The University of Texas at El Paso
Department of Computer Science
CS 1290 – Algorithmic Thinking in Problem Solving
Spring 2020 Syllabus

1. General Information

Instructor:
Daniel Mejia
Email: dmmejia2@utep.edu
Office: Microsoft Teams/Email
Office Hours: TR 1:30-3:00pm (Microsoft Teams)

Class Time:
Online
MWF 12:00pm – 1:20am (as necessary – determined by instructor)

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 coding 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 able to:

1. Describe problem-solving strategies/approaches.
    a. IDEAL
    b. Duke's 7 steps.
2. Describe the role of abstraction in analyzing a problem description.
3. Describe the difference between clarifying and probing questions.
4. Understand the importance of basic data structure and algorithm knowledge.

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. Apply problem-solving strategies to coding interview problems, including abstraction, question generation (clarifying and probing), data collection and analysis, problem decomposition, and pattern generalization.
2. Communicate (oral and written) solutions to technical/coding problems.

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. Solve technical/coding problems with redundant, incomplete, and inconsistent specifications.
2. Evaluate correctness and quality of different solutions to technical/coding problems using metrics such as efficiency, correctness, and coverage.
3. Provide constructive critique of solutions presented by other groups.
    - Identify strengths and weaknesses of solutions.
4. Resolve critique of your group's solution to improve your solution.
5. Articulate and defend the solution to a problem over other options [Product].
6. Defend decisions (prioritizing, improved problem solving) [Process].
7. Reflect on problem solving process to improve and contribute to one's toolbox for solving problems.

3. Policies & Other Information

Grading:

- Quizzes 15%
- Assignments/Homework/Participation 25%
- Partial Exams/Projects 35%
- Final project/presentation/Exam 25%

Note: You must score at least 60% on individual submissions to receive a passing grade (A-D)

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

Participation
Your participation and preparation are critical for your success in this course and your development as a professional. You are expected to fully participate in class tests, quizzes, discussions, and other activities determined by the instructor.

Assignments
You are responsible to submit all assignments, quizzes, tests, discussions, etc. by the due date specified on Blackboard. Late assignments will be accepted with a 15% penalty for the first 24 hours. Assignments will be accepted 24-48 hours with a 30% penalty. Assignments will not be accepted after 48 hours. Tests will not be accepted late.

Technology/Office Hours
This course will be completed entirely online; there will be instances where the class will meet virtually at the assigned meeting time – this will be determined by the instructor. You will be required to use Blackboard & Microsoft Teams as part of this course. You will also need access to a video recorder (phone, camera, web-camera, tablet, etc.) for video submissions & presentations.

Office hours will be held through Microsoft Teams. Should you need to communicate with me during office hours, send a chat message to me through Microsoft Teams; if appropriate, we will meet through a video call.

If you need assistance outside of office hours, please send an email. Emails should be written with the subject line: [CS 1290] – Subject

Collaboration
Collaboration among students is strongly encouraged.
It is appropriate to:
- Talk with other students about approaches and ideas.
- Get ideas and extra information from the internet, books, etc.

However, it is not appropriate to:
- Share code with another student (if a piece of code is submitted by two or more students, both students are guilty of cheating, regardless of who wrote the original code).
- Use code acquired from an outside source (the internet, a friend, etc.)
- Look at another student's code
- Debug another student's code

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.

Note: If you have a registered CASS accommodation, it is your responsibility to discuss your accommodations with the instructor. Please email me to discuss your specific case.

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.