Course Syllabus

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19 02 POINT LOMA NAZARENE UNIVERSITY	**Department of Mathematical, Information, and Computer Sciences** **CSC 3014: Operating Systems** **Number of Units: 4**
Spring 2021 | **March 1 - June 4** **Finals Week June 7-11**	

Meeting days: Wednesday	**Instructor: Dr. Lori Carter**
Meeting times: 12:30-2:15	**Phone: 619-849-2352**
Meeting location: Zoom	**Email: lcarter@pointloma.edu**
Office Hours Zoom: by appointment	**Office hours: on Zoom by appointment**

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. (https://www.pointloma.edu/coronavirus-covid-19-information)**

COURSE DESCRIPTION

A systems course focusing on operating systems, topics include basic operating system design, process management, device management, memory management, and file systems. Students are introduced to the basics of software evolution, reliability, concurrency, security and protection in the context of single-core, multi-core, distributed, and virtual environments. Class members gain experience using both GUI and command-line interfaces. In the course of implementing the CPU scheduling simulation, students understand the importance of thorough system testing and attention to system specs as they try to make parts of their systems work with those designed by their teammates.

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 and associated reading. Quizzes are open book, but not open friend.

Labs: Frequent labs based on the Linux/Unix operating systems, from the book, *Just Enough Unix* and other sources will be assigned. An unfinished lab may be turned in on time for partial credit. Labs will contain questions that require analysis and thought. Often, a large point value will be assigned to these answers. **They should be original, and in your own words**. If it appears that 2 (or more) people have turned in 1 lab when this is not authorized, I will split the points or potentially give each person a zero.

All labs and video quizzes are due before Wednesday at midnight. If we change to meeting in Tuesday/Thursday groups in person, this will change to Monday. I am assigning a single due date for simplicity and maximum flexibility, but turning things in early is encouraged. **No late labs or quizzes are accepted** but I will drop the lowest lab grade.

Exams: There will be 2 exams in addition to the final exam. These will only cover material presented since the last exam. 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 a documented emergency.** Exam 1 is scheduled for **Tuesday April 4.** It will cover chapters 1 – 4 plus the appropriate chapters in the Unix book. Exam 2 is scheduled for Thursday **May 6** and will cover chapters 5-8 in your text. Whether we are meeting together or in half-sections, everyone will take the exam on the same day.

Final Exam: Cumulative exam with an emphasis on material covered in the last part of the semester. The final is scheduled for the **Tuesday of finals week at 1:30 PM**.

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.

Simulation Project: A 3-week programming project based on process scheduling will be assigned. The entire project is due May 12, but there will be several intermediate due dates as well. In order to get full credit, all intermediate dates must be met as well as the final date. Unless otherwise stated, late portions are not accepted. **Most aspects of this project (exceptions will be noted) must be completed using basic Linux/UNIX tools (non-GUI)**. Programs will be written in C++ using the basic Linux Operating System (command-line) and g++ compilers. All written projects will be completed using a Linux/Unix text editor.

COURSE LEARNING OUTCOMES

- Students will understand the interaction between hardware and software.
- Students will be able to explain the purpose of the Operating System, and where it fits into the computer system as a whole
- Students will be able to evaluate how a change in one part of the operating system will affect the operating system as a whole.
- Students will develop a working knowledge of the UNIX/Linux operating systems
- Students will be able to take from theory to design to implementation a module of an operating system.
- Students will have an understanding of the historical development, contemporary progress and societal role of computer science.
- Students will be able to list the 5 tasks of the operating system, describe what each is, and justify why it is important.
- Students will be able to state how ethics plays a role in OS development
- Students will be able to collaborate effectively in teams

REQUIRED TEXTS AND RECOMMENDED STUDY RESOURCES

Silbershatz et.al, Operating System Concepts Essentials. Second ed. and Andersen, Paul, Just Enough Unix, Fifth ed.

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 4 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 150 total hours meeting the course learning outcomes. The time estimations are provided in the Canvas modules.

ASSESSMENT AND GRADING

Grade categories will be weighted in the final grade as follows:

Video Quizzes 10%

Participation 5%

Exams 30%

Labs 25%

Scheduling Project 10%

Final 20%

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:

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 before midnight on the date indicated in Canvas (initially Wednesdays). Incompletes will only be assigned in extremely unusual circumstances. As noted earlier,

late assignments are not accepted, but one quiz and one lab will be dropped.

