Course Syllabus

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19 02 POINT LOMA NAZARENE UNIVERSITY	**Department of Mathematical, Information, and Computer Sciences** **CSC 3002: Python and Unix Scripting for Computational Science** **Number of Units: 2**
Spring 2021 | **March 1 - June 4** **Finals Week June 7-11**	

Meeting days: TR	**Instructor: Lori Carter**
Meeting times: 10:00-10:50	**Phone: 619-849-2352**
Meeting location: Zoom	**Email:lcarter@pointloma.edu**
Office Hours Zoom	**Office hours: by appointment on Zoom**

PLNU Mission

To Teach ~ To Shape ~ To Send

Point Loma Nazarene University exists to provide higher education in a vital Christian community where minds are engaged and challenged, character is modeled and formed, and service is an expression of faith. Being of Wesleyan heritage, we strive to be a learning community where grace is foundational, truth is pursued, and holiness is a way of life.

Department Mission:

The Mathematical, Information, and Computer Sciences department at Point Loma Nazarene University is committed to maintaining a curriculum that provides its students with the tools to be productive, the passion to continue learning, and Christian perspectives to provide a basis for making sound value judgments.

HEALTH AND SAFETY UPDATE

It is expected that all students will abide by the health and safety standards set by the university. Here is a link to the most current Health and Safety Guidelines.

COURSE DESCRIPTION

An introduction to UNIX and Python scripting in the context of applications to scientific research. Students will become competent users of the UNIX operating system. They will learn to find and manipulate data from various file formats (including text, FASTA, HTML) using regular expressions with UNIX and Python scripts. They will learn to use Python for data analysis and for more specialized purposes using third party modules including NumPy, BioPython, and Tkinter.

COURSE ORGANIZATION

Lectures: Cover the highlights of chapters assigned – not a substitute for reading. Student versions of the lecture slides can be obtained from Canvas. Lectures will come in both synchronous and asynchronous delivery modes. Attendance at synchronous meetings will count towards your final grade.

- If class is being held only virtually, the synchronous meetings will occur on Thursdays.
- If we are able to be together face-to-face, it is likely that half of the class will attend lecture on Tuesday, and half on Thursday.
- Video presentations will be provided as well, and are expected to be watched prior to the synchronous meetings. There will short asynchronous quizzes based on the video presentations.

Labs: In general, lab assignments should be completed individually. If your lab looks too similar to that of someone else, both parties could receive a zero on that assignment. Occasionally I will ask you to work in groups, but I will make that clear. All labs assigned for a week are due the next Monday before midnight. **No late labs are accepted.** However, I will drop the lowest lab grade and you may turn in any unfinished lab on time for partial credit. Labs will be both available and turned in on Canvas.

3 minute interdisciplinary presentations: The expectation is that everyone will do one 3 minute presentation with peers providing comments, and a summary. The 3-minute presentation is a presentation on something in your discipline, directed to people not in your discipline, providing a “just enough” understanding of a topic in words they can understand. The presentation as well as the audience summaries will be graded. Your presentation will hold the weight of 3 summaries. The 3 lowest summary scores will be dropped but your presentation score cannot be dropped. Peer reviews will be completed via Canvas. **Summaries cannot be made up** but a missed presentation can be given the next class period for ½ credit.

Synchronous Quizzes: In addition to the midterm and final exam, you will have 2 quizzes to help you keep current on both theory and practice. Quizzes are not cumulative but will cover material from both lecture and lab. Quizzes are scheduled for 3/4 and 5/6 (both Thursdays). If we change to face-to-face lectures, one of the quizzes will be changed to Tuesday. If you miss a quiz without giving me prior notice for an excused function, there is a good chance you will receive a zero unless, of course, there was a documented emergency.

Exams: There will be 2 exams, a midterm and a final. If you will miss an exam for a school function, you must arrange to take it in advance. If you ever miss an exam without giving me prior notice, there is a good chance you will receive a zero unless, of course, there was clearly an emergency. Exam content can include material from lectures, the textbook, labs, and 3 minute presentations. Exams are cumulative. The midterm is scheduled for the week of 4/5-4/9. The exact day will depend on our current classroom modality. It will cover chapters 1 – 6 in your textbook.

