CSC 394: Programming Languages (4 Units)
Spring 2018

Point Loma Nazarene University
College of Natural and Social Sciences

PLNU Mission
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.

Instructor:

Dr. Benjamin Mood
bmood@pointloma.edu
619 849 2269
RS 216

Meeting Times and Locations:

Lecture:

MWF: 2:45 – 3:55 (LA102)

Office Hours:

M: 10:30 – 11:30, 1:30 – 2:30, 4:00 – 5:00
T: 3:00 – 5:00
W: 11:00 – 11:30, 1:30 – 2:30
R: 12:15 – 1:15
F: 10:30 – 11:30, 1:30 – 2:30

Books:

Concepts of Programming Languages by Robert W. Sebesta 11/E

Course Description:

This course in programming languages covers language design issues and language translators. Laboratories give students a practical understanding of programming language concepts as well as give experience in programming using several programming languages.

Learning Outcomes:

Students will be able to write correct and robust software.
Students will use the theory of algorithms and computation to solve problems.
Students will analyze the interaction between hardware and software.

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.

Additional Course Information:

Missed Classes: Work missed due to PLNU activities (i.e., sports teams, choirs, etc), should be turned in the class day the student is back. Missed Exams must be scheduled before the student leaves (exception is in the case of dire circumstances). It is the student's responsibility to inform the professor of when they will be gone. In-class work will be waived for excused events.

Project: The best way to truly understand what goes on in a compiler and a lot of techniques in programming languages is to write and explore code for a compiler. To that end, each student will be implementing a compiler in C++ as a semester long project. You will be given a smaller compiler, which uses the same techniques you will use to work off of.

The project will be separated into 5 components. Late turn ins will receive a 0 for each late component. Unfortunately, due to the nature of this project, there are many times that, even if you did not finish part, you will still need the completed component before you can do the next step. (parts 1 & 2 are not dependent on any other part; 3 depends on 2; 4 depends on 3; 5 depends on 4.)

Each part of the project will be graded as follows: Dr. Mood will run N test cases for each component of the project. A working program, which fulfilled the requirements of the assignment, will be awarded a base 50% + however many tests cases work. Those components, which don't pass a single test case may receive up to 50%, depending on how close they were.

All grades on a component of the compiler project are considered temporary and may be modified by the compiler oral exam (explained later).

This is a lengthy semester long project and not meant to be done in 1 sitting. **It is highly suggested you don't wait till the last minute to work on any component of the project. If you wait till the last minute and have a question, there is a high chance I won't be able to respond.**

Summary of deadlines for the different pieces (descriptions on canvas):

Part 1: Interpreter:
Due: Friday January 19th at 4:49am.

Part 2: Lexical Analyzer (Scanner):
Due: Friday Feb 2nd at 4:49am.

Part 3: Parser:
Due: Friday March 2nd at 4:49am.

Part 4: Type Checker:
Due: Friday March 23rd at 4:49am.

Part 5: Code Generator:
Due: Friday April 20th at 4:49am.

Compiler Oral Exam: Within a three days of completing the project, each student will contact Dr. Mood to set up a 20-minute appointment with Dr. Mood. Each student will be asked some basic conceptual questions about a compiler and their code. These exams might increase or decrease the initial score of the project. For instance, someone who wasn't able to get much complete but knows exactly how things should have worked may have their project score raised if they are able to answer questions about parts they did not get working and as a second example, someone who doesn't understand the concepts or what they did might have their score lowered.

Study Questions: Questions from the book will be periodically given out; these questions will contain the concepts and the types of questions, which I will ask on exams.

Labs: There will be a few assigned labs during class. They will be due 1 week from the time they are given out. In these labs, you will get to explore other programming languages you have not previously seen. Late labs will not be accepted.

Exams: Exams are comprehensive. The midterm covers all of what we have talked about so far and the final covers all material with emphasis on the second half of the class. Missed exams should be taken before the student is to be gone.

Final: The final time is listed in the schedule.

Cheating: You are not to copy code from other students. You may work together to discuss ideas and bug fix, but programming should be done on your own. As a general rule of thumb, if Dr. Mood calls you into his office to explain your code; you should be able to.

