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 principles and use C++ to implement those principles. Of course we’ll learn a lot about C++ in the process as well.

Catalog Description
Computer programming syntax for primitive types, control structures, vectors, strings, structs, classes, functions, file I/O, exceptions and other programming constructs, plus the use of class libraries; practice in solving problems with computers; includes the execution of student written programs in C++.

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.

Prerequisites
A programming course in high school or college.
Meeting Times & Important Dates


<table>
<thead>
<tr>
<th></th>
<th>509</th>
<th>513</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lecture/Lab</td>
<td>MW 8:00 AM – 10:00 AM</td>
<td>MW 10:20 AM – 12:20 PM</td>
</tr>
<tr>
<td>Exam 1</td>
<td>February 19, 2016, 9:10 AM – 10:00 AM</td>
<td>February 19, 2016, 10:20 AM – 11:10 AM</td>
</tr>
<tr>
<td>Exam 2</td>
<td>April 8, 2016, 9:10 AM – 10:00 AM</td>
<td>April 8, 2016, 10:20 AM – 11:10 AM</td>
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<tr>
<td>Final Exam</td>
<td>May 6, 2016, 8:00 AM – 10:00 AM</td>
<td>May 9, 2016, 8:00 AM – 10:00 AM</td>
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<tr>
<td>Team Project: Code</td>
<td></td>
<td>May 1, 2016 before midnight</td>
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<tr>
<td>Team Project: Demo</td>
<td></td>
<td>May 2, 2016 during class</td>
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<tr>
<td>Extra Credit</td>
<td></td>
<td>April 29, 2016 or within 3 days of seminar whichever is earlier</td>
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</tbody>
</table>

Required Resources

**ONLINE TEXTBOOK**

*Programming in C++*

_CTexas A&M University CSCE 121 Fall 2016: Programming in C++_

Publisher: Zyante Inc.

zyBooks Link: [http://zybooks.com](http://zybooks.com)

ISBN: 9780989590204

Class zyBooks Code: TAMUCSCE121Spring2016

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 exercises that count toward your grade.

**PRINTED TEXTBOOK**


There are significant changes from the first edition, so the current edition is recommended.
WEB

Course Website: http://courses.cse.tamu.edu/jmichael/sp16/121

Piazza:

All questions will be fielded through Piazza. Email should only be used in rare instances.
Class Link: http://piazza.com/tamu/spring2016/csce121moore/home
Signup Link: http://piazza.com/tamu/spring2016/csce121moore

eCampus: https://ecampus.tamu.edu/

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

Vocareum:

Online code submission system with autograding.

Gradescope:

Used to return exams.

BYOD

Bring Your Own Device is an initiative in the college of engineering where students bring their own computing device to class. You are expected to have an appropriate computing device for active participation in class. This allows you to practice what you use while the information is still fresh. (https://engineering.tamu.edu/easa/areas/academics/byod)

We will help you install any software you need.

Your device must be fully charged at the beginning of class. If it is not charged you will not be able to fully participate.

I>CLICKER 2

ISBN 9781429280471 OR 9781498601634

You will be using an i>clicker 2 daily in class. You cannot use iclickergo.

If you forget your i>clicker2 or if your batteries are dead, we will not collect hard copy information to replace i>clicker2 data.

Register your i>clicker2 to get credit for work. https://www1.iclicker.com/register-clicker/

If you have lost or broken your i>clicker 2 remote, you will have to replace it. Contact an instructor if this happens.
People

Instructors

Dr. J. Michael Moore, PhD
Instructional Assistant Professor
- Email: jmichael@cse.tamu.edu
- Office: HRBB 325
- Phone: 979-845-5475
- Office Hours: Posted on course website and by appointment
- Web: http://faculty.cse.tamu.edu/jmichael/

Mr. Jesus Suarez
Teaching Fellow
- Email: jesussuarez@tamu.edu
- Office: HRBB 516 (only during posted office hours)
- Office Hours: Posted on course website and by appointment

Teaching Assistants
You will have two teaching assistants. They will attend class and assist with activities. They will also hold office hours. TA information is posted on the course website.