The final exam is scheduled for **Thursday of finals week at 10:30** and will emphasize chapters 8-10 in your textbook plus labs and lecture material covered since the last exam. There will be some questions from earlier in the semester.

The final exam date and time is set by the university at the beginning of the semester and may not be changed by the instructor. This schedule can be found on the university website and in th course calendar. No requests for early examinations will be approved. Only in the case that a student is required to take three exams during the same day of finals week, is an instructor authorized to consider changing the exam date and time for that particular student.

COURSE LEARNING OUTCOMES

- Students will be able to write correct and robust software.
- Students will be able to apply their technical knowledge to solve problems.

REQUIRED TEXTS AND RECOMMENDED STUDY RESOURCES

Haddock and Dunn, *Practical Computing for biologists,* Sinauer Associates Publishers, 2011.

COURSE CREDIT HOUR INFORMATION

In the interest of providing sufficient time to accomplish the stated Course Learning Outcomes, this class meets the PLNU credit hour policy for a 2 unit class delivered over 15 weeks. It is anticipated that students will spend a minimum of 37.5 participation hours per credit hour on their coursework. For this course, students will spend an estimated 75 total hours meeting the course learning outcomes. The time estimations are provided in the Canvas modules.

ASSESSMENT AND GRADING

Student grades will be posted in the Canvas grade book no later than midnight on Tuesday of each week beginning in Week Two of this course. It is important to read the comments posted in the grade book as these comments are intended to help students improve their work. Final grades will be posted within one week of the end of the class. Grades will be based on the following:

Types of assignments will be weighted in the final grade as follows:

Synchronous meetings	3%
Videos and video quizzes	10%
3 min talk summaries	7%
Labs	30%
Synchronous Quizzes	15%
Midterm	15%
Final	20%

Standard Grade Scale Based on Percentages

A	B	C	D	F
A 93-100	B+ 87-89	C+ 77-79	D+ 67-69	F Less than 60
A- 90-92	B 83-86	C 73-76	D 63-66	
	B- 80-82	C- 70-72	D- 60-62	

INCOMPLETES AND LATE ASSIGNMENTS

All assignments are to be submitted/turned in by date and time indicated on Canvas Incompletes will only be assigned in extremely unusual circumstances.

PLNU COPYRIGHT POLICY

Point Loma Nazarene University, as a non-profit educational institution, is entitled by law to use materials protected by the US Copyright Act for classroom education. Any use of those materials outside the class may violate the law.

PLNU ACADEMIC HONESTY POLICY

Students should demonstrate academic honesty by doing original work and by giving appropriate credit to the ideas of others. Academic dishonesty is the act of presenting information, ideas, and/or concepts as one's own when in reality they are the results of another person's creativity and effort. A faculty member who believes a situation involving academic dishonesty has been detected may assign a failing grade for that assignment or examination, or, depending on the seriousness of the offense, for the course. Faculty should follow and students may appeal using the procedure in the university Catalog.

See **Academic Policies** (http://catalog.pointloma.edu/content.php?catoid=18&navoid=1278) for definitions of kinds of academic dishonesty and for further policy information.

PLNU ACADEMIC ACCOMMODATIONS POLICY

While all students are expected to meet the minimum standards for completion of this course as established by the instructor, students with disabilities may require academic adjustments, modifications or auxiliary aids/services. At Point Loma Nazarene University (PLNU), these students are requested to register with the Disability Resource Center (DRC), located in the Bond Academic Center. (**DRC@pointloma.edu** (https://mail.google.com/mail/?view=cm&fs=1&tf=1&to=DRC@pointloma.edu) or 619-849-2486). The DRC's policies and procedures for assisting such students in the development of an appropriate academic adjustment plan (AP) allows PLNU to comply with Section 504 of the Rehabilitation Act and the Americans with Disabilities Act. Section 504 (a) prohibits discrimination against students with special needs and guarantees all qualified students equal access to and benefits of PLNU programs and activities. After the student files the required documentation, the DRC, in conjunction with the student, will develop an AP to meet that student's specific learning needs. The DRC will thereafter email the student's AP to all faculty who teach courses in which the student is enrolled each semester. The AP must be implemented in all such courses.

If students do not wish to avail themselves of some or all of the elements of their AP in a particular course, it is the responsibility of those students to notify their professor in that course. PLNU highly recommends that DRC students speak with their professors during the first two weeks of each semester about the applicability of their AP in that particular course and/or if they do not desire to take advantage of some or all of the elements of their AP in that course.

