

# CS 2336 – Data Structures and Algorithms

## Fall 2021 Course Syllabus

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**Instructor: Dr. Mark B. Motl**

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Office Phone: (325) 486-5420

Office: MCS 205M

Office Hours: MWF 8:30 a.m. – 10:30 a.m.

TR 2:00 p.m. – 4:00 p.m.

Class Times: Section 010: MWF 11:00 a.m. – 11:50 a.m.

Section 020: MWF 12:00 p.m. – 12:50 p.m.

Classroom: Section 010: MCS 114

Section 020: MCS 115

## Course Information

### Course Description

Study of basic data structures and their applications such as: linear structures (arrays, lists, stacks, queues) and non-linear structures (trees, graphs); sequential and linked storage representation methods; sorting and searching algorithms; and techniques of algorithmic analysis.

### Prerequisite and Co-requisite Courses

CS 1337

### Prerequisite Skills

Two courses in C or C++ programming.

### Student Learning Outcomes

Upon completion of this course, students will:

- have a better understanding of the C++ class concept,
- learn techniques of algorithm analysis,
- learn about recursion,
- learn how to use the C++ Standard Template Library (STL) vector container,

- learn programming techniques for sorting,
- learn programming techniques for searching,
- know how to use the STL stack adaptor,
- know how to use the STL queue adaptor,
- know how to use the STL deque container,
- know how to use the STL priority\_queue adaptor, and
- know how to use the STL list container.

## Course Delivery

This is a face-to-face course with online components that students are expected to access in [Blackboard](#).<sup>1</sup>

## Required Texts and Materials

Gaddis, Tony, *Starting Out with C++: From Control Structures Through Objects*, Ninth ed., Boston, MA: Pearson/Addison-Wesley, 2018.

## Communication

- **Written communication via email:** All private communication will be done exclusively through your ASU email address. Check frequently for announcements and policy changes. In your emails to faculty, include the course name and section number in your subject line.
- **Blackboard Collaborate:** I will be available every weekday during office hours in the virtual Collaborate classroom under Blackboard. You will be able to text, audio/video chat and share your computer screen with me.
- **Phone:** I can be contacted via my office telephone during office hours.

## Grading

### Evaluation and Grades

Course grades will be determined as indicated in the table below.

Assessment	Percent of Total Grade
Programming Assignments	30%
Exam 1	14%
Exam 2	14%
Exam 3	14%
Exam 4	14%
Exam 5	14%
Total	100%

## Grading System

Course grades will be dependent upon completing course requirements and meeting the student learning outcomes.

The following grading scale is in use for this course:

<b>Grade</b>	<b>Percentage</b>
A	90.00 – 100.00
B	80.00 – 89.99
C	70.00 – 79.99
D	60.00 – 69.99
F	0.00 – 59.99

Please note that grades are **not** rounded up.

## Course Outline

This outline should be considered approximate and tentative.

<b>Week(s)</b>	<b>Topics</b>
1 – 4	<ul style="list-style-type: none"><li>• review of class concept</li><li>• overloaded operators</li><li>• Exam 1</li></ul>
5 – 6	<ul style="list-style-type: none"><li>• recursion</li><li>• function templates</li><li>• Exam 2</li></ul>
7 – 8	<ul style="list-style-type: none"><li>• time complexity</li><li>• algorithm analysis</li><li>• Exam 3</li></ul>
9 – 12	<ul style="list-style-type: none"><li>• vectors</li><li>• Exam 4</li></ul>
13 – 15	<ul style="list-style-type: none"><li>• adaptors (stacks, queues, priority queues)</li><li>• dequeues</li><li>• lists</li></ul>
16	<ul style="list-style-type: none"><li>• Exam 5</li></ul>

## Assignment and Activity Descriptions

**Programming assignments:** The purpose of the programming assignments is to give you individual practice on the topics that you are learning and to explore some ideas more deeply. Assignments will be given frequently for you to complete. The following guidelines are to be observed concerning the programming assignments (labs):

