USC Viterbi
School of Engineering

CSCI 109: Introduction to Computer Science (Spring 2020)

Units:	2
Instructor:	Mohammad Reza Rajati, PhD
	PHE 412
	rajati@usc.edu – Include CSCI 109 in subject
Office Hours:	Wednesday 1:30 pm –3:00 pm
TA(s):	Max Pflueger
	pflueger@usc.edu – Include CSCI 109 in subject
Office Hours:	TBD
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Office Hours:	TBD
Lecture:	Monday, 12:00 pm –2:00 pm in SAL 101
Webpages:	Piazza Class Page for everything except grades
	and USC Blackboard Class Page for grades
Prerequisite:	This course is a corequisite to CSCI 103L.
	None.
Tentative Grading:	Assignments 35%
	Midterm Exam 30%
	Final Exam 35%
	Participation on Piazza* 5%

Letter Grade Distribution:

≥ 93.00	A		73.00 - 76.99	C
90.00 - 92.99	A-		70.00 - 72.99	C-
87.00 - 89.99	B+		67.00 - 69.99	D+
83.00 - 86.99	B		63.00 - 66.99	D
80.00 - 82.99	B-		60.00 - 62.99	D-
77.00 - 79.99	C+		≤ 59.99	F

Disclaimer: Although the instructor does not expect this syllabus to drastically change, he reserves every right to change this syllabus any time in the semester.

Note on e-mail vs. Piazza: If you have a question about the material or logistics of the class and wish to ask it electronically, please post it on the piazza page (not e-mail). You may post it anonymously if you wish. Often times, if one student has a question/comment, other also have a similar question/comment. Use e-mail with the professor, TA, graders only for issues that are specific to you individually (e.g., a scheduling issue or grade issue).

Catalogue Description: An introduction to, and overview of, Computer Science; both as a discipline and a body of knowledge.

Course Description: Computing is a broad scientific and engineering domain that centers on information and its transformation (i.e., computation). This course, introduces undergraduate students to computing as a discipline, a body of knowledge, and a domain of science/engineering. The focus is on ideas and concepts, with significant amounts of reading but no programming.

Course Objectives: Upon successful completion of this course a student will understand Computer Science:

- as a discipline including its subareas, and their relationship to each other;

- as a body of knowledge including its principal abstractions, structure, and fundamental contributions; and

- as a domain of science/engineering including information and its transformation.

Exam Dates:

- **Midterm Exam:** Monday March 9, 12:00-2:00 PM in SAL 101.

- **Final Exam:** Friday, May 8, 11:00 AM- 1:00 PM in SAL 101 as set by the university

Textbooks:

- **Required Textbook:**

  1. Frank Vahid, Susan Lysecky, Nkenge Wheatland, and Ron Siu *Computing Technology for All*, ZyBooks, 2019. (Zy)

- **Recommended Textbooks:**

1. Nell B. Dale *Computer Science Illuminated*, 6th Edition, Jones & Bartlett Learning, 2014. (Dale)

2. Wladston Ferreira Filho and Raimondo Pictet *Computer Science Distilled: Learn the Art of Solving Computational Problems*, 1st Edition, Code Energy LLC, 2017.

Grading Policies:

- The letter grade distribution table guarantees the *minimum* grade each student will receive based on their final score. When appropriate, relative performance measures will be used to assign the final grade, at the discretion of the instructor.

  - Final grades are non-negotiable and are assigned at the discretion of the instructor. If you cannot accept this condition, you should not enroll in this course.

- Your lowest grade in problem sets and your lowest grade in programming assignments will be dropped from the final grade.

- *Participation on Piazza has up to 5% extra credit, which is granted on a competetive basis *at the discretion of the instructor.*

- **Homework Policy**

  - Homework is assigned on an approximately weekly basis. A one-day grace period can be used for each homework with 10% penalty. *Absolutely no late homework will be accepted after the grace period. A late assignment results in a zero grade.*

  - Students are encouraged to discuss homework problems with one another, but each student must do their own work and submit individual solutions written/ coded in their own hand. Copying the solutions or submitting identical homework sets is written evidence of cheating. The penalty ranges from F on the homework or exam, to an F in the course, to recommended expulsion.

  - Posting the homework assignments and their solutions to online forums or sharing them with other students is strictly prohibited and infringes the copyright of the instructor. Instances will be reported to USC officials as academic dishonesty for disciplinary action.