PLNU ATTENDANCE AND PARTICIPATION POLICY

Regular and punctual attendance at all **synchronous** class sessions is considered essential to optimum academic achievement. If the student is absent for more than 10 percent of class sessions (virtual or face-to-face), the faculty member will issue a written warning of de-enrollment. If the absences exceed 20 percent, the student may be de-enrolled without notice until the university drop date or, after that date, receive the appropriate grade for their work and participation. In some courses, a portion of the credit hour content will be delivered **asynchronously** and attendance will be determined by submitting the assignments by the posted due dates. See **Academic Policies** (https://catalog.pointloma.edu/content.php?catoid=46&navoid=2650#Class_Attendance) in the Undergraduate Academic Catalog. If absences exceed these limits but are due to university excused health issues, an exception will be granted.

Asynchronous Attendance/Participation Definition

A day of attendance in asynchronous content is determined as contributing a substantive note, assignment, discussion, or submission by the posted due date. Failure to meet these standards will result in an absence for that day. Instructors will determine how many asynchronous attendance days are required each week.

Class Enrollment:

It is the student's responsibility to maintain his/her class schedule. Should the need arise to drop this course (personal emergencies, poor performance, etc.), the student has the responsibility to follow through (provided the drop date meets the stated calendar deadline established by the university), not the instructor. Simply ceasing to attend this course or failing to follow through to arrange for a change of registration (drop/add) may easily result in a grade of F on the official transcript.

SPIRITUAL CARE

Please be aware PLNU strives to be a place where you grow as whole persons. To this end, we provide resources for our students to encounter God and grow in their Christian faith.

If students have questions, a desire to meet with the chaplain or have prayer requests you can contact the **Office of Spiritual Development (https://www.pointloma.edu/offices/spiritual-development)**

USE OF TECHNOLOGY

Since most courses will have online components, in order to be successful in the online environment, you'll need to meet the minimum technology and system requirements; please refer to the ***Technology and System Requirements*** **(https://help.pointloma.edu/TDClient/1808/Portal/KB/ArticleDet?ID=108349)** information. Additionally, students are required to have headphone speakers compatible with their computer available to use. If a student is in need of technological resources please contact **student-tech-request@pointloma.edu (https://mail.google.com/mail/?view=cm&fs=1&tf=1&to=student-tech-request@pointloma.edu)** .

Problems with technology do not relieve you of the responsibility of participating, turning in your assignments, or completing your class work.

Course Summary:

Date	Details	Due
Tue Mar 2, 2021	**CSC3002-1 SP21 - Unix and Python Scripting for Computational Science (https://canvas.pointloma.edu/calendar?event_id=76003&include_contexts=course_55066)**	10am to 11am
	WK1 | Tuesday Zoom Session Agenda | 10:00 a.m. (https://canvas.pointloma.edu/courses/55066/assignments/609364)	due by 10am

Date	Details	Due
Thu Mar 4, 2021	CSC3002-1 SP21 - Unix and Python Scripting for Computational Science (https://canvas.pointloma.edu/calendar?event_id=75989&include_contexts=course_55066)	10am to 11am
	WK1 | Thursday Zoom Session Agenda | 10:00 a.m. (https://canvas.pointloma.edu/courses/55066/assignments/606777)	due by 10am
	3 min Latitude/Longitude (https://canvas.pointloma.edu/courses/55066/assignments/609448)	due by 11am
Mon Mar 8, 2021	HTML and REs Quiz (https://canvas.pointloma.edu/courses/55066/assignments/610959)	due by 11:59pm
	RE and HTML video	to do: 11:59pm
Thu Mar 11, 2021	CSC3002-1 SP21 - Unix and Python Scripting for Computational Science (https://canvas.pointloma.edu/calendar?event_id=75990&include_contexts=course_55066)	10am to 11am
	WK2 | Thursday Zoom Session Agenda | 10:00 (https://canvas.pointloma.edu/courses/55066/assignments/606778)	due by 10am
	3 min HTML (https://canvas.pointloma.edu/courses/55066/assignments/609449)	due by 11am
	3 min Operating Systems (https://canvas.pointloma.edu/courses/55066/assignments/609451)	due by 11am
	3 min Stocks (https://canvas.pointloma.edu/courses/55066/assignments/609450)	due by 11am
Mon Mar 15, 2021	Week 3 videos	to do: 11:59pm
	HTML lab (https://canvas.pointloma.edu/courses/55066/assignments/609363)	due by 11:59pm

