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>501-504</th>
<th>513</th>
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</thead>
<tbody>
<tr>
<td>Lecture/Lab</td>
<td>TR 11:10 AM – 12:25 PM (ETB 2005) • 501: TR 12:45 – 1:35 PM (RDMC 111H)</td>
<td>MW 8:00 AM – 10:00 AM (ETB 2005)</td>
</tr>
<tr>
<td>August 29, 2016 through December 7, 2016</td>
<td>• 502: TR 9:35 – 10:25 AM (RDMC 111A) • 503: TR 2:20 – 3:10 PM (RDMC 111H) • 504: MW 12:40 – 1:30 PM (RDMC 111A)</td>
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<tr>
<td>Exam 1</td>
<td>October 6, 2016, 11:35 AM – 12:25 PM</td>
<td>October 7, 2016, 9:10 AM – 10:00 AM</td>
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<tr>
<td>Exam 2</td>
<td>November 10, 2016, 11:35 AM – 12:25 PM</td>
<td>November 11, 2016, 9:10 AM – 10:00 AM</td>
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<tr>
<td>Final Exam</td>
<td>December 9, 2016, 3:00 PM – 5:00 PM</td>
<td>December 9, 2016, 10:00 AM – 12:00 PM</td>
</tr>
<tr>
<td>Team Project: Code</td>
<td>December 4, 2016 before midnight</td>
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<tr>
<td>Team Project: Demo</td>
<td>December 6 &amp; 7, 2016 during lab.</td>
<td>December 7, during class</td>
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<tr>
<td>Extra Credit</td>
<td>1. October 15, 2016 before midnight</td>
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<td></td>
<td>2. November 27, 2016 before midnight</td>
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Required Resources

**ONLINE TEXTBOOK**

*Programming in C++*

*Texas 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: TAMUCSCE121MooreFall2016

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/f16/121
The course website will be a repository of labwork descriptions, homework descriptions, slides, etc.

PIAZZA: https://piazza.com/tamu/fall2016/csce121/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.
You will be signed up with your tamu email, but you may switch to another email. Signup Link: http://piazza.com/tamu/fall2016/csce121

VOCAREUM: https://www.vocareum.com/
Online code submission system. Vocareum supports autograding. The system is new, so we will only use the autograding in limited situations. We will create accounts for you, and you will receive email instructions from Vocareum on connecting.

GRADESCOPE: https://gradescope.com/
Used to turn in some assignments. This system provides a better grading system for instructors and TAs than what is available in eCampus. We will create accounts for you, and you will receive email instructions from Gradescope on connecting.

GOOGLE DRIVE: http://google.tamu.edu
Used to save course data so if your computer crashes, you still have code you created.

ECAMPUS: https://ecampus.tamu.edu/
Will be used primarily for grade dissemination and extra credit submission.

BYOD

You must have a computing device that you have permission to install software. It must also be capable of running an IDE such as Visual Studio Community or xCode. Note: Sections 501-504 can use computers provided in the lab. Regardless, we will do some activities in class and you should have a device in class to fully participate.

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

We will guide you to 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.
People

Professor

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/

Teaching Assistants

You will have teaching assistants. They will attend lab (501-504) or the combined lecture/lab (513) and assist with activities. They will also hold office hours. TA information is posted on the course website.

Peer Teachers

Peer teachers will attend will attend lab (501-504) or the combined lecture/lab (513) 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/

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.”
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</td>
<td>Computer Organization, Data Representation, Assignment &amp; Variables, First Program</td>
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<tr>
<td>2</td>
<td>Software Development Process, Flowcharts, Control Structures (Sequence, Selection, Iteration)</td>
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<tr>
<td>3</td>
<td>Exceptions, Compound Data, Algorithms</td>
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<tr>
<td>4</td>
<td>Streams, Input Validation, File IO</td>
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<tr>
<td>5</td>
<td>Function Basics</td>
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<tr>
<td>6</td>
<td>Functions, Command Line Parameters, Exceptions</td>
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<tr>
<td>7</td>
<td>Advanced Functions, Code Organization, Debugging</td>
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<tr>
<td>8</td>
<td>Functions – Recursion, Objects &amp; Classes</td>
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<tr>
<td>9</td>
<td>Objects &amp; Classes</td>
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<tr>
<td>10</td>
<td>Dynamic Memory</td>
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<tr>
<td>11</td>
<td>Dynamic Memory, Linked Lists</td>
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<tr>
<td>12</td>
<td>Inheritance / Polymorphism</td>
</tr>
<tr>
<td>13</td>
<td>Graphical User Interfaces with Event Driven Programming</td>
</tr>
<tr>
<td>14</td>
<td>Generic Programming (Templates, STL)</td>
</tr>
<tr>
<td>15</td>
<td>Project Demos; Catch up</td>
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</table>

* tentative means it can change...

Teams

Teams will be established near the beginning of the semester. You will be on the same team for Team Labwork 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.
You must have a **60% average on exams to pass the course** regardless of grades in other sections.

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

Exit tickets will be collected at the end of each class via a Google Form Quiz.

- There will be graded and ungraded portions.
  - Some questions will test your knowledge of material covered in the course. For full credit on graded portions, you must submit 85% of exit tickets.
  - The ungraded portions will be used to assess topics that might need further explanation.
- You must attend class to submit an exit ticket.
- These cannot be submitted late for any reason.

- 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.

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

Homework will be a combination of programming assignments, reports, drills, and questions.

- Must be done on your own.
- 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.
- If you do not submit more than two homework assignments, you cannot pass the class regardless of grades in other sections.
- Can be submitted late for a penalty, but not after any solutions have been published.

Labwork will be activities your team does in class to get a better understanding of concepts. We also encourage groups to openly help each other.

- For full credit, you must complete 85% of activities.
- You cannot get credit for a team activity if you are not in attendance.
- These cannot be submitted late for any reason.

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 the extra credit is on the course website. Note: Borderline grades will not be boosted if extra credit is not submitted.

* At the end of the semester, we will use data from exit tickets, labwork, 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.

- Exit Tickets and Labwork: There will be no make ups for exit tickets, and a zero will be recorded for all missing exit ticket grades. Also, labwork cannot be submitted late. However, to accommodate illness and other things that life can throw at you, only 85% of either will be considered full credit. If you have excused absences affecting more than 15% of exit tickets or labworks, 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 missing items beyond the 15% of automatic drops.

Late Work

Submission time is determined by the timestamp recorded by the online system for your submission. If submitted late, homework 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.

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>0</td>
<td>100.0%</td>
</tr>
<tr>
<td>5</td>
<td>99.9%</td>
</tr>
<tr>
<td>30</td>
<td>99.4%</td>
</tr>
<tr>
<td>60 (1 hour)</td>
<td>98.8%</td>
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<tr>
<td>360 (6 hours)</td>
<td>93.1%</td>
</tr>
<tr>
<td>720 (12 hours)</td>
<td>86.6%</td>
</tr>
<tr>
<td>1080 (18 hours)</td>
<td>80.6%</td>
</tr>
<tr>
<td>1440 (1 day)</td>
<td>75.0%</td>
</tr>
<tr>
<td>2880 (2 days)</td>
<td>56.2%</td>
</tr>
<tr>
<td>4320 (3 days)</td>
<td>42.1%</td>
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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.