CS108L Computer Science for All

Instructors:

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Course Website: cs4all.cs.unm.edu/cs108

Class: Section 001: MW 1:00-2:15 pm
Section 002: MW 4:30-5:45 pm

Course Description:

CS108L — Computer Science for All is an introduction to Computational Science and Modeling. The class is a dual-credit computational science course open to high school students as well as college students. As a hybrid course, a significant part of the course content is on-line and the remaining part is taught in-person. This hybrid course uses a style of pedagogy called a "flipped course." Lectures are delivered during out-of-class times via videos while in-class time is used for hands-on activities, project work, questions and other interactive learning.

Course Learning Outcomes — At the completion of this course, students will be able to:

- Learn the basics of a programming language (NetLogo).
- Improve on logical problem-solving skill.
- Use agent-based models to conduct scientific experiments.
- Use programming skills in an interdisciplinary environment.
- Develop computational thinking and problem-solving skills.

The above Learning Outcomes will be met through the assigned interdisciplinary module projects. Each project will require students to create a program in NetLogo that solves a realistic problem as described in the project prompts. Students will then use their created Netlogo modules to conduct scientific experiments regarding the effects of initial conditions inputted on the model.

This course is offered to both College and High School students. UNM students who successfully complete the course will receive 3 UNM credits. High school students who successfully complete the course will receive 1 high school credit and 3 UNM college credits. A 3 credit course at the university is equivalent to 9 hours of work per week (in-class and out-of-class) and approximately 144 hours of work per semester. This course is listed as one of the Natural and Physical Science Core Courses (Area 3). All high school and college students who earn a C or better in CS108 will earn 3 college credits toward the Science Core.

With regards to research on this course, all data, including but not limited to your responses to surveys, assessments, and assignments in this course are being collected as part of a research study. The purpose of this research study is to improve how computer science is taught.

Recommended Supplies:
1. Internet access
2. USB Flash Drive

There are no required textbooks for this course

Grading:

The CS108L course consists of a total of 16 weeks. There will be 11 modules, each of which consists of a programming assignment, "Do Now" questions, and lecture videos. The 11th module is a longer programming assignment that is more self-directed. The total points a student earns during the semester determines a student's final course grade.

1. *Programming Assignments:* 10 weekly assignments worth 20 points each and a final programming project worth 80 points. There are opportunities to earn extra credit on most assignments. Total: 280 points
2. *Quizzes:* Completed in class throughout the semester, there will be roughly 5 quizzes. These will be worth 10 points each. If you are not in class, you will lose those points. Total: 50 points
3. *Participation:* All students begin with 100 points. Students will lose points if they are absent without prior permission, not engaged in the activities or assignments during class, do not complete surveys or if they have not prepared for class by doing assigned activities outside of class.
4. *Exams:* There will be a midterm and a final, each given during a class period and worth 100 points. Total: 200 points
5. *Extension problems:* Students are required to complete 2 extension problems. Extension problems are posted for 4 modules, and students must choose 2. Each is worth 20 points. Total: 40 points.

Letter Grade Score Ranges		Letter Grade Score Ranges	
Numerical Score	**Letter Grade**	**Numerical Score**	**Letter Grade**
>= 100%	A+	70% – <73%	C-
93% – <100%	A	67% – <70%	D+
90% – <93%	A-	63% – <67%	D
87% – <90%	B+	60% - <63%	D-
83% – <87%	B	<60%	F
80% – <83%	B-		
77% – <80%	C+		
73% – <77%	C		

Late Assignments:

You have 3 free late days in the semester. After the free days are used you will be penalized 10% for the first late day and 20% the second late day. No assignments will be accepted more than 2 days late. Excuses are unacceptable, so save your free days for real emergencies.

Course Material (Tentative Dates):

Module 1 (8/21-8/25): Introduction to NetLogo
Module 2 (8/28-9/1): Decomposition and Data Representation
Module 3 (9/4-9/8): Introduction to Abstraction
Module 4 (9/11-9/15): Introduction to Modeling
Module 5 (9/18-9/22): Boolean Logic
Module 6 (9/25-9/29): Variables, Scope and Running Experiments with Computer Models
Module 7 (10/2-10/6): Algorithms
Midterm Week (10/9-10/13): Review (Monday 10/9), Midterm Exam (Wednesday 10/11)
Fall Break! Enjoy (10/12-10/13)
Module 8 (10/16-10/20): Recursion
Module 9 (10/23-10/27): Epidemic Modeling
Module 10 (10/30-11/3): Ecosystem Modeling
Module 11, part I (11/5-11/22): Project
Thanksgiving Break! (11/23-11/24)
Module 11, part II (11/27-12/8): Project
Final: Review (Wednesday 12/6), Final Exam per schedule (see link on class website).

Course Policy:

Below is a list of general course policies.

1. All assignments specify what format (file type) is to be submitted. Work in any other format will not be graded.
2. All programs require the name of **ALL** authors at the top of the code tab in comments. If an author's name is missing, they will not receive credit.
3. You must use comments to initialize each procedure you authored. When working in pairs it is expected both students have substantial contributions.
4. Instructors have the right to drop students who fail to turn in 2 assignments or do not show up to class at anytime throughout the semester.

Attendance Policy: Regular and punctual attendance is required. UNM Pathfinder (the UNM Student Handbook http://pathfinder.unm.edu/) policies apply, which in part means instructor drops based on non-attendance are possible. This policy applies regardless of the grading option you have chosen.

Accommodation Statement: Accessibility Services (Mesa Vista Hall 2021, 277-3506) provides academic support to students who have disabilities. If you think you need alternative accessible formats for undertaking and completing coursework, you should contact this service right away to assure your needs are met in a timely manner. If you need local assistance in contacting Accessibility Services, see the Bachelor and Graduate Programs office.

Academic Integrity: The University of New Mexico believes that academic honesty is a foundation principle for personal and academic development. All University policies regarding academic honesty apply to this course. Academic dishonesty includes, but is not limited to, cheating or copying, plagiarism (claiming credit for the words or works of another from any type of source such as print, Internet or electronic database, or failing to cite the source), fabricating information or citations, facilitating acts of academic dishonesty by others, having unauthorized possession of examinations, submitting work of another person or work previously used without informing the instructor, or tampering with the academic work of other students. The University's full statement on academic honesty and the consequences for failing to comply to said policies are available in the college catalog and in the *Pathfinder*.

Specifically, in this course, you may discuss assignments with your classmates, but **you may not copy code and present it as your own**. We will scan assignments for plagiarized code. Assignments completed in collaboration should always identify who contributed to the assignment. If you are unsure about whether something violates the Academic Integrity policy, it is your responsibility to ask an instructor.

Cell Phones and Technology: As a matter of courtesy, please turn off cell phones and other communication and entertainment devices prior to the beginning of class. Notify the instructor in

advance if you are monitoring an emergency. Computers should be used during class to work on class material, and nothing else.

Work Hard. Be Nice*: UNM has established policies to encourage a respectful and supportive learning environment for all students. There are specific policies in the *Pathfinder* regarding, for example, student grievances, code of conduct, sexual harassment, and discrimination. All UNM policies apply in this class. Additionally, I expect all students and instructors to be respectful of one another, an attitude captured by the *motto of the KIPP charter schools: Work Hard. Be Nice. Within that context I also encourage you to Be Creative. Have Fun.