Date	Details	Due
	Stock Market Data Transformation Lab (https://canvas.pointloma.edu/courses/55066/assignments/609998)	due by 11:59pm
Thu Mar 18, 2021	CSC3002-1 SP21 - Unix and Python Scripting for Computational Science (https://canvas.pointloma.edu/calendar?event_id=75991&include_contexts=course_55066)	10am to 11am
	WK3 | Thursday Zoom Session Agenda | 10:00 (https://canvas.pointloma.edu/courses/55066/assignments/628774)	due by 10am
	Regular Expressions Quiz (https://canvas.pointloma.edu/courses/55066/assignments/628790)	due by 10:30am
	3 min IP addresses (https://canvas.pointloma.edu/courses/55066/assignments/629295)	due by 11am
	3 min Set up Bash Shell on Windows computer (https://canvas.pointloma.edu/courses/55066/assignments/629293)	due by 11am
Mon Mar 22, 2021	Week 4 videos	to do: 11:59pm
	Unix Tutorial (https://canvas.pointloma.edu/courses/55066/assignments/629352)	due by 11:59pm
Thu Mar 25, 2021	CSC3002-1 SP21 - Unix and Python Scripting for Computational Science (https://canvas.pointloma.edu/calendar?event_id=75992&include_contexts=course_55066)	10am to 11am
	WK4 | Thursday Zoom Session Agenda | 10:00 (https://canvas.pointloma.edu/courses/55066/assignments/628775)	due by 10am
	3 min Enneagram test (https://canvas.pointloma.edu/courses/55066/assignments/629323)	due by 11am
Mon Mar 29, 2021	Week 5 videos	to do: 11:59pm

Date	Details	Due
	Grep/IP Lab (https://canvas.pointloma.edu/courses/55066/assignments/629354)	due by 11:59pm
Thu Apr 1, 2021	CSC3002-1 SP21 - Unix and Python Scripting for Computational Science (https://canvas.pointloma.edu/calendar?event_id=75993&include_contexts=course_55066)	10am to 11am
	WK5 | Thursday Zoom Session Agenda | 10:00 (https://canvas.pointloma.edu/courses/55066/assignments/628776)	due by 10am
Mon Apr 5, 2021	Enneagram Scripting Lab (https://canvas.pointloma.edu/courses/55066/assignments/629355)	due by 11:59pm
Thu Apr 8, 2021	CSC3002-1 SP21 - Unix and Python Scripting for Computational Science (https://canvas.pointloma.edu/calendar?event_id=75994&include_contexts=course_55066)	10am to 11am
	WK6 | Thursday Zoom Session Agenda | 10:00 (https://canvas.pointloma.edu/courses/55066/assignments/628777)	due by 10am
	Midterm (https://canvas.pointloma.edu/courses/55066/assignments/628792)	due by 10:50am
Mon Apr 12, 2021	Week 7 videos	to do: 11:59pm
Thu Apr 15, 2021	CSC3002-1 SP21 - Unix and Python Scripting for Computational Science (https://canvas.pointloma.edu/calendar?event_id=75995&include_contexts=course_55066)	10am to 11am
	WK7 | Thursday Zoom Session Agenda | 10:00 (https://canvas.pointloma.edu/courses/55066/assignments/628779)	due by 10am