- **Exam Policy**

  - **Make-up Exams:** No make-up exams will be given. If you cannot make the above dates due to a class schedule conflict or personal matter, you must drop the class. In the case of a required business trip or a medical or family emergency, a signed letter from your manager or counselor or physician has to be submitted. This letter must include the contact of your physician or counselor or manager.

  - Midterm and final exams will be closed book and notes. Calculators, computers, and cell-phones or any devices that have internet capability are not allowed.

  - All exams are cumulative, with considerable emphasis on material presented since the last exam.

- **Attendance:**

- Students are required to attend all the lectures and discussion sessions and actively participate in class discussions. Use of cellphones and laptops for anything unrelated to the lecture is prohibited in the classroom.

Important Note:

- Please use your USC email to register on Piazza and to contact the instructor and TAs.

Tentative Course Outline

MONDAY	
Jan 13th	**1**
Introduction, History, and Basics (Zy Ch. 1) Historical Notes Programming Computers in Modern Age Number Systems	
20th Martin Luther King Day	
27th	**2**
Logic Circuits*, Basic Computer Architecture, Software* (Zy Ch. 2, Dale Chs. 4, 5) Logic Circuits and Gates* Hardware Memory and Cache IO Devices Programming languages and Assembly* Python*	
Feb 3rd	**3**
Problem Solving and Algorithms (Dale Ch. 7) Problem Solving Algorithms Conditional Statements Loops Data Types Arrays Search Algorithms	
10th	**4**
Problem Solving and Algorithms (Dale Ch. 7) Sorting Selection and Bubble Sort Recursion	
17th President's Day	

Monday
24th **5** **Data Structures** (Dale Ch. 8) Abstract Data Types Logical Implementations Stacks Queues Slacks Trees Binary Search Graph Algorithms
Mar 2nd **6** **Operating Systems** (Zy Ch. 4) OS Basics Common Operating Systems Being a Good OS User Device Drivers
9th **7** **Midterm**
16th Spring Recess
23rd **8** **Computer Applications and Databases** (Zy Ch. 5) Introduction to Databases Audio, Video, Graphics, and Word Processing Applications
30th **9** **Networks** (Dale Ch. 15) Types of Networks Internet Connections Paclket Switching Network Protocols and TCP/IP Firewalls Network Addresses Domain Name Systems (DNS) Cloud Computing

Monday
Apr 6th **10**
The Internet and Web, Web Applications (Dale Ch. 16, Zy Ch. 6) The World-Wide Web Search Engines Weblogs Web Analytics HTML Java Applets XML Video Streaming Crowdsourcing Email
13th **11**
Privacy and Security (Zy Chs. 7, 8) Web footprint Anonymity Security Basics Viruses and Malware Firewalls Cryptography Digital Certificates
20th **12**
Information Systems (Zy Ch. 9) Definitions Cloud Computing
27th **13**
Artificial Intelligence, Machine Learning, and Data Science (Dale Ch. 13, Zy Ch. 11) Thinking Machines The Turing Test Critics of Turing Test Expert Systems Statistical learning Neural Networks Natural Language Processing Robotics Data Science

Notes:

- Items marked by * will be covered only if time permits.

Statement on Academic Integrity: USC seeks to maintain an optimal learning environment. General principles of academic honesty include the concept of respect for the intellectual property

of others, the expectation that individual work will be submitted unless otherwise allowed by an instructor, and the obligations both to protect one's own academic work from misuse by others as well as to avoid using another's work as one's own. All students are expected to understand and abide by these principles. SCampus, the Student Guidebook, contains the University Student Conduct Code (see University Governance, Section 11.00), while the recommended sanctions are located in Appendix A. See: http://scampus.usc.edu.

Emergency Preparedness/Course Continuity in a Crisis   In case of a declared emergency if travel to campus is not feasible, USC executive leadership will announce an electronic way for instructors to teach students in their residence halls or homes using a combination of Blackboard, teleconferencing, and other technologies. See the university's site on Campus Safety and Emergency Preparedness: http://preparedness.usc.edu

Statement for Students with Disabilities: Any student requesting academic accommodations based on a disability is required to register with Disability Services and Programs (DSP) each semester. A letter of verification for approved accommodations can be obtained from DSP. Please be sure the letter is delivered to me (or to TA) as early in the semester as possible. DSP is located in STU 301 and is open 8:30 a.m.–5:00 p.m., Monday through Friday. Website: http://sait.usc.edu/academicsupport/centerprograms/dsp/home_index.html
    (213) 740-0776 (Phone), (213) 740-6948 (TDD only), (213) 740-8216 (FAX) ability@usc.edu.