Introduction to Problem Solving with Computers II

Course Description
This course is a continuation of COSC 1435, completing the syntax of the language introduced in COSC 1435 and providing an introduction to elementary data structures. It includes the intermediate study of the basic concepts of problem solving. Concepts include basic one- and two-dimensional array handling, recursion, basic searching and sorting algorithms, abstract data types, an introduction to object-oriented programming in C++, and dynamic data structures.

Text and References
1- *Starting Out With C++, 7th Edition*, Tony Gaddis

Prerequisite
Successful completion of COSC 1435

Learning Objectives
Upon successful completion of this course, the student will:
- Understand and effectively use dynamic memory allocation to create and manipulate variables within the scope of dynamic linear data structures.
- Be able to use the UNIX operating system to manage and manipulate files and folders and to create, compile, and execute computer programs of intermediate length.
- Develop, implement, and effectively use classes.
- Have a basic understanding of algorithm efficiency and be able to determine the Big-O efficiency of an algorithm.
- Understand and effectively use basic bubble, insertion, and selection sorting algorithms.
- Understand and effectively use single- and multi-dimensional arrays.
- Understand and effectively use linear and binary search algorithms.
- Understand the syntax of and effectively use a high-level language to write computer programs of intermediate length including the use of functions, structs, dynamic memory allocation, and classes.
- Understand and effectively use basic recursive algorithms.

Format
This course will be a mixture of lectures and discussions. The student is expected to actively participate in all class activities. The student is also expected to do outside work on assignments and reading. Additionally, students are to attend a weekly lab session.
Course Outline

The following is a rough outline and is subject to change. See the course website for the most up to date information.

- Introduction & Review
- Arrays
- Pointers
- String Programming
- Structured data
- Searching
- Sorting
- Classes
- Recursion

Important Dates

- 25 February, Exam 1
- 8 April, Exam 2
- 8 May, Final Exam

Student Expectations

- Students are expected to be in attendance, punctual, and prepared for class and labs.
- Quizzes will be frequent (normally at least once per week), unannounced, and cover the material assigned in the readings.
- Please ask questions on any material that you do not understand, if I cannot explain it to your satisfaction, please see me during my office hours or labs.
- Demonstrate integrity, maturity, and ethical behavior

Student Evaluation

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<thead>
<tr>
<th></th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Exam 1 &amp; 2</td>
<td>30% (15% each)</td>
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<tr>
<td>Final Exam</td>
<td>20% (comprehensive)</td>
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<tr>
<td>Programming Assignments (Labs)</td>
<td>30%</td>
</tr>
<tr>
<td>Class Assignments, Attendance &amp; Quizzes</td>
<td>20%</td>
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</tbody>
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Grade Ranges

<table>
<thead>
<tr>
<th>Grade</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>A</td>
<td>90 - 100%</td>
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<tr>
<td>B</td>
<td>80 - 89%</td>
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<tr>
<td>C</td>
<td>70 - 79%</td>
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<tr>
<td>D</td>
<td>60 - 69%</td>
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<tr>
<td>F</td>
<td>Less than 60%</td>
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Class Policies
• **Attendance:** Success in this course depends on your attendance and participation. I normally take attendance every day the class meets. If you are not in the room and in your seat before I start lecturing, you will NOT be counted as present that day. Attendance and active participation is included as part of your grade and are essential to successfully completing this course.

• **Electronic Device:** Please refrain from the use of electronic devices during class, as it is distracting to not only you, but also to your instructor and peers. *Turn off all cell phones and beepers when you enter the classroom!* If your or my cell phone rings in the lecture, it is **QUIZ** time. No electronic devices are allowed during exam time.

• **Academic Honesty:** You are expected to avoid all forms of academic dishonesty as defined in Catalog. In addition, students are expected to behave in an ethical manner in all class activities. All work submitted for grading must be the student's own work. Plagiarism will result in a score of 0 (zero) for the work or dismissal from the course and the Dean of Students office will be notified. No copying from another student's work of any type is allowed. It is the student's duty to allow no one to copy his or her work. Anyone found cheating and/or copying, in the exams or assignments, in the instructor's opinion, may receive an automatic F for the course.

