EE 3372 – Software Design II
Syllabus

Fall 2019

COURSE INFORMATION:
Meeting Times: Monday, Wednesday 12:00PM – 01:20PM
Room: Liberal Arts 209
Final Exam: Friday, December 13th; 01:00PM – 03:45PM
Course Designation: EE3376
CRN: 11411
Credit Hours: 3
Catalog Description: An introduction to object-oriented software design. Covers basic language
elements, operations, and design concepts; emphasizes program design and
construction using extensive, reusable modules.
Course Type: Selective Elective
Prerequisite: EE2372, EE3176, and EE3376, each with a grade of "C" or better.
Co-requisite: EE 3376; Junior standing required.
Website: Blackboard

INSTRUCTOR INFORMATION:
Instructor: Erasmo Morales, MSCp.E
Office: *Engineering Building E326
Office Hours: *Monday, Wednesday 10:30AM – 11:50PM or by appointment.
E-Mail: emorales4@utep.edu

TEXTBOOKS:
Data Structures and Algorithms in C++
by Michael Goodrich, Roberto Tamassia, and David Mount (2nd Edition)
PTHreads Programming: A POSIX Standard for Better Multiprocessing
by Dick Buttlar, Jacqueline Farrell, and Bradford Nichols

COURSE MATERIALS:
• Computer with C++ IDE: Visual Studio (Windows/MacOS), Eclipse CDT
  (Windows/MacOS Linux)
• ECE Vectra Lab Student Computer Account (Acquired at Room E319B)
COURSE OUTCOMES:

Students completing this course will be able to:

1. Design, create, and execute software written in C++.
2. Design and construct object-oriented software packages composed of extensible, reusable classes residing in multiple files.
3. Design multi-threaded C++ programs that take advantage of systems with multi-processor architecture.
4. Use a variety of programming tools to create, manage, debug, query, and execute C++ programs.

TOPICS:

Topics you will be expected to demonstrate throughout the semester:

- Introduction and Best Coding Practices (All Sections)
  - Section I:
    - Object-Orientated Design
    - Data Types and Operators
    - Program Control and Functions
    - Class Objects and Methods
    - Classes of algorithms: brute-force, greedy, divide-and-conquer
  - Section II:
    - Memory Management and Data Structures
    - Binary Trees, Tries
    - Searching and Sorting Algorithms
    - C++ Function and Class Templates
    - Standard Template Library
    - Inheritance and Polymorphism
    - Advanced Data Structures: Graphs
  - Section III:
    - Multi-Processor Architectures and Classes of Parallelism
    - Multi-threaded Programming with PThreads
    - Race Conditions in Multi-Threaded Programs
    - Thread Synchronization Using Mutual Exclusion Semaphores

GRADING:

Instead of traditional letter grades, you will be earning points in this course. Below is a chart that explains point scores and their letter grade equivalents:

<table>
<thead>
<tr>
<th>Score</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>900+</td>
<td>A</td>
</tr>
<tr>
<td>800 - 899</td>
<td>B</td>
</tr>
<tr>
<td>700 - 799</td>
<td>C</td>
</tr>
<tr>
<td>600 - 699</td>
<td>D</td>
</tr>
<tr>
<td>0 - 599</td>
<td>F</td>
</tr>
</tbody>
</table>
**POINT ALLOCATION:**

There are several ways to earn points through-out the semester:

<table>
<thead>
<tr>
<th>Task</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Code-A-Long</td>
<td>5</td>
</tr>
<tr>
<td>Class Participation</td>
<td>5 - 10</td>
</tr>
<tr>
<td>Trivia</td>
<td>5 - 20</td>
</tr>
<tr>
<td>Assignment</td>
<td>10 - 20</td>
</tr>
<tr>
<td>Quiz</td>
<td>20 - 30</td>
</tr>
<tr>
<td>Design Challenge</td>
<td>30 - 50</td>
</tr>
<tr>
<td>Exam</td>
<td>100 - 150</td>
</tr>
<tr>
<td>Final Exam</td>
<td>200</td>
</tr>
</tbody>
</table>

Completing tasks accurately and quickly will earn you the most points. Additionally, you must earn a minimum amount of points for each section of the course. Below are the minimum and maximum amount of points you can earn in each section:

