

Spring 2019

Syllabus: Introduction to Program Design & Concepts



Course Description

This class is all about getting you ready to handle the basics of writing code to solve the interesting problems in computer science. While getting a program to work can be a challenge at first, as you gain experience you'll start knocking out code sooner than you would think.

We'll focus a lot on design and programming principles. We'll use C++ to implement those principles. Of course we'll also learn a lot about C++ in the process.

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.

Americans with Disabilities Act (ADA) Policy 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 Disability Services, currently located in the Disability Services building at the Student Services at White Creek complex on west campus or call 979-845-1637. For additional information, visit http://disability.tamu.edu.

This course uses Blackboard Learn (i.e. eCampus). To know more about its accessibility standards please to their website.

http://www.blackboard.com/Platform s/Learn/Resources/Accessibility.aspx.

If you find that course content or software are not accessible, please contact your course instructor or disability services so that appropriate

CSCE 121 Sections 505 - 508 509 - 512

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accommodations to the learning environment can be made.

Prerequisites

A programming course in high school or college.



Important Dates (tentative)

- Syllabus Quiz: Wednesday, 23 January 2019
- Exam 1: Wednesday 6 March 2019
- Exam 2: Wednesday 24 April 2019
- Final Exam
 - o 505-508: 3:30 5:30 PM Monday 6 May 2018 o 509-512: 10:30 - 12:30 PM Monday 6 May 2018
- Extra Credit
 - Sunday 3 March 2019
 - Sunday, 28 April 2019

Meeting Times

- Lecture (ZACH 310):
 - 505 508: MWF 1:50 2:40 PM
 - 509 512: MWF 3:00 3:50 PM

• Lab:

zyBooks

- 505: MW 8:00 8:50 AM (ZACH 598)
- 506: MW 9:10 10:00 AM (ZACH 592)
- 507: MW 10:20 11:10 AM (ZACH 592)
- 508: MW 11:30 AM 12:20 PM (ZACH 592)
- 509: MW 1:50 2:40 PM (ZACH 598)
- 510: MW 4:10 5:00 PM (ZACH 598)
- 511: TR 11:10 AM 12:00 PM (ZACH 598)

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Program Design and

J. Michael Moore

FALL 2018

o 512: TR 12:45 - 1:35 PM (ZACH 598)

Resources

REQUIRED TEXTBOOK (ONLINE)

CSCE 121: Introduction to Program Design & Concepts C++

zyBooks Link: http://learn.zybooks.com

Class zyBooks Code: TAMUCSCE121RitcheySpring2019

This is an **online** textbook. You will required to have access to your own copy linked to this class with the code above. Otherwise you will not receive credit for completion of activities that count toward your grade.

zBooks will give you a refund if you drop the class within a week after Q-drops. So purchase ASAP. Even if you want to wait to purchase until after add/drop, you can sign up and get access to first chapter for free!

Note: When a section is **optional** in the first four chapters the content is not optional. See "Getting Started" on eCampus for more information.

RECOMMENDED ADDITIONAL TEXTS

Any of the following would be an excellent resource to supplement the zyBook since it sometimes lacks in depth of explanation.

- Programming Principles and Practice Using C++, Second Edition, Bjarne Stroustrup, Pearson, 2014.
- A Computer Science Tapestry, Second Edition, Owen L. Astrachan, McGraw-Hill, 2000. (Free PDF)

COMPUTER

You must have a computing device that you have permission to install software. It must also be capable of running a Virtual Machine.

Bring Your Own Device (BYOD) is an initiative in the college of engineering where students are required bring their own computing device to class. The following link explains the program and provides information about approved devices.

https://engineering.tamu.edu/easa/areas/academics/byod

Approved BYOD devices fulfill the requirements for this class, although many other devices are sufficient (i.e. you probably don't have to buy a new computer for this class.)

REQUIRED DIGITAL RESOURCES

ECAMPUS: https://ecampus.tamu.edu/

Provides links to materials, assignments, and resources, and collects some student submissions.

PIAZZA: https://piazza.com/tamu/spring2019/csce121ritchey/home

All questions will be fielded through Piazza. Email should only be used in rare instances.