• **Email:** You should monitor your university provided email account and the course website in Blackboard daily.

• **Makeup exam:** No makeup exam without adequate doctor's excuse explaining your absence. Makeup exams will not be the same exam. If for any reason you have a conflict you must see me as soon as you know about the conflict!

**Programming Assignments/Labs:** As part of this class, you will have many programming assignments (labs). These labs are all individual efforts. There is a two-hour lab session associated with this course. This time is used for supplemental instruction and also for you to work on your programming assignments. Attendance will be taken in these labs, and quizzes may be given.

• **Attendance:** Successful completion of this course depends, in part, on the completion of lab assignments. Attendance is required. Once you have submitted the current lab and you have no past due labs, you may leave the lab early.

• **Assignments:** A list of assigned lab work will be available on the course web site. These labs are crucial for you to learn the subject matter and also to earn a good grade. Follow the following guidelines:

  o Assignments are to be done individually. If two or more people turn in the same assignment, they will all receive a zero for that lab. You are responsible for protecting your work. Although some labs may be finished during the two-hour lab session, in general this will not be the case and you will need to spend time outside of lab time to complete them. Without spending time on the labs you will not learn the material.

  o **Be sure to keep backup copies of ALL your programs!** Storage media have been known to fail. *Not having a backup copy of your work is NOT an acceptable excuse for submitting a late lab.*

  o **Assignment Due Dates:** Assignments are to be submitted by the time and date listed for that particular lab. Due dates are listed with each assignment. If you want an A on any lab, **it must be submitted on time.**
- **Late submission** Labs may be submitted late, for a maximum of 80% of the total points, up to 48 hours after the original due date. Even if you don't finish your lab, you should turn in what you have done for partial credit. There will be no resubmissions of labs.

**Classroom/Professional Behavior.** Texas A&M University-Corpus Christi, as an academic community, requires that each individual respect the needs of others to study and learn in a peaceful atmosphere. Under Article III of the Student Code of Conduct, classroom behavior that interferes with either (a) the instructor's ability to conduct the class or (b) the ability of other students to profit from the instructional program may be considered a breach of the peace and is subject to disciplinary sanction outlined in article VII of the Student Code of Conduct. Students engaging in unacceptable behavior may be instructed to leave the classroom. This prohibition applies to all instructional forums, including classrooms, electronic classrooms, labs, discussion groups, field trips, etc.

**Disabilities Accommodations.** The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please call or visit Disability Services at (361) 825-5816 in Driftwood 101.

If you are a returning veteran and are experiencing cognitive and/or physical access issues in the classroom or on campus, please contact the Disability Services office for assistance at (361) 825-5816.

**Academic Advising:** The College of Science and Technology requires that students meet with an Academic Advisor as soon as they are ready to declare a major. The Academic Advisor will set up a degree plan, which must be signed by the student, a faculty mentor, and the department chair. The College's Academic Advising Center is located on the third floor of the Center for Instruction and can be reached at 825-6094.

**Grade Appeals.** A student who believes that he or she has not been held to appropriate academic standards as outlined in the class syllabus, equitable evaluation procedures, or appropriate grading, may appeal the final grade given in the course. The burden of proof is on the student to demonstrate the appropriateness of the appeal. A student with a complaint about a grade is encouraged to first discuss the matter with the instructor. For complete details on the process, including the responsibilities of the parties involved in the process and the number of days allowed for completing the steps in the process, consult Texas A&M University-Corpus Christi University Procedure 13.02.99.C2.01 Student Grade Appeal Procedures (http://www.tamucc.edu/provost/university_rules/index.html), and the College of Science and Engineering Grade Appeals webpage (http://sci.tamucc.edu/students/GradeAppeal.html). For assistance and/or guidance in the grade appeal process, students may contact the chair or director of the appropriate department or school or the College of Science and Engineering Dean's Office.