Peer Teachers
Peer teachers will attend class and assist with activities. You can find our Peer Teachers and other Peer Teachers at Peer Teacher Central.
- Location: Peer Teacher Central (HRBB 129)
- Web: http://engineering.tamu.edu/cse/academics/peer-teachers/
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. 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. Navigate and make use of class libraries.
10. Write simple computer programs in a high-level programming language, C++.
11. Complete a team design project using knowledge and principles from the course.

Tentative* Schedule

<table>
<thead>
<tr>
<th>WEEK</th>
<th>TOPIC(S)</th>
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<tbody>
<tr>
<td>1/18</td>
<td>Introduction; Design</td>
</tr>
<tr>
<td>1/25</td>
<td>Computer Organization; Assignment; Datatypes</td>
</tr>
<tr>
<td>2/1</td>
<td>Selection; Iteration</td>
</tr>
<tr>
<td>2/8</td>
<td>Compound Data (Vectors / Arrays)</td>
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<tr>
<td>2/15</td>
<td>Streams; File I/O</td>
</tr>
<tr>
<td>2/22</td>
<td>User-Defined Functions</td>
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<tr>
<td>2/29</td>
<td>Functions; Recursion</td>
</tr>
<tr>
<td>3/7</td>
<td>Objects &amp; Classes</td>
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<tr>
<td>3/14</td>
<td>SPRING BREAK</td>
</tr>
<tr>
<td>3/21</td>
<td>Inheritance</td>
</tr>
<tr>
<td>3/28</td>
<td>Graphics Class Design (FLTK)</td>
</tr>
<tr>
<td>4/4</td>
<td>Graphical User Interfaces (GUI); Event Driven Programming</td>
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<tr>
<td>4/11</td>
<td>Pointers / Dynamic Memory</td>
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<tr>
<td>4/18</td>
<td>Rule of Three; Rule of Five; Templates</td>
</tr>
<tr>
<td>4/25</td>
<td>STL: Containers, Iterators, &amp; Algorithms</td>
</tr>
<tr>
<td>5/2</td>
<td>Project Demos; Catch up</td>
</tr>
</tbody>
</table>

* tentative means it can change...

Teams

Teams will be assigned near the beginning of the semester. You will be on the same team for Team Lab Work and the Team Project. You team will span the entire semester. If you have issues with your initial assignment, you should let an instructor know ASAP so we can make adjustments. You will create names for your teams, and leading teams will be listed on the course website. To distinguish teams for Team Lab Work, we will use metrics beyond correctness of code.
Grading*

<table>
<thead>
<tr>
<th>% total</th>
<th>&gt;= 90</th>
<th>80-89</th>
<th>70-79</th>
<th>60-69</th>
<th>&lt;60</th>
</tr>
</thead>
<tbody>
<tr>
<td>Letter Grade</td>
<td>A</td>
<td>B</td>
<td>C</td>
<td>D</td>
<td>F</td>
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</tbody>
</table>

**EXAMS**
- Exam 1 (13%)
- Exam 2 (17%)
- Final Exam (20%)

**50%**

**QUIZZES**
Quizzes will be done with i>clicker2 at the beginning of every class. Sometimes additional quiz questions will be added at the end of class. Quizzes will cover material from assigned readings and information covered during class. Quizzes are closed book and closed notes. There will be no make-up quizzes.

**5%**

**ZYBOOK**
- Participation Activities (3%): For full credit, you must successfully complete 85% prior to midnight the night before the reading due date for the assigned sections.
- Challenge Activities (2%): For full credit, you must successfully complete 85% within one week of the reading due date for the assigned sections for full credit.

These are hard due dates and cannot be checked after the required time.

**30%**

**HOMEWORK**
Homework will be a combination of programming assignments, reports, drills, and questions. Grades for programming assignments will be based on design, correctness of the code, code structure, and program readability. See the course website for more details and submission instructions. Can be submitted late for a penalty.