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	CSC3014-1 SP21 - Operating Systems (https://canvas.pointloma.edu/calendar?event_id=77548&include_contexts=course_55046)	12:30pm to 2pm
	WK1 | Tuesday Zoom Session Agenda | 12:30 p.m. (https://canvas.pointloma.edu/courses/55046/assignments/614854)	due by 12:30pm
Wed Mar 3, 2021	Unix/Linux on your computer	to do: 11:59pm
Thu Mar 4, 2021	CSC3014-1 SP21 - Operating Systems (https://canvas.pointloma.edu/calendar?event_id=77503&include_contexts=course_55046)	12:30pm to 2pm
	WK1 | Thursday Zoom Session Agenda | 12:30 p.m. (https://canvas.pointloma.edu/courses/55046/assignments/606792)	due by 12:30pm
Wed Mar 10, 2021	Computing Environments Quiz (https://canvas.pointloma.edu/courses/55046/assignments/621102)	due by 11:59pm
	Unix File System Quiz (https://canvas.pointloma.edu/courses/55046/assignments/621121)	due by 11:59pm
	Intro to Linux/Unix (https://canvas.pointloma.edu/courses/55046/assignments/614858)	due by 11:59pm
	Unix Lab 2 (https://canvas.pointloma.edu/courses/55046/assignments/621032)	due by 11:59pm
Thu Mar 11, 2021	CSC3014-1 SP21 - Operating Systems (https://canvas.pointloma.edu/calendar?event_id=77504&include_contexts=course_55046)	12:30pm to 2pm
	WK2 | Thursday Zoom Session Agenda | 12:30 p.m. (https://canvas.pointloma.edu/courses/55046/assignments/621033)	due by 12:30pm

Date	Details	Due
Wed Mar 17, 2021	Week 3 quiz (https://canvas.pointloma.edu/courses/55046/assignments/630187)	due by 11:59pm
	C Lab (https://canvas.pointloma.edu/courses/55046/assignments/629626)	due by 11:59pm
	System Calls lab (https://canvas.pointloma.edu/courses/55046/assignments/629628)	due by 11:59pm
Thu Mar 18, 2021	CSC3014-1 SP21 - Operating Systems (https://canvas.pointloma.edu/calendar?event_id=77505&include_contexts=course_55046)	12:30pm to 2pm
	WK3 | Thursday Zoom Session Agenda | 12:30 p.m. (https://canvas.pointloma.edu/courses/55046/assignments/629585)	due by 12:30pm
Wed Mar 24, 2021	Week 4 video quiz (https://canvas.pointloma.edu/courses/55046/assignments/630188)	due by 11:59pm
	C++ Lab (https://canvas.pointloma.edu/courses/55046/assignments/629632)	due by 11:59pm
	Emacs Lab (https://canvas.pointloma.edu/courses/55046/assignments/629630)	due by 11:59pm
Thu Mar 25, 2021	CSC3014-1 SP21 - Operating Systems (https://canvas.pointloma.edu/calendar?event_id=77506&include_contexts=course_55046)	12:30pm to 2pm
	WK4 | Thursday Zoom Session Agenda | 12:30 p.m. (https://canvas.pointloma.edu/courses/55046/assignments/629608)	due by 12:30pm
Wed Mar 31, 2021	Scripting Lab (https://canvas.pointloma.edu/courses/55046/assignments/629640)	due by 11:59pm
	Threading lab (https://canvas.pointloma.edu/courses/55046/assignments/634776)	due by 11:59pm

Date	Details	Due
Thu Apr 1, 2021	CSC3014-1 SP21 - Operating Systems (https://canvas.pointloma.edu/calendar?event_id=77507&include_contexts=course_55046)	12:30pm to 2pm
	WK5 | Thursday Zoom Session Agenda | 12:30 p.m. (https://canvas.pointloma.edu/courses/55046/assignments/629609)	due by 12:30pm
Tue Apr 6, 2021	Exam 1 (https://canvas.pointloma.edu/courses/55046/assignments/629812)	due by 1:25pm
Wed Apr 7, 2021	Week 6 Video quiz (https://canvas.pointloma.edu/courses/55046/assignments/630189)	due by 11:59pm
	Open source ethics (https://canvas.pointloma.edu/courses/55046/assignments/629641)	due by 11:59pm
Thu Apr 8, 2021	CSC3014-1 SP21 - Operating Systems (https://canvas.pointloma.edu/calendar?event_id=77508&include_contexts=course_55046)	12:30pm to 2pm
	WK6 | Thursday Zoom Session Agenda | 12:30 p.m. (https://canvas.pointloma.edu/courses/55046/assignments/629610)	due by 12:30pm
Wed Apr 14, 2021	Week 7 Video Quz (https://canvas.pointloma.edu/courses/55046/assignments/630191)	due by 11:59pm
	Threading lab (https://canvas.pointloma.edu/courses/55046/assignments/629642)	due by 11:59pm
Thu Apr 15, 2021	CSC3014-1 SP21 - Operating Systems (https://canvas.pointloma.edu/calendar?event_id=77509&include_contexts=course_55046)	12:30pm to 2pm
	WK7 | Thursday Zoom Session Agenda | 12:30 p.m. (https://canvas.pointloma.edu/courses/55046/assignments/629611)	due by 12:30pm

