidents to the Dean of Students. Once the case is reviewed, the Judicial Facilitator, Dean of Students or designee, will meet with the student to discuss the allegations. The student will have the opportunity to accept responsibility and sanctions or to have the case heard by a Conduct Review Panel

(CRP). If a CRP is needed, the student and all other faculty, staff or students who have direct knowledge of the incident will be asked to participate in a hearing. The CRP is composed of three members who are selected by the Judicial Facilitator from a pool of faculty, staff, or students. In cases of potential violations of the Academic Integrity Code, the CRP is generally composed of faculty members. The CRP will determine if it is more likely than not that the campus policies have been violated. If the CRP finds that the policies have been violated, they will recommend sanctions. The Judicial Facilitator will notify the student in writing of the CRP's findings. The student has the opportunity to appeal to the VP for
Academic Affairs.

To learn more about the official policies of the university on this issue, please read "Code of Academic Integrity" beginning on page 18 and "Sanctions for Violations of Regulations" beginning on page 63 of the Student Handbook. The Student Handbook can be downloaded from:
http://www.captechu.edu/current-students/undergraduate/academic-resources

The contents of this syllabus or the scheduled contained herein can be modified at any time without notice by the Professor.