

INTRODUCTION TO PROGRAM DESIGN AND CONCEPTS

Fall 2018 – CSCE-121-{521, 522, 523, 524}
Texas A&M University

Instructor:	Mr. Michael R. Nowak	Office :	HRBB-322B
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Phone :	(979) 320-9838		the website.

Meeting Times:

Lecture		
	TR 08:00-09:15	ZACH-350
Labs		
Section 521	TR 09:35-10:25	RDMC-111H
Section 522	TR 12:45-13:35	RDMC-111H
Section 523	TR 11:10-12:00	RDMC-111A
Section 524	TR 17:30-18:20	RDMC-111A

Important Dates:

Exam 1 Tue, 09 Oct 08:00-09:15
Exam 2 Tue, 08 Nov 08:00-09:15
Comprehensive final exam Mon, 10 Dec 13:00-15:00

Teaching Assistant(s): TBA

Peer Teachers: See engineering.tamu.edu/cse/academics/peer-teachers/current-peer-teachers or go to HRBB 129, Peer Teacher Central. In addition to the peer teacher(s) for your section, you may also consult other peer teachers if they are not busy.

Catalog Description: Computation to enhance problem solving abilities; computational thinking; understanding how people communicate with computers, how computing affects society; design and implementation of algorithms; data types, program control, iteration, functions, classes, and exceptions; understanding abstraction, modularity, code reuse, debugging, maintenance, and other aspects of software development; development and execution of programs.

Prerequisites: Prior programming experience (high school or college).

Required Textbooks:

- Vahid, F. & Lysecky, R. (2015). *Programming in C++* (Texas A&M University-College Station CSCE 121 Nowak Fall 2018 ed.). Zyante Inc.
 - This is an **online** textbook, accessible at zybooks.com. You are required to have access to your own copy linked to this class, so make sure that when you subscribe at learn.zybooks.com, you use the class code **TAMUCSCE121Fall2018**.

- Stroustrup, B. (2014). *Programming: principles and practice using C++* (2nd ed.). Addison-Wesley. ISBN 978-0321992789

Optional Textbooks:

- Lippman, S. B., Lajoie, J., and Moo, B. (2012). *C++ Primer* (5th ed.). Addison-Wesley. ISBN 978-0321714114
- Stroustrup, B. (2014). *The C++ Programming Language* (4th ed.). Addison-Wesley. ISBN 978-0-321-56384-2

Learning Objectives: At the end of the course, a successful student should be able to:

1. understand computer program structure, design and development;
2. use primitive data types and control structures in computer programs;
3. understand and apply vectors, strings, and structs;
4. declare and use functions in computer programs;
5. understand object-oriented programming concepts: objects, classes, inheritance, polymorphism, and encapsulation;
6. design and create simple graphic user interfaces;
7. understand and apply file I/O in computer programs;
8. understand and use basic algorithms for searching, sorting, lists, trees and maps;
9. write simple computer programs in a high-level programming language; and,
10. complete a team design project using knowledge and principles from the course

Learning objectives 1 through 10 will be assessed using homeworks, quizzes, and exams. Objective 11 will be assessed by evaluating student group programming assignments and their collective responses to posed questions.

Assignments & Grading:

Course grades will be assigned according to this scale:

% Total	>= 90.00	89.99 – 80.00	79.99 – 70.00	69.99 – 60.00	<= 59.99
Letter Grade:	A	B	C	D	F

* The fractional aspect of our final weighted average calculated for you for this course will be truncated.

Method of evaluation:

One-hour exams (2)(15% each)	30%
Comprehensive final exam	20%
Homework assignments	30%
Team labwork assignments	7%
Assigned zybook activities	7%
Attendance and class participation	6%

One-hour exams (2), comprehensive final exam

Two one-hour exams (each contributing 15% towards your overall grade) and a comprehensive final exam (comprising 20% of your overall grade) will be given this semester.

If your score on the comprehensive final exam is higher than your average for the one-hour exams grade category, your comprehensive final exam score will replace both one-hour exam scores during the calculation of your final course grade.

Homework assignments

Homework will be a combination of programming assignments and written-responses to posed questions.

These assignments are to be completed individually and will be accepted past the submission deadline at the expense of an applied late penalty at 5% off per date late.

The maximum number of days late that you can submit a homework is 7.

Team labwork assignments

Weekly labworks will be assigned for completion during the lab sessions. These assignments will be completed in teams; your grade for each labwork will be that received on the team submission multiplied by your attendance to the lab for the assignment date (i.e., 1 when present; otherwise 0).

Labworks will not be accepted past the submission deadline.

In order to receive full-credit for this section, 85% of the labworks must be completed; otherwise, the fraction of submissions to this extent will be allocated.