The primary benefit is that for many questions everyone can see the answer and other students can answer as well. We will endorse good student responses.

You can also post private messages that can only be seen by instructors or an individual instructor. This allows any instructor or TA to answer which generally leads to quicker response times.

Sign Up: https://piazza.com/tamu/spring2019/csce121ritchey

MIMIR:

Online code submission system. Mimir supports autograding.

TAMU Login: https://class.mimir.io/cas_login/5315eobf-a5bc-4521-baec-923474543dd5

Class Access Code: 3167251438

GRADESCOPE: http://gradescope.com/

Used to grade exams and return midterm exam to you. This system provides a better grading system for instructors and TAs. We will create accounts for you before you need to access it. You will receive email instructions from Gradescope on connecting.

GOOGLE DRIVE: http://google.tamu.edu

Used to share some course materials. You must be logged into your TAMU Google account to access these materials.

Course Copyright

The materials used within this course are copyrighted. These materials include, but are not limited to, the syllabi, quizzes, exams, lab problems, online handouts, course videos, etc. Because these materials are copyrighted, you do not have the right to copy or distribute these materials, unless permission is expressly granted.

Course Plagiarism

All materials generated by the instructor for this class (which may include but are not limited to syllabi and in-class materials) are copyrighted. You do not have the right to copy such materials unless the instructor expressly grants permission. As commonly defined, plagiarism consists of passing off as one's own the ideas, words, writing, etc. which belong to another. Plagiarism is one of the worst academic violations, for the plagiarist destroys trust among others. If you have any questions regarding plagiarism, please consult the latest issue of the Texas A&M University Student Rules, under the section "Scholastic Dishonesty."













Getting Help & Contact Information

This course has a plethora of resources for assistance. You should find the resources that meet your needs. For example, if you are having trouble accessing your CSE resources, it will be faster if you directly contact the CSE helpdesk rather than posting on Piazza only to have us tell you to contact the CSE helpdesk.

AGGI

Instructor

Dr. Philip Ritchey, PhD

Instructional Assistant Professor

- Email: pcr@tamu.edu
- Office: <u>EABB</u> 102
- Phone: Unlisted
- Web: http://faculty.cse.tamu.edu/ritchey
- Appointments:
 - Walk in:
 - Check online Calendar (academic): http://faculty.cs.tamu.edu/ritchey/calendar.html
 - I have a "semi-open door" policy. I am frequently in my office, and you can get some help if the door is open. However, sometimes things come up that prevent me from seeing you immediately. I'll try to set up a time that we can meet if that happens.
 - Make an appointment:
 - https://calendly.com/pcr

Teaching Assistants

Teaching assistants are graduate students that run the lab sections of the class. You can find TA contact information and office hours on eCampus. If TA office hours do not work for you please feel free to make an appointment.

Peer Teachers

Peer teachers are undergraduate computer science and engineering students who have done well in their CSCE coursework. Peer teachers attend labs, hold office hours and can assist with programming, etc. Office hours are posted on the Peer Teachers website.

- Location: Peer Teacher Central (<u>HRBB</u> 129)
- Web: <u>http://engineering.tamu.edu/cse/academics/peer-teachers/</u>



Student Organizations

Computer Science:

evention

https://engineering.tamu.edu/cse/academics/student-orgs

LIVE

Mentors TEXAS A&M UNIVE

College of Engineering:

https://engineering.tamu.edu/student-life/studentorgs.html

Technology Support:

For technological issues related to eCampus, software, and computing resources contact the TAMU Help Desk:

- Student eCampus Help Website, <u>http://ecampus.tamu.edu/student-help.php</u>
- TAMU IT Help Desk:
 - The TAMU Help Desk is open 24/7.
 - Website: <u>http://hdc.tamu.edu/index.php</u> (Online Chat is available)
 - Phone: (979) 845-8300
 - Email: <u>helpdesk@tamu.edu</u>
- CSE Help Desk
 - o Website:
 - https://wiki.cse.tamu.edu/index.php/Main_Page
 - o Phone: (979) 845-5550
 - Email: <u>helpdesk@cse.tamu.edu</u>
- Don't forget that you might need to contact help for the zyBook or Mimir directly as well.