Date	Details	Due
	3 min Codons, Amino Acids, Proteins (https://canvas.pointloma.edu/courses/55066/assignments/629327)	due by 11am
	3 min Java Functions (https://canvas.pointloma.edu/courses/55066/assignments/629328)	due by 11am
	3 min Memory Loss (https://canvas.pointloma.edu/courses/55066/assignments/629326)	due by 11am
Mon Apr 19, 2021	Week 8 videos	to do: 11:59pm
	Python lab 2 (https://canvas.pointloma.edu/courses/55066/assignments/629356)	due by 11:59pm
Thu Apr 22, 2021	CSC3002-1 SP21 - Unix and Python Scripting for Computational Science (https://canvas.pointloma.edu/calendar?event_id=75996&include_contexts=course_55066)	10am to 11am
	WK8 | Thursday Zoom Session Agenda | 10:00 (https://canvas.pointloma.edu/courses/55066/assignments/628782)	due by 10am
	3 min Open Reading Frames (ORFs) (https://canvas.pointloma.edu/courses/55066/assignments/629329)	due by 11am
Mon Apr 26, 2021	Week 9 videos	to do: 11:59pm
Thu Apr 29, 2021	CSC3002-1 SP21 - Unix and Python Scripting for Computational Science (https://canvas.pointloma.edu/calendar?event_id=75997&include_contexts=course_55066)	10am to 11am
	WK9 | Thursday Zoom Session Agenda | 10:00 (https://canvas.pointloma.edu/courses/55066/assignments/628783)	due by 10am
	3 min Mathematical Sets (https://canvas.pointloma.edu/courses/55066/assignments/629332)	due by 11am

Date	Details	Due
	3 min Probability (https://canvas.pointloma.edu/courses/55066/assignments/629331)	due by 11am
Mon May 3, 2021	Week 10 videos	to do: 11:59pm
	Python lab 3 (https://canvas.pointloma.edu/courses/55066/assignments/629357)	due by 11:59pm
Thu May 6, 2021	CSC3002-1 SP21 - Unix and Python Scripting for Computational Science (https://canvas.pointloma.edu/calendar?event_id=75998&include_contexts=course_55066)	10am to 11am
	WK10 | Thursday Zoom Session Agenda | 10:00 (https://canvas.pointloma.edu/courses/55066/assignments/628784)	due by 10am
	Python quiz (https://canvas.pointloma.edu/courses/55066/assignments/628794)	due by 10:25am
Mon May 10, 2021	Week 11 videos	to do: 11:59pm
Thu May 13, 2021	CSC3002-1 SP21 - Unix and Python Scripting for Computational Science (https://canvas.pointloma.edu/calendar?event_id=75999&include_contexts=course_55066)	10am to 11am
	WK11 | Thursday Zoom Session Agenda | 10:00 (https://canvas.pointloma.edu/courses/55066/assignments/628785)	due by 10am
	3 min Computer Simulations (https://canvas.pointloma.edu/courses/55066/assignments/629333)	due by 11am
Mon May 17, 2021	Week 12 videos	to do: 11:59pm
	Python lab 4 (https://canvas.pointloma.edu/courses/55066/assignments/629358)	due by 11:59pm

Date	Details	Due
	Turtle lab (https://canvas.pointloma.edu/courses/55066/assignments/629359)	due by 11:59pm
Thu May 20, 2021	CSC3002-1 SP21 - Unix and Python Scripting for Computational Science (https://canvas.pointloma.edu/calendar?event_id=76000&include_contexts=course_55066)	10am to 11am
	WK12 | Thursday Zoom Session Agenda | 10:00 (https://canvas.pointloma.edu/courses/55066/assignments/628786)	due by 10am
	3 min Image Processing (https://canvas.pointloma.edu/courses/55066/assignments/629334)	due by 11am
Mon May 24, 2021	Week 13 videos	to do: 11:59pm
	Monte Carlo Simulation (https://canvas.pointloma.edu/courses/55066/assignments/629360)	due by 11:59pm
Thu May 27, 2021	CSC3002-1 SP21 - Unix and Python Scripting for Computational Science (https://canvas.pointloma.edu/calendar?event_id=76001&include_contexts=course_55066)	10am to 11am
	WK13 | Thursday Zoom Session Agenda | 10:00 (https://canvas.pointloma.edu/courses/55066/assignments/628787)	due by 10am
Mon May 31, 2021	Image Processing Lab (https://canvas.pointloma.edu/courses/55066/assignments/629362)	due by 11:59pm
Thu Jun 3, 2021	CSC3002-1 SP21 - Unix and Python Scripting for Computational Science (https://canvas.pointloma.edu/calendar?event_id=76002&include_contexts=course_55066)	10am to 11am
	WK14 | Thursday Zoom Session Agenda | 10:00 (https://canvas.pointloma.edu/courses/55066/assignments/628788)	due by 10am

Date	Details	Due
	3 minute presentation signups - available 3/2 at 2 PM (https://canvas.pointloma.edu/courses/55066/assignments/610635)	