That is, your score will be $\min(1.0, [0.15 + \frac{\text{number of points you scored}}{\text{total number of points possible}}])$.

The maximum score you can receive for this category will thus be 85% the sum of the base grades.

If you have excused absences that have prompted you to miss more than 15% of the lab assignments, we will address what to do at that point; though you will be required to produce all documentation for all excused absences at that time.

Assigned zybook activities

Participation and challenge activities are the two kinds of graded interaction that you will encounter throughout the Zybook material. The former will account for 4% of your overall course grade, while the latter 3%.

Participation activities for each chapter are due 08:00 on the day that the chapter is listed on the schedule.

Challenge activities for each chapter are due 48-hours after 08:00 of the day that the chapter is listed on the schedule.

We will not assign credit for an activity that is completed past that date.

In order to receive full-credit for this section, 85% of the assigned participation activities and 85% of the assigned challenge activities must be completed; the maximum score you can receive for this category will thus be 85% the sum of the base grades.

Attendance and class participation

Each attendance/participation item (pop quizzes, lab quizzes, etc.) will be given a best value, essentially the “weight” of that assignment. Your overall grade for attendance/participation will be the sum of the individual grades over 85% the sum of the base grades; the maximum score you can receive for this category will thus be 85% the sum of the base grades.

There will be no make ups for these items, and a zero will be recorded for all that are missing. In order to accommodate illness and other potential excused absences, we will calculate your score out of 85% the sum of the base grade.

If you have excused absences that have prompted you to miss more than 15% of the total sum of the base grades, we will address what to do at that point; though you will be required to produce all documentation for all excused absences at that time.

Extra credit:

You will have the opportunity to earn up to 1.5 percentage points added on to your final grade through extra credit offerings; details will be announced on the course website.

Note: borderline grades will not be boosted if extra credit is not submitted.

Teams: Teams will be established during the second week of lab. You will be responsible for forming a team comprised of 2-3 individuals (including yourself) from your lab section, and will work with this group throughout the semester on the labworks. If issues arise within your group, please contact the instructor or the teaching assistant assigned to your lab section at their onset; this will allow us to resolve the issues promptly through appropriate intervention.

Course Resources:*Course website*

michaelnnowak.com/teach/f18.csce121

The course website will be the go-to resource for all course material, including: lecture slides, homeworks, labworks, etc.

E-campus

e-campus.tamu.edu

We will be using this environment primarily for grade dissemination; some assignments may also be submitted here.

Piazza

piazza.com/class/jjmtyvew4hhqc

All questions will be fielded through Piazza. The primary benefit of using Piazza is that, for many questions, everyone can see the answer and other students can answer as well. We will endorse good student responses. You will need to register (through the link above) using your tamu email.

Mimir

class.mimir.io

You will submit most of your programming assignments to Mimir for auto-grading and plagiarism detection; we will create accounts for you, and you will receive email instructions on connecting.

Gradescope

gradescope.com

You will submit some of the course assignments to Gradescope; we will create accounts for you, and you will receive email instructions from on connecting.

Course Policy:

- All assignments will be posted on the course website; it is your responsibility to ensure that you complete these assignments on time.
- Students are responsible for all missed work, regardless of the reason for absence.
- Regular attendance in both the lecture and lab sections is essential and expected (ref: student-rules.tamu.edu/rule07).
- Missed exams will be rescheduled without penalty for an excused absence, or with a 40% penalty if the absence is not excused. In cases where the advance notification of absence is not feasible (e.g., accident, emergency, etc.) the student must provide information by the end of the second working day after the absence.
 - In accordance with Student Rule 7, Attendance, specifically section 7.1.6-Illness or Injury that is too severe or contagious for the student to attend class, I require documentation in the form of a medical confirmation note from the *medical doctor (M.D. or D.O.)* overseeing your care.
 - Kindly note that section 7.1.6.2 specifies that it is within the purview of, and at the sole discretion of, the instructor whether an absence is excused for short-term illness or injury.
- Regrade requests and/or challenges must be submitted within one week from the date that the respective student work is handed back; for all works submitted to Mimir, this is one-week from the assignment due date.
- We will have weekly homework, labworks, and zybook activities. You will also be given weekly attendance/participation item(s) (pop quizzes, lab quizzes, etc. based on assigned readings and/or previous lecture content).
- Late labworks and zybook activities will never be accepted; there will be no make-ups for missed attendance/participation items.
- Homework not submitted on-line before the deadline will be considered late.
- Nearly perfect solutions may be considered as an official solution of that homework and will be uploaded to the course website, and the student gets a bonus mark.
- All homework solution programming codes must be submitted electronically (through Mimir).
- You may discuss homework problems with other students, but you must write up your homework independently. You are not allowed to search the Internet for solutions; we will use a software plagiarism detector to ensure academic integrity.
- If solutions have been discussed or handed out for a respective assignment, submission of that assignments will not be accepted for grading.
- All exams (one-hour exams and the comprehensive final) are closed book, and you are not allowed to use any electronic devices such as calculators, mobiles, tablets, etc.
- In class/lab, be courteous when using mobile devices. Make sure your cell phone is turned fully off, or completely silent.
- If you must use a laptop in class/lab, then turn off the sound and do type quietly on your laptop keyboards.
- The policy outlined in the ‘Assignments & Grading’, ‘Copyright statement’, and ‘Recording statement’ sections of this document are acknowledged and affirmed as course policy by this statement.