Learning Outcomes

At the end of the course, under ABET outcomes (a), (e), and (k), students should be able to:

- 1. Understand computer program structure, design and development.
- 2. Use primitive data types and control structures in computer programs.
- 3. Declare and use functions in computer programs.
- 4. Understand object-oriented programming concepts: objects, classes, inheritance, polymorphism, and encapsulation.
- 5. Understand and apply file I/O in computer programs.
- 6. Understand and apply aggregate datatypes.
- 7. Navigate and make use of class libraries.
- 8. Write simple computer programs in a high-level programming language, C++.





Tentative* Schedule

WEEK	TOPIC(S)
1	New forms of what you already know: Assignment & Variables, Control Structures (Sequence, Selection, Iteration), Functions
2	Design (Flowcharts & Pseudocode), Data Representation
3	Aggregate Datatypes I (CStrings and Arrays), Datatype Limitations
4	Function organization, Debugging, Unit Testing
5	Function complexities, Recursion
6	Pointers, Arrays, and Command Line Arguments
7	IO streams (incl. File IO), Aggregate Datatypes II (2d Arrays and struct)
8	Designing Objects, Exam 1
9	Spring Break – Be Safe, Have Fun
10	Constructing classes
11	Operator Overloading, Dynamic Memory
12	Linked List, Destructor
13	Shallow and Deep Copy, Rule of Three
14	Inheritance, Polymorphism
15	Templates & Exam 2

* Tentative means it can change...

Gradina*		% total	>=90	80-89	70-79	60-69	<60				
erdang		Letter Grade	Α	В	С	D	F				
Exams 50%	If you take the optional final exam, your course exam average will be the higher of the final exam average OR the average of exam 1, exam 2, and the final exam. Otherwise, your course exam average is the weighted average of exam 1 (40%) and exam 2 (60%). Your course exam average must be 60% or higher to get a C or higher in the course . If you have less than a 60% course exam average and a passing overall calculated score, the maximum grade you can receive is a D.										
zyBook Activities	Participation Activities (For full credit, you must These are hard due date for full credit allows omis	Participation Activities (4%) + Challenge Activities (3%) For full credit, you must successfully complete 85% by the due date. These are hard due dates and you cannot receive credit for late completion. Requiring 85% for full credit allows omissions for extenuating circumstances including excused absences.									
Class Participation 3%	Various ways will be used attendance and quizzes. For full credit, you must	d to assess your have 85% credit	engagem 	ent in the o	course. The	ese can inclu	ide				
Homework 35%	 Homework is a combination of preparation for and coding of programming assignments. These are due approximately once a week. Must be done on your own. Failing to submit code for more than two homework assignments will result in a failing course grade. Can with late day pool, but not after any solutions have been published. If you feel there are extenuating circumstances, do not wait to submit until after you have consulted an instructor. We can go back and update late penalties, but only if we know when you actually finished the assignment. If you want to challenge any grading, you must do so within one week of when the grade is published. 										
Team Labwork	 Team labwork are activities to help you get a better understanding of concepts that students traditionally struggle with or that are integral to know prior to doing homework programming assignments. For full credit, you must complete 85% by the due dates. You must work collaboratively with other students in the class. You must submit as a team with at least one and no more than two other collaborators. You must be present in lab to get credit. These are hard due dates and you cannot receive credit for late completion. Requiring 85% for extenuating circumstances such as excused absences. 										
Syllabus Quiz	You must get a 100% on grade in the class . You r	the syllabus qu may retake the o	iz by Wed quiz as ne	nesday 23 . eded prior t	January 20 to the due (19 to get a date.	bassing				
Extra Credit	You can get up to one point added to your final grade through culture reports that broaden your exposure to computer science. You can submit up to two reports, and each is worth one-half point. Details for selecting material, writing, and submitting is on eCampus.										

*At the end of the semester, we will use data from your video watching activity, piazza activity, completion of extra credit, and completeness of graded work to potentially boost borderline grades to the next level. It is unlikely that you will be considered if you are at the borderline and you did not submit extra credit and have excessive missing submissions.