Date	Details	Due
Wed Apr 21, 2021	FCFS test cases (https://canvas.pointloma.edu/courses/55046/assignments/629643)	due by 11:59pm
	Makefile lab (https://canvas.pointloma.edu/courses/55046/assignments/629749)	due by 11:59pm
Thu Apr 22, 2021	CSC3014-1 SP21 - Operating Systems (https://canvas.pointloma.edu/calendar?event_id=77510&include_contexts=course_55046)	12:30pm to 2pm
	WK8 | Thursday Zoom Session Agenda | 12:30 p.m. (https://canvas.pointloma.edu/courses/55046/assignments/629612)	due by 12:30pm
Wed Apr 28, 2021	Week 8 Video Quiz (https://canvas.pointloma.edu/courses/55046/assignments/630193)	due by 11:59pm
	Makefile, driver, stubbs code (https://canvas.pointloma.edu/courses/55046/assignments/629791)	due by 11:59pm
	Priority test cases (https://canvas.pointloma.edu/courses/55046/assignments/629750)	due by 11:59pm
Thu Apr 29, 2021	CSC3014-1 SP21 - Operating Systems (https://canvas.pointloma.edu/calendar?event_id=77511&include_contexts=course_55046)	12:30pm to 2pm
	WK9 | Thursday Zoom Session Agenda | 12:30 p.m. (https://canvas.pointloma.edu/courses/55046/assignments/629613)	due by 12:30pm
Wed May 5, 2021	Week 9 Video Quiz (https://canvas.pointloma.edu/courses/55046/assignments/630194)	due by 11:59pm
Thu May 6, 2021	CSC3014-1 SP21 - Operating Systems (https://canvas.pointloma.edu/calendar?event_id=77512&include_contexts=course_55046)	12:30pm to 2pm

Date	Details	Due
	WK10 | Thursday Zoom Session Agenda | 12:30 p.m. (https://canvas.pointloma.edu/courses/55046/assignments/629614)	due by 12:30pm
	Exam 2 (https://canvas.pointloma.edu/courses/55046/assignments/630204)	due by 1:25pm
Wed May 12, 2021	Week 11 Video Quiz (https://canvas.pointloma.edu/courses/55046/assignments/630196)	due by 11:59pm
	FCFS and Priority code (https://canvas.pointloma.edu/courses/55046/assignments/629794)	due by 11:59pm
Thu May 13, 2021	CSC3014-1 SP21 - Operating Systems (https://canvas.pointloma.edu/calendar?event_id=77513&include_contexts=course_55046)	12:30pm to 2pm
	WK11 | Thursday Zoom Session Agenda | 12:30 p.m. (https://canvas.pointloma.edu/courses/55046/assignments/629615)	due by 12:30pm
	Simulation analysis - in class (https://canvas.pointloma.edu/courses/55046/assignments/629795)	due by 11:59pm
	Stand up meeting 5/4 and peer review 5/13 (https://canvas.pointloma.edu/courses/55046/assignments/629796)	due by 11:59pm
Wed May 19, 2021	Week 12 Video Quiz (https://canvas.pointloma.edu/courses/55046/assignments/630197)	due by 11:59pm
Thu May 20, 2021	CSC3014-1 SP21 - Operating Systems (https://canvas.pointloma.edu/calendar?event_id=77514&include_contexts=course_55046)	12:30pm to 2pm
	WK12 | Thursday Zoom Session Agenda | 12:30 p.m. (https://canvas.pointloma.edu/courses/55046/assignments/629616)	due by 12:30pm
Wed May 26, 2021	Week 13 Video Quiz (https://canvas.pointloma.edu/courses/55046/assignments/630199)	due by 11:59pm

Date	Details	Due
Thu May 27, 2021	CSC3014-1 SP21 - Operating Systems (https://canvas.pointloma.edu/calendar?event_id=77515&include_contexts=course_55046)	12:30pm to 2pm
	WK13 | Thursday Zoom Session Agenda | 12:30 p.m. (https://canvas.pointloma.edu/courses/55046/assignments/629623)	due by 12:30pm
Wed Jun 2, 2021	Week 14 Video Quiz (https://canvas.pointloma.edu/courses/55046/assignments/630201)	due by 11:59pm
Thu Jun 3, 2021	CSC3014-1 SP21 - Operating Systems (https://canvas.pointloma.edu/calendar?event_id=77516&include_contexts=course_55046)	12:30pm to 2pm
	WK14 | Thursday Zoom Session Agenda | 12:30 p.m. (https://canvas.pointloma.edu/courses/55046/assignments/629624)	due by 12:30pm