

**Course:** COSC 1435.004  
**Class:** MW 2:00 – 3:15 PM, CI-138  
**Lab:** M 3:30 – 5:20 PM, CI-228  
**Semester:** Spring 2012  
**Office Telephone:** 361-825-3436  
**Web Page:** <http://sci.tamucc.edu/~lyoung1/>

**Instructor:** Larry Young  
**Office:** CI-339  
**Office Hours:** Mon. & Wed. 9:00 - 9:50,  
Wed. 11:00 – 12:00 and Thur. 11:00 - 2:00  
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## Introduction to Problem Solving with Computers I

### Course Description:

- Catalog: An introduction too many computer science topics including: algorithms, problem solving, operating system concepts, computer architecture, and programming languages.
- Detailed: A broad introduction to Computer Science. Many important concepts underlying computer science are covered. This includes the algorithmic foundations of computer science and the expression of algorithms as pseudocode. A number of algorithms are examined including sequential search, find greatest, selection sort, and binary search. The time efficiency of algorithms and Big-O classification are discussed. Computer hardware concepts are studied including binary numbers, Boolean logic, gates, and circuits such as compare for equality and addition circuits. The construction of a CPU from basic circuits is examined. Machine language, assembly language and the basic pseudocode/programming language control structures in assembly language are covered. The C++ programming language is an area of emphasis. Operating system concepts, high-level languages, programs written in high-level languages, parsing, networking, and social issues are looked at. The course includes a weekly 2 hour lab that provides experience with the concepts covered in the lectures.

**Texts:** *Computer Science, An Overview, 11th Edition*, J. Glenn Brookshear and *Starting Out With C++, 7<sup>th</sup> Edition*, Tony Gaddis (both required)

**Learning Objectives:** Upon successful completion of this course, the student will:

- Understand the algorithmic foundations of Computer Science and be able to express algorithms in pseudocode.
- Understand the design of basic searching and sorting algorithms (linear search, binary search, and selection sort).
- Understand the time and space efficiency of algorithms and big-O notation.
- Understand how binary numbers are represented, basic concepts of Boolean logic and logic gates, and understand the equality and addition circuits.
- Understand the von Neumann model of computer organization.
- Have a basic understanding of machine language and assembly language programming.
- Have a basic understanding of computer system software such as compilers, operating systems, and virtual machines.
- Design and develop basic computer programs using high level programming language (sequence, selection, and iteration structures).
- Be able to design and implement programs that use arrays and functions.

**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:** MATH 1314 or placement beyond MATH 1314

**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. 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.

**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**.

**Labs:** The labs for this class are designed to provide the student experience 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 and/Blackboard. 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 8, 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 Rule 13.02.99.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](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:** We will be using two textbooks this semester, *Computer Science, An Overview, 11th Edition*, by J. Glenn Brookshear and *Starting Out With C++ From Control Structures through Objects, Seventh Edition*, by Tony Gaddis. For the schedule that follows, I will use (B) to refer to *Computer Science, An Overview* and (G) to refer to *Starting Out With C++ From Control Structures through Objects*

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

Class Week	Subject	Reading Assignment
January 23	<i>Introduction; An Introduction to Computer Science (B)</i>	<i>Chapter 0 (B)</i>
January 28	<i>Data Storage (B)</i>	<i>Chapter 1 (B)</i>
February 4	<i>Algorithms (B)</i>	<i>Chapter 5 (B)</i>
February 11	<i>Introduction to C++ (G)</i>	<i>Chapter 2 (G)</i>
February 18	<i>Expressions and Interactivity (G)</i>	<i>Chapter 3 (G)</i>
February 25	<i>Making Decisions (G) &amp; Exam 1</i>	<i>Chapter 4 (G)</i>
March 4	<i>Making Decisions (G)</i>	<i>Chapter 4 (G)</i>
March 18	<i>Looping (G)</i>	<i>Chapter 5 (G)</i>
March 25	<i>Looping (G)</i>	<i>Chapter 5 (G)</i>
April 1	<i>Defining and Calling Functions (G)</i>	<i>Chapter 6 (G)</i>
April 8	<i>Defining and Calling Functions (G) &amp; Exam 2</i>	<i>Chapter 6 (G)</i>
April 15	<i>Arrays (G)</i>	<i>Chapter 7 (G)</i>
April 22	<i>Arrays (G)</i>	<i>Chapter 7 (G)</i>
April 29	<i>Data Manipulation (B)</i>	<i>Chapters 2 (B)</i>
May 6	<i>Programming Languages (B)</i>	<i>Chapter 6 (B)</i>
May 15, 1:45 - 4:15	<i>Final Exam</i>	<i>All above chapters</i>

**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	Email & Problem Solving
February 4	Chap 1 Problems (B)
February 11	Chap 5 Problems (B)
February 18	First C++ Program
February 25	Manipulating Numbers in C++
March 4	Making Decisions I
March 18	Making Decisions II
March 25	Looping I
April 1	Looping II
April 8	Representing Numbers
April 15	Functions I
April 22	Functions II
April 29	Functions and Arrays
May 6	Functions and Arrays
May 8	Bonus: Manipulating Numbers