

The University of Texas at El Paso
Department of Computer Science
CS 1190 – Computational Thinking in Problem Solving
Spring 2020 Syllabus

1. General Information

Instructor:

Daniel Mejia

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Office: CCSB 3.1018

Office Hours: TR 1:30-3:00pm

Class Time:

MW 9:00am – 10:20am/CCSB 1.0702

2. Objectives & Outcomes

Class Objectives

Problem solving using computational thinking involves formulating problems in a manner that enables the use of computers and related tools to find the solution. When employing computational thinking techniques, being aware of the specific characteristics of constructs and features and choosing the appropriate tool to solve the problem is essential. In this course, students would build-on their problem-solving skills to address complex real-world problems. The activities will focus on developing abilities to identify specific modules in a difficult problem, and build solutions using a bottom-up method.

Learning outcomes

Level 1: Knowledge and Comprehension:

Level 1 outcomes are those in which the student has been exposed to the terms and concepts at a basic level and can supply basic definitions. Upon successful completion of this course, students will be able to:

1. Define what it means to use computational thinking to solve a problem.
2. Describe problem-solving strategies/approaches.
 - a. IDEAL
 - b. Duke's 7 steps.

Level 2: Application and Analysis:

Level 2 outcomes are those in which the student can apply the material in familiar situations, e.g., can work a problem of familiar structure with minor changes in the details. Upon successful completion of this course, students will be able to:

1. Design algorithms to solve a set of familiar problems.
 - a. Identify computational constructs
2. Identify the separate components of a complex problem (problem decomposition).
3. Identify, organize, and analyze data related to the problem domain.
4. Convert a real-world problem to its computational equivalent problem.
5. Apply appropriate strategies to solve a problem.

Level 3: Synthesis and Evaluation

Level 3 outcomes are those in which the student can apply the material in new situations. This is the highest level of mastery. Upon successful completion of this course, students will be able to:

1. Convert a new problem to its computational equivalent problem.
2. Identify and evaluate different approaches to create a solution.
3. Reuse components of one solution as part of another solution to a different problem.
4. Articulate and defend the solution to a problem over other options [Product].
5. Defend decisions (prioritizing, improved problem solving) [Process].
6. Reflect on one's own progress as a computational thinker in solving problems.

3. Policies & Other Information

Grading:

- | | |
|---------------------------------------|-----|
| • Class Attendance/Performance | 25% |
| • Homework/In-Class Exercise/Quizzes | 25% |
| • Partial Exams/Projects (12.5% each) | 25% |
| • Final project/presentation | 25% |

The nominal percentage-score-to-letter-grade conversion is as follows:

- 90% or higher is an A
- 80-89% is a B
- 70-79% is a C
- 60-69% is a D
- below 60% is an F

Attendance and Punctuality

Your attendance and preparation are critical for your success in this course and your development as a professional.

- Attendance: You will be dropped from the class if you have **three or more** absences. Two tardies are equal to one absence.

Technology:

The use of laptops, cell phones, tablets of any kind, may be necessary for in class quizzes. Outside of the approved specified time (quizzes), laptops and cell phones should not be used during class. The use of laptops or tablets as a tool for taking notes will be considered on a case-

by-case basis, at the sole discretion of the instructor. It is preferred that all notes should be taken using paper and pencil/pen.

All other electronics (and its accessories) including, but not limited to music playing devices and headphones are not allowed and should be stored prior to the beginning of class. The instructor reserves the right to ask individuals who do not comply to leave the class.

Disabilities:

If you have a disability and need classroom accommodations, please contact The Center for Accommodations and Support Services (CASS) at 747-5148, or by email to cass@utep.edu, or visit their office located in UTEP Union East, Room 106. For additional information, please visit the CASS website at www.sa.utep.edu/cass.

4. Standards of Conduct and Academic Dishonesty

Standards of Conduct:

You are expected to conduct yourself in a professional and courteous manner, as prescribed by the [UTEP Standards of Conduct](#).

A fundamental principle for any educational institution, academic integrity is highly valued and seriously regarded at The University of Texas at El Paso. More specifically, students are expected to maintain absolute integrity and a high standard of individual honor in scholastic work undertaken at the University. At a minimum, you should complete any assignments, exams, and other scholastic endeavors with the utmost honesty, which requires you to:

- Acknowledge the contributions of other sources to your scholastic efforts;
- Complete your assignments independently unless expressly authorized to seek or obtain assistance in preparing them;
- Follow instructions for assignments and exams, and observe the standards of your academic discipline; and
- Avoid engaging in any form of academic dishonesty on behalf of yourself or another student.

Graded work, e.g., homework and tests, is to be completed independently and should be unmistakably your own work (or, in the case of group work, your team's work), although you may discuss your project with other students in a general way. You may not represent as your own work material that is transcribed or copied from another person, book, or any other source, e.g., a web page.

Any student who commits an act of scholastic dishonesty is subject to discipline. Scholastic dishonesty includes, but not limited to cheating, plagiarism, collusion, the submission for credit of any work or materials that are attributable to another person.

- **Cheating**

- Copying from the test paper of another student
- Communicating with another student during a test
- Giving or seeking aid from another student during a test
- Possession and/or use of unauthorized materials during tests (i.e. Crib notes, class notes, books, etc.)
- Substituting for another person to take a test
- Falsifying research data, reports, academic work offered for credit
- **Plagiarism**
 - Using someone's work in your assignments without the proper citations
 - Submitting the same paper or assignment from a different course, without direct permission of instructors
 - Submitting the same work from a classmate
- **Collusion**
 - Unauthorized collaboration with another person in preparing academic assignments

A full description of the University Standards of Conduct and Academic Dishonesty can be found in the [Handbook of Operating Procedures](#).

Professors are required to -- and will -- report academic dishonesty and any other violation of the Standards of Conduct to the Dean of Students.