Cell Phones & Laptops: Please don't use them in class unless we are doing a demonstration or asked to use them. An occasional peek is OK, but ignoring what is going on in class is not.

Be Courteous and Respectful. Be respectful to me. Be respectful of each other. It is highly distracting to me to see someone doing something else while in my class. This includes things like listening to music during my lecture. Do not do work for any other class inside of this one. Students violating the above rules may be asked to leave class for the day and will receive a 0 for all in class work.

Grading:

	CSC394
Compiler Project	30%
Labs	10%
Midterm	25%
Final	35%

Grading scale
93 – 100% A

90 – 92%	A-
87 – 89%	B+
83 – 86%	B
80 – 82%	B-
77 – 79%	C+
73 – 76%	C
70 – 72%	C-
67 – 69%	D+
63 – 67%	D
60 – 62%	D-
0 – 59%	F

PLNU Policies

Attendance:
Attendance is expected at each class session. In the event of an absence you are responsible for the material covered in class and the assignments given that day.

Regular and punctual attendance at all classes is considered essential to optimum academic achievement. If the student is absent from more than 10 percent of class meetings, the faculty member can file a written report which may result in 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. See http://catalog.pointloma.edu/content.php?catoid=24&navoid=1581#Class_Attendance in the Undergraduate Academic Catalog.

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.

Academic Accommodations:
If you have a diagnosed disability, please contact PLNU's Disability Resource Center (DRC) within the first two weeks of class to demonstrate need and to register for accommodation by phone at 619-849-2486 or by e-mail at DRC@pointloma.edu. See Disability Resource Center for additional information. For more details see the PLNU catalog:
http://catalog.pointloma.edu/content.php?catoid=24&navoid=1581#Academic_Accommodations

Students with learning disabilities who may need accommodations should discuss options with the instructor during the first two weeks of class.

Academic Honesty:
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 http://catalog.pointloma.edu/content.php?catoid=24&navoid=1581#Academic_Honesty for definitions of kinds of academic dishonesty and for further policy information.

Final Exam: May 4th at 1:30pm
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 the 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.

Copyright Protected Materials:
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.

Credit Hour:
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. Specific details about how the class meets the credit hour requirements can be provided upon request.

Schedule

Monday	Tuesday	Wednesday	Thu	Friday
Jan: 8	9: Bytecode & Interpreter & compiler project	10: Finish last time & chapter 1	11:	12 Chapter 2
15 (no classes)	16	17 Chapter 2	18	19 **Interpreter Due at 4:49am** DFA Lexer (Scanner) day
22 Chapter 3 (continued)	23	24 Chapter 3	25	26 Chapter 4
29 Chapter 4	30	31 DFA/REGX/CFG/PDA/Turing Machines	Feb 1	2 **Lexer (Scanner) Due at 4:49am**

				Parser day
5 DFA/REGX/CFG/PDA/Turing Machines	6	7 DFA/REGX/CFG/PDA/Turing Machines	8	9 Chapter 5
12 Chapter 6	13	14 Chapter 6	15	16 Chapter 7
19 NDSS	20	21 NDSS	22	23 Chapter 7
26 Chapter 8	27	28 **Midterm!**	1 (Birthday)	2 **Parser Due at 4:49am** Type checker day
5 (spring break)	**6**	**7**	**8**	**9 (spring break)**
12 Chapter 8	13	14 Chapter 9	15	16 Chapter 9
19 Chapter 11	20	21 Chapter 11	22	23 **Type Checker Due at 4:49am** Code generator day
26 Chapter 11	27	28 Chapter 12	29 **Easter Break**	30 **Easter Break**
2 **Easter Break**	3	4 Chapter 12	5	6 Chapter 13
9 Chapter 13	10	11 Chapter 13	12	13 Chapter 13
16 Chapter 15	17	18 Chapter 15	19	20 Chapter 15 **Code generator Due at 4:49am**
23 Chapter 16	24	25 Chapter 16	26	27 review
30	1	2	3	4 **Final @ 1:30pm**