**2%**

**TEAM LAB WORK**
Lab work will be activities your team does in class to get a better understanding of concepts. For full credit, you must complete 85% of activities. You cannot get credit for a team activity if you are not in attendance.

**8%**

**TEAM PROJECT**
The project is an opportunity to tackle a more challenging programming assignment. Details, requirements and submission information will be on the course website. Project milestones will occur throughout the semester. Milestones and the final completed project can be submitted late for a penalty although there will be a hard deadline for the final completed project to allow grading to occur prior to final grade submission.

**EXTRA CREDIT**
You can get up to one point added to your final grade through a culture report that broadens your exposure to computer science. Attend a seminar and submit a typed report to eCampus within 3 days of the seminar. Details for selecting an acceptable seminar and the report format can be found on the course website.

* At the end of the semester, we will use data from your i>clicker2, lab and class attendance, interactions with me during office hours, piazza activity, completion of extra credit, and completeness of graded work to potentially boost borderline grades to the next level.
Attendance & Make Up

Please review Texas A&M student rule 7: http://student-rules.tamu.edu/rule07

**Attendance is expected.**

If you do miss class for any reason, it is your responsibility to find out what you missed. While assignment information will be posted online, it is a good idea to talk to classmates to see if additional information was discussed.

Attendance will not be taken for a grade, and you will not be penalized for excused absences. However, graded activities will be tied to your attendance. It will also indicate whether you utilized course resources such as the instructor and teaching assistants.

**Make Up**

- **Exams:** Missed exams will only be rescheduled for university excused absences. Note that if advanced notice is not feasible, you have 2 business days provide notification. See student rules. A zero will be assigned for exams due to an unexcused absence. Documentation must be submitted prior to taking a missed exam.

- **Quizzes:** There will be **no make ups** for quizzes, and a zero will be recorded for all missing quiz grades. However, to accommodate illness and other things that life can throw at you, only the top 85% of your quizzes will be counted. If you have excused absences affecting 15% of missed quizzes, we will address what to do. When exceeding the 15% of automatic drops you must present documentation for all excused absences at that time (i.e. all those for weeks affecting the automatic drops plus the additional ones that need to be addressed). Do not submit documentation until required to show proof for quizzes beyond the 15% of automatic drops.

- **Lab work:** Lab work has a built in system for dealing with excused absences. First work can still be checked one lab session after it is due. Also 95% completion is required. The 5% accounts for absences spanning beyond two lab sessions.

**Late Work**

Submission time is determined by the timestamp recorded for your submission on the online system. If submitted late, homework and the team project will receive a grading penalty. The number of minutes late the work is turned in (m) will be used to compute the penalty. Your overall grade for the assignment will be multiplied by $0.9998^m$. **Note: Late work cannot be accepted once solutions are shared or discussed in class.**

In eCampus, grades for assignments that can be submitted late will be recorded in three columns:

1. Your overall grade (without penalty)
2. The number of minutes late (zero if submitted on time)
3. Final grade used for grade calculation. This will be your overall grade times $0.9998^m$ where $m$ is the recorded number of minutes late. Recall that $0.9998^0$ is 1, so on time submissions will get full credit.

How turning in late work can affect your grade:

<table>
<thead>
<tr>
<th>Minutes Late</th>
<th>Max Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>99.9%</td>
</tr>
<tr>
<td>60</td>
<td>98.8%</td>
</tr>
<tr>
<td>1440 (1 day)</td>
<td>75%</td>
</tr>
<tr>
<td>4320 (3 days)</td>
<td>42.1%</td>
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</tbody>
</table>
Academic Integrity

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

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
  http://aggiehonor.tamu.edu/RulesAndProcedures/HonorSystemRules.aspx#definitions
- Potential sanctions

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.”

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 result is an F in the course and submission of the incident to the Aggie Honor System.

Collaboration
Collaboration and team work are 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.