<table>
<thead>
<tr>
<th>Section</th>
<th>Minimum Points</th>
<th>Maximum Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>200</td>
<td>~250</td>
</tr>
<tr>
<td>II</td>
<td>300</td>
<td>~350</td>
</tr>
<tr>
<td>III</td>
<td>300</td>
<td>~350</td>
</tr>
<tr>
<td>Final</td>
<td>200</td>
<td>+200</td>
</tr>
</tbody>
</table>

**DUE DATES:**

Generally, there are no due dates for tasks. However, tasks will be worth less the more time has passed since they were assigned. Tasks belonging to a topic in each section will be worth points up until day **before** the relevant Exam takes place. Trivia task points can only be earned during the class period in which they are given. See below for Exam dates and available points:

<table>
<thead>
<tr>
<th>Section</th>
<th>Exam Date</th>
<th>Maximum Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Wednesday, September 25th [12:00 -13:20]</td>
<td>250</td>
</tr>
<tr>
<td>II</td>
<td>Wednesday, October 30th [12:00 -13:20]</td>
<td>350</td>
</tr>
<tr>
<td>III</td>
<td>Wednesday, November 20th [12:00 -13:20]</td>
<td>350</td>
</tr>
<tr>
<td>Final</td>
<td>Friday, December 13th [13:00 -15:45]</td>
<td>200</td>
</tr>
</tbody>
</table>
MATERIAL SUBMISSION GUIDELINES:

All materials will be turned into Blackboard, **DO NOT PRINT THEM**. When submitting your code (source files **ONLY**), please use the following file naming convention:

\[
\text{Student Name} - \text{Section} - \text{Task}.\text{ext}
\]

For example:

- Ortega Miguel – SI – Assignment2.cpp
- Lily Garcia – SII – DC4.cpp
- Robert Velez – SIII – DC7.zip

Do not include special characters '!', '?', '#', '$', '%', '&', etc).

The only acceptable archive files are .zip files when asked.

The best method for submitting code and other material is by using the Blackboard. **Email is for special cases.**

For special cases, submit materials to my email (emorales4@utep.edu), however, it is more difficult to keep track of submissions this way.

CLASS CONDUCT:

Try not to bring food or drink, other than water, into the class room. Leaving a mess is rude and crunching on food is distracting to your fellow students, as well as myself. If you have special dietary needs, please let me know ahead of time.

Please keep talking and texting to a minimum. If you must contact someone or leave in an emergency, feel free to leave the classroom as quietly as possible (no need to explain to me). You may return later.

Attendance will not be taken nor must you be seated at a certain time. You may leave the classroom and return at any time. Please do either as quietly as possible.

Do not borrow code. Write it yourself. If your code appears to be copied, you (and the student that provided the code, if applicable) will lose all points ‘earned’ thus far. A second occurrence of plagiarism will result in being reported to the Dean.

Please respect me and your fellow students.

MISCELLANEOUS:

While there are no makeup exams, if you have an extraneous circumstance that have cause you to miss an exam, contact me as soon as possible to see what options are available.

Most class lectures and notes will be posted to Blackboard.

You may use any resource on exams, other than a buddy.

You may inquire about your score at any time. Current scores will also be available on Blackboard.

**Census date and last day to drop with a W:** Friday November 1st, 2019
ACADEMIC DISHONESTY:

As an entity of The University of Texas at El Paso, the Department of Electrical and Computer Engineering is committed to the development of its students and to the promotion of personal integrity and self-responsibility. The assumption that a student’s work is a fair representation of the student’s ability to perform forms the basis for departmental and institutional quality. All students within the Department are expected to observe appropriate standards of conduct. Acts of scholastic dishonesty such as cheating, plagiarism, collusion, the submission for credit of any work or materials that are attributable in the whole or in part to another person, taking an examination for another person, any act designed to give unfair advantage to a student, or the attempt to commit such acts will not be tolerated. Any case involving academic dishonesty will be referred to the Office of the Dean of Students. The Dean will assign a Student Judicial Affairs Coordinator who will investigate the charge and alert the student as to its disposition. Consequences of academic dishonesty may be as severe as dismissal from the University. See the Office of the Dean of Students’ homepage (Office of Student Life) at http://studentaffairs.utep.edu/dos for more information.

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. CASS’ Staff are the only individuals who can validate and if need be, authorize accommodations for students with disabilities.

This syllabus is subject to change as the needs of the course change throughout the semester.

If you have any questions, feel free to ask at any time!

SEE YOU IN CLASS!