Make Up & Late Work

Please review Texas A&M student rule 7: http://student-rules.tamu.edu/ruleo7

Participation is Expected.

It is *your* responsibility to keep up with the class, even when unexpected events interfere.

Exam Make Up

Missed exams will only be rescheduled for university excused absences. Note that if advanced notice is not feasible, you have 2 business days to provide notification. See <u>student rules</u>. A zero will be assigned for exams due to an unexcused absence. Documentation must be submitted prior to making up a missed exam. Job interviews do not constitute an excused absence unless explicitly approved by the instructor.

zyBook & Labwork

These cannot be submitted late for credit. However, you should make sure you understand them all. Only requiring a percentage be completed allows for omitting some when extenuating circumstances arise such as excused absences.

If excused absences compose more than the allotted percentage, then gather documentation for all excused absences and present to the instructor at the end of the semester. Adjustments will be made accordingly.

Student Behavior & Academic Integrity

"An Aggie does not lie, cheat or steal, or tolerate those who do."

Late Homework

Timely completion of homework is important. Homeworks build on each other and are due every week except exam weeks.

You have a pool of 22 late days. These are designed to handle excused absences, but you may use them for any reason. Submission time is the timestamp recorded for your submission on the online system. One day is a 24 hour period. You cannot use a fraction of a day from your pool. You use either a full day or no day. We will give you instructions on requesting late days from your pool. Otherwise, a 50% late penalty per day is applied.

Note: there are frequently technical glitches when submitting things close to the due date. So waiting to submit until the last minute can easily lead it to becoming a late submission. I suggest finishing an assignment at least 12 hours before it is due to ensure it is on time. You should also submit periodically as you develop to get feedback from the autograding system.

If you encounter problems with a submission, do not wait until after talking to an instructor to submit. Submit as soon as you are able. Then contact the instructor to discuss whether an alternative late penalty is appropriate.



Upon accepting admission to Texas A&M University, a student immediately assumes a commitment to uphold the Honor Code, 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.

Aggie Honor System Office

You should be familiar with the Aggie Honor System Office. Their website provides more information on academic integrity, plagiarism, etc.

http://aggiehonor.tamu.edu/

- Definitions of academic misconduct, including plagiarism <u>http://aggiehonor.tamu.edu/RulesAndProcedures/HonorSystemRules.aspx#definitions</u>
 Potential sanctions
- Potential sanctions <u>http://aggiehonor.tamu.edu/RulesAndProcedures/Sanctions.aspx</u>

Acknowledgement

Note that most assignments will include reminders of the academic dishonesty policy. By submitting anything for grading, you are essentially saying "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."

Student Rules

Each student has the responsibility to be fully acquainted with and to comply with the Texas A&M University Student Rules. More specific rules, information and procedures may be found in various publications pertaining to each particular service or department. For more information, please visit <u>http://student-rules.tamu.edu/</u>

Plagiarism

Individual programming MUST be done on your own. You must write assignments in your own words. Plagiarism will not be tolerated.

To help identify possible instances of plagiarism, we may use systems for plagiarism detection. Students found to have engaged in plagiarism will be punished. A typical outcome is submission of the incident to the Aggie Honor System resulting in an F* in the course.

Collaboration

Collaboration is important for facilitating learning, and your peers can be a great resource. So you are encouraged to discuss problems and general approaches with each other (but not actual solutions). Regardless, unless stated otherwise, all assignments must be done **on your own**. The basic rule is that no student should explicitly share a solution with another student (and thereby circumvent the basic learning process), but it is okay to share general approaches, directions, and so on. If you have an issue that needs clarification, contact an instructor or TA.

Netiquette

Netiquette is network etiquette. Netiquette covers both common courtesy online and the informal when communication occurs online. TAMU Instructional Technology Services provides some general netiquette rules that students and faculty are expected to follow. For more information on netiquette, please visit <u>https://distance.tamu.edu/Student-Rules-and-</u>

> Policies/Aggie-Honor-Code-and-Nettiquette