Copyright statement: The course materials used in this course are copyrighted. All material prepared for this class is copyrighted; this includes the syllabus, lecture slides and notes, exams, labworks, homeworks, etc. Given that all course material is a copyrighted work, you do not have the rights to copy or distribute the course material, unless the author expressly grants such permission.

Recording statement: Students may not record audio or video of any course activity unless the student has an approved accommodation from Disability Services permitting the recording of lectures and/or laboratory sessions. This accommodation letter must be presented to the instructor in advance of any recording being done. Students who are allowed to record classes are not permitted to redistribute audio or video recordings of statements or comments from the course to other individuals without the express permission of the faculty member and of any students who are recorded.

Academic Integrity:

Scholastic Dishonesty

Scholastic dishonesty will not be tolerated. While working together on homeworks and labworks is encouraged, the final product submitted for a grade must be the individual work of the person turning it in. In other words, it is all right to discuss and to assist each other concerning programming strategy or technique or for one student to help another debug code which will not work; but each student is expected to write his or her own programs from beginning to end. If it is determined to the satisfaction of the instructor that a student's submission is not the product of the individual, all students involved are subject to the Texas A&M University Honor System Rules, including a course grade of F* (with the '*' denoting academic dishonesty). Additional penalties as determined by the Aggie Honor System Office may be applied if this is not the first offense.

It is imperative that each student clearly understand those rules and the severe consequences that can result from the adjudication of an Honor Code Violation. In particular, every student should understand that complicity – helping or attempting to help another student commit an act of academic dishonesty also constitutes academic dishonesty and carries the same punishment as cheating. In other words, if you provide your solution to another student, who turns it in for credit, you are both subject to the same consequences.

Plagiarism

Plagiarism is the presentation of the work of someone else without giving him or her due credit. You can copy the words of others as long as you identify them as such. In fact, documented use of program libraries is encouraged. Submitted work will be examined for plagiarism using computer software designed for that purpose. Examinations are meant to measure the knowledge or skill of each individual, so giving or receiving unauthorized assistance during tests and quizzes is cheating. It is assumed that college students know what is honest and what is not.

Aggie Honor Code

Upon accepting admission to Texas A&M University, a student immediately assumes a commitment to uphold the Honor Code – “An Aggie does not lie, cheat, or steal or tolerate those who do.”) – to accept responsibility for learning, and to follow the philosophy and rules of the Honor System. Students will be required to state their commitment on examinations, research papers, and other academic work. Ignorance of the rules does not exclude any member of the TAMU community from the requirements or the processes of the Honor System.

Students are to affirm their compliance to the Aggie Honor Code by including the following statement (typed or hand-written) on any work submitted for a grade in this course: “*On my honor, as an Aggie, I have neither given nor received any*

unauthorized aid on any portion of the academic work included in this assignment.”

This statement is to be followed by the student’s name and signature.

Any submissions failing to confirm the student’s compliance with the Aggie Honor Code through the inclusion of this statement will not be graded; in such cases, a zero-value score will be allocated for that assignment. For additional information, please visit aggiehonor.tamu.edu.

Americans with Disabilities Act Statement: 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 contact the Disability Services building at the Student Services at White Creek complex on west campus or call 979-845-1637. For additional information, visit disability.tamu.edu.

Tentative Schedule:

Week no.	Topic
1	Computer architecture and compilation process; software development process
2	Data representation; objects, types, and values
3	Expressions and statements; compound types, compound data
4	Type conversions; type safety; errors; i/o streams
5	Functions; function argument passing; ad-hoc polymorphism
6	Recursive functions; exceptions
7	Dynamic memory
8	User-defined types: classes and structs; operator overloading
9	User-defined types with dynamic objects
10	Dynamic structures
11	Linked lists, trees, and maps
12	Inheritance; inclusion polymorphism
13	Generic-programming; parametric polymorphism
14	Standard template library; function objects
15	Searching and sorting

** Tentative implies that this may indeed change...*