Course: COSC 1436.003   **Instructor**: Larry Young
Class: TTh 2:00 – 3:15 PM, CI-112   **Office**: CI-339
Lab: Th 3:30 – 5:20 PM, CI-230   **Office Hours**:   Mon. & Wed. 9:00 - 9:50,
Semester: Spring 2013   Wed. 11:00 – 12:00 and Thur. 11:00 - 2:00
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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.

Texts: *Starting Out With C++, 7th Edition*, Tony Gaddis

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 to create dynamic linear data structures (list, stack, and queue).
- 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.

Assessment of Objectives: Assessment of objectives will be conducted through exams, laboratory exercises, and programming assignments.

Instructional Methods and Activities: The methods and activities for instruction will include:

- Presentation of new material and concepts in the classroom through the use of lecture, tutorials, and sample programs.
- Classroom and laboratory discussion using problem solving techniques.
- Programming assignments to review and reinforce topics covered in the classroom.
- Optional one-on-one discussion as needed between the student and instructor outside regularly scheduled class time.

Lab Supplies: A flash drive to archive your programs.

Prerequisite: Successful completion of COSC 1435

Student Expectations:
- Students are expected to be in attendance, punctual, and prepared for class and labs.
- Assigned readings, as found on the instructor's web page, should be completed before coming to class.
- Know the answers to the 'Practice Problems' and 'Exercises' in the textbook. Most, but not all, quiz questions will be pulled from this material.
- 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

Course Grades:

Exam 1 & 2	30% (15% each)
Final Exam	25% (comprehensive)
Programming Assignments (Labs)	30%
Class Assignments, Attendance & Quizzes	15%

Grade Ranges:

A	90 - 100%
B	80 - 89%
C	65 - 79%
D	55 - 64%
F	Less than 55%

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. You are expected to know all material presented in class. _Turn off **all** cell phones and beepers when you enter the classroom!_

Reading: Class topics will follow the order of topics in the schedule on my web page. You should read ahead and be prepared for each class. Be prepared to study and complete laboratory assignments for 1 - 2 hours for every hour you spend in class/lab.

Email: Each student is required to monitor the university provided email account. This is the only account that I will send email to. Forwarding this account to another account is acceptable, as long as you receive the information. Students are required to check their email account on a regular basis (before each class/lab).

Class announcements, changes in schedules, feedback on assignments, clarifications on assignments, and other important information will be communicated via email. Please feel free to send questions to me on the class or subjects we are covering in class; at my discretion, I may forward the question and my reply to all class members. Not checking your designated email account is an unacceptable excuse for not receiving this information.

Academic Integrity/Plagiarism University students are expected to conduct themselves in accordance with the highest standards of academic honesty. Academic misconduct for which a student is subject to penalty includes all forms of cheating, such as illicit possession of examinations or examination materials, falsification, forgery, complicity, copying a program from the Internet or other students, or plagiarism. (Plagiarism is the presentation of the work of another as one's own work.) In this class, academic misconduct or complicity in an act of academic misconduct on an assignment or test will result in the student or students receiving a zero on that assignment. Group interactions, investigations, and studying are encouraged; **however, duplicative work, in which more than one student claims credit for essentially the same material, will be treated as cheating and will receive a grade of zero.** *This includes sharing code for the individual lab assignments!* If you feel uncertain about a particular activity, please speak to me BEFORE problems arise. In addition, you are responsible for obtaining and retaining original copies of graded material for the entire semester. The instructor reserves the right to run programs through electronic verification designed to find plagiarism.

Dropping a Class I hope that you never find it necessary to drop this or any other class. However, events can sometimes occur that make dropping a course necessary or wise. Please consult with me before you decide to drop to be sure it is the best thing to do. Should dropping the course be the best course of action, you must initiate the process to drop the course by going to the Student Services Center and filling out a course drop form. Just stopping attendance and participation WILL NOT automatically result in your being dropped from the class. March 30, 2012 is the last day to drop a class with an automatic grade of "W" this term.

Assignments: Class and lab work will be assigned on a regular basis. Please refer to the lab schedule for specific information and instructions about the lab assignments. Late assignments will be accepted, but the grade may be reduced by 20% for each day late.

Class problems: You will be asked to work in groups in class to solve problems similar to those that will appear on exams. You are expected to actively participate in these activities. In addition, you will be asked to write answers to group problems on the board.

Exams: You MUST read the text to do well in this class. As much as one third of the material on the tests may be information in the texts not discussed in class. Exams will focus on programming, including programming sections of code, analyzing code, finding errors, multiple choice, fill-in the blank, and/or short answer. **Be sure to keep ALL graded material.** The final examination is comprehensive, but will focus on the last half of the class.

