

INTRODUCTION TO PROGRAM DESIGN AND CONCEPTS

Spring 2019 – CSCE-121- $\{521, 522, 523, 524\}$
Texas A&M University

Instructor: Mr. Michael R. Nowak	Office: HRBB-322B
Email : m.n@tamu.edu	Office Hours: Please see the website.

Meeting Times:

Lecture		
	MWF 08:00-08:50	ZACH-310
Labs		
Section 521	MW 11:30-12:20	ZACH-590
Section 522	MW 12:40-13:30	ZACH-582
Section 523	TR 14:20-15:10	ZACH-596
Section 524	TR 15:55-16:45	ZACH-596

Important Dates:

Exam 1: Fri, 01 Mar 08:00-08:50
Exam 2: Fri, 05 Apr 08:00-08:50
Comprehensive final exam: Thur, 02 May 10:00-12:00

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 Spring 2019 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 **TAMUCSCE121NowakSpring2019**.

Optional Textbooks:

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

Lab Requirements:

- Students are expected to bring their own computational devices to the lab period.

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%
Individual homework assignments	30%
Group homework assignments	12%
Attendance and class participation	8%

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 a one-hour exam, your comprehensive final exam score will replace the lower one-hour exam score in the calculation of your final course grade.

Individual homework assignments

Individual 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 10% off per date late.

The maximum number of days late that you can submit an individual homework is 3.

No collaboration is allowed on the individual homework assignments; if you need help, you can talk to the instructor, TA, or one of the peer teachers in peer teacher central.

Group homework assignments

Weekly group homework will be assigned during the lab sessions; these assignments will take longer than the lab period, so expect to work on them outside of lab.

These assignments must be completed in teams (i.e., groups); you will not receive credit on a group homework assignment if you work alone.

Group homeworks will not be accepted past the submission deadline.

Your grade for each group homework will be that received on the team submission multiplied by your attendance to the lab on the assignment distribution date (i.e., 1 when present; otherwise 0).

In order to receive full-credit for this section, 90% of the group homework assignments must be completed; otherwise, the fraction of submissions to this extent will be allocated.

That is, your score will be $\min(1.0, [0.10 + \frac{\text{number of points you scored}}{\text{total number of points possible}}])$.

The maximum score you can receive for this category will thus be 90% the sum of the base grades.

If you have excused absences that have prompted you to miss more than 10% of the lab meeting times, 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.

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 90% the sum of the base grades; the maximum score you can receive for this category will thus be 90% 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 90% the sum of the base grade.

If you have excused absences that have prompted you to miss more than 10% 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: Zybook Activities

Must be completed 24-hours prior to the final exam.

Participation and challenge activities are the two kinds of graded interaction that you will encounter throughout the Zybook material.

Participation activities will account for 0.5% percentage points added on to your final grade; challenge activities will amount to 1.5% points.

In order to receive the full extra credit percentage added to your final grade, 100% of the participation activities and 100% of the challenge activities; otherwise, the fraction of submissions to this extent will be allocated.

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 group homeworks. 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/sp19.csce121

The course website will be the go-to resource for all course material, including: lecture slides, individual homeworks, group homeworks, 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/jpvj381lbqh4lt

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 from us 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 us 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 reserve the right to audit the grades for any assignments submitted to this course; during the audit process, we can decrease or increase your score. Examples when this might occur include (but are not limited to): (1) a mistake made by the auto-grader; (2) student circumvention of a test case by some means; (3) student failing to follow an assignment requirement.
- We will have weekly individual homeworks and group homeworks. 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 group homeworks will never be accepted; there will be no make-ups for missed attendance/participation items.
- Individual 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 must write up your individual homework independently. You are not allowed to search the Internet for solutions; we will use a software plagiarism detector to ensure academic integrity.

In the past, I've had problems with students using code from Chegg; using such an outside resource is not allowed.

If you submit code based on a solution or on starting code from such a resource, I will refer you to the honor council and I will recommend that you receive an F* as the consequence, even if it is your first offense.

- If solutions have been discussed or handed out for a respective assignment, submission of that assignment 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, individual homeworks, group 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:

Academic Dishonesty

Academic dishonesty will not be tolerated. For individual homework assignments, 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 any student’s submission (unless it is a group/team submission for a group/team activity) 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, even if that student does not turn it in for credit, you have committed an act of academic dishonesty and will both be subject to the same consequences, such as a course grade of F*.**

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.

By submitting anything to this course, electronically or otherwise, you are asserting the following: “On my honor, as an Aggie, I have neither given nor received unauthorized aid on this academic work. In particular, I certify that I have listed above all the sources that I consulted regarding this assignment, and that I have not received or given any assistance that is contrary to the letter or the spirit of the collaboration guidelines for this assignment.”

For additional information about the Honor Code, 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...*