Makeup Exams: Makeup exams will not be given under normal circumstances. If you notify me immediately that serious, unavoidable, documentable (e.g., with a letter from your doctor) circumstances have arisen, I will discuss options for replacing the missing grade. Excused absences due to school sponsored activities, religious observations, family events, etc. should be discussed **in advance**. Makeup exams will be different from the regular exams and typically more difficult.

Labs: The labs for this class are designed to provide the student experience in advanced programming in C++. The instructor will be available to assist with the assignments. Programs are not a group efforts, asking for assistance from other class members and the instructor is fine, but all work needs to be completed

individually. Most programs will take more time than is available during the scheduled labs. The instructor routinely assigns bonus points for students who go above and beyond stated lab requirements. Feel free to ask the instructor for suggestions on how to earn bonus points. There is a lab policies area that is part of this syllabus which provides additional information.

- *Attendance:* Successful completion of this course depends, in part, on the completion of lab assignments. I require attendance at lab. 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 my web site. Here are some guidelines you need to follow in order to do well on the labs:
    - The assignments are to be completed *individually*. You may ask each other for general advice, but do __*NOT*__ share final answers and/or source code unless you have been told to do so. Be sure to protect your programs.
    - Plan on spending 3 - 6 hours working on your lab assignments ___*outside of the scheduled lab time,*___ especially for labs later in the course. You cannot learn and understand the material by simply sitting through lectures. And it is unlikely that you will be able to complete an entire lab assignment in the hour and 50 minutes of scheduled lab time.
    - ___*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.*
    - *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*. However, under normal circumstances, if you have not completed your assignment by the due date, you should submit the work you have done for partial credit. For the sake of your grade, you should ALWAYS turn in SOMETHING that shows you've attempted to solve the problem.
    - **No labs will be accepted after Wednesday, May 7, 2013.** If an unavoidable, documentable emergency arises, please discuss it with me.
- *Resubmitting Lab Assignments:* I allow you to resubmit lab assignments if you are not satisfied with the grade you have earned on a lab. However, there are "ground rules".
    - The grade of a lab you want to resubmit must be less than a 90.
    - The original lab must not have been late. If you did not originally submit a lab on time that shows a reasonable amount of effort, you may not resubmit a lab.
    - The maximum number of points you may receive for a resubmit is 50% of the points you missed on the original submission.

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.

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.

Grade Appeals. As stated in University Rule 13.02.99.C2, Student 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 upon 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, including the responsibilities of the parties involved in the process and the number of days allowed for completing the steps in the process, see University Rule13.02.99.C2, Student Grade Appeals, and University Procedure 13.02.99.C2.01, Student Grade Appeal Procedures. These documents are accessible through the University Rules Web site at http://www.tamucc.edu/provost/university_rules/index.html. For assistance and/or guidance in the grade appeal process, students may contact the Office of Student Affairs.

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.

Tentative Class Schedule: This is my planned schedule, but almost certainly will change. The official schedule in on my web site and that schedule will be updated as changes occur.

Week	Subject	Reading Assignment
January 23	Introduction& Review	Gaddis: Chapters 1 - 6
January 28	Arrays	Gaddis: Chapter 7
February 4	Pointers	Gaddis: Chapter 9
February 11	String Programming	Gaddis: Chapter 10
February 18	Structured Data	Gaddis: Chapter 11
February 25	Searching (Exam February 28)	Gaddis: Chapter11
March 4	Sorting	Gaddis: Chapter11
March 18	Classes I	Gaddis: Chapter 13
March 25	Classes II	Gaddis: Chapter 14
April 1	Classes II	Gaddis: Chapter 14
April 8	Classes III	Gaddis: Chapter 15 & 16
April 15	Stacks/Queues & Exam 2 (April 18)	Gaddis: Chapter 18
April 22	Linked Lists	Gaddis: Chapter 17
April 29	Linked Lists & Recursion	Gaddis: Chapter 17 & 19
May 6	Recursion	Gaddis: Chapter 19
May 14, 1:45 – 4:15 PM	Final Exam	All

Lab Assignments: The following lab assignments are anticipated, changes may occur and the updated list of assignments and due dates is available on the class web site.

Date Due	Lab Subject
January 30	Lab 1: Email, UNIX overview
February 4	Lab 2: Arrays/Functions in C++
February 11	Lab 3: UNIX and Pointers
February 18	Lab 4: C-string and string class
February 25	Lab 5: Structs
March 4	Lab 6: Searching
March 18	Lab 7: Sorting
March 25	Lab 8: Classes I (Gaddis: Chapter 13)
April 1	Lab 9: Classes II (Gaddis: Chapter 14)
April 8	Lab 10: Classes III (Gaddis: Chapter 15)
April 15	Lab 11Classes IV (Gaddis: Chapter 16)
April 22	Lab 12: Array-Based Queue
April 29	Lab 13: Dynamic Queue
May 6	Lab 14: Recursion