- No late assignment will be accepted. No e-mail submission is accepted. There are no exceptions to this rule.
- All assignments, unless otherwise specified, must be submitted to Blackboard and contain your name, course discipline and number, and the title of the assignment.
- Assignments are not weighted equally. Each assignment has a designated value. The value of each assignment can be found on the first page of the document describing the assignment.
- Labs are due by the end of the day on the designated due date.
- The labs will be developed on the department's Unix environment.
- Assignments will be graded on the CS department's Unix environment. If you develop solutions to the programming assignments in a different environment such as Microsoft Visual Studio, it is your responsibility to ensure that these solutions work correctly in the Unix environment also.
- You are responsible for doing your own work. You may be asked to defend/explain your work at any time. You are encouraged to work with your classmates and use the resources of the Internet to understand and complete the assignments; however, when you submit an assignment, you are verifying that it is your own work. Cheating will not be tolerated.

**Exams:** Five exams will be given throughout the semester (including the final). The following guidelines are to be observed concerning the exams:

- There are no makeup exams. Only exception will be student absence for observance of religious holy day (see Additional Policies below).
- If an exam is missed, a grade of zero will be given for that exam.
- The final exam must be taken on its assigned date.

## General Policies Related to This Course

All students are required to follow the policies and procedures presented in these documents:

- [Angelo State University Student Handbook](#)<sup>2</sup>

- [Angelo State University Catalog](#)<sup>3</sup>

## **Attendance**

Attendance is expected, but it will not be used in calculating your final grade.

## **Academic Integrity**

Students are expected to maintain complete honesty and integrity in all work. Any student found guilty of any form of dishonesty in academic work is subject to disciplinary action and possible expulsion from ASU.

The College of Science and Engineering adheres to the university's [Statement of Academic Integrity](#).<sup>4</sup>

## **Accommodations for Students with Disabilities**

ASU is committed to the principle that no qualified individual with a disability shall, on the basis of disability, be excluded from participation in or be denied the benefits of the services, programs or activities of the university, or be subjected to discrimination by the university, as provided by the Americans with Disabilities Act of 1990 (ADA), the Americans with Disabilities Act Amendments of 2008 (ADAAA) and subsequent legislation.

Student Disability Services is located in the Office of Student Affairs, and is the designated campus department charged with the responsibility of reviewing and authorizing requests for reasonable accommodations based on a disability. It is the student's responsibility to initiate such a request by contacting an employee of the Office of Student Affairs, in the Houston Harte University Center, Room 112, or contacting the department via email at [ADA@angelo.edu](mailto:ADA@angelo.edu). For more information about the application process and requirements, visit the [Student Disability Services website](#).<sup>5</sup> The employee charged with the responsibility of reviewing and authorizing accommodation requests is:

Dr. Dallas Swafford  
Director of Student Disability Services  
Office of Student Affairs  
325-942-2047  
[dallas.swafford@angelo.edu](mailto:dallas.swafford@angelo.edu)  
Houston Harte University Center, Room 112

## **Incomplete Grade Policy**

It is policy that incomplete grades be reserved for student illness or personal misfortune. Please contact faculty if you have serious illness or a personal misfortune that would keep you from completing course work. Documentation may be required. See ASU Operating Policy 10.11 [Grading Procedures](#)<sup>6</sup> for more information.

## **Plagiarism**

Plagiarism is a serious topic covered in ASU's [Academic Integrity policy](#)<sup>7</sup> in the Student Handbook. Plagiarism is the action or practice of taking someone else's work, idea, etc., and passing it off as one's own. Plagiarism is literary theft.

In your discussions and/or your papers, it is unacceptable to copy word-for-word without quotation marks and the source of the quotation. It is expected that you will summarize or paraphrase ideas giving appropriate credit to the source both in the body of your paper and the reference list.

Papers are subject to be evaluated for originality. Resources to help you understand this policy better are available at the [ASU Writing Center](#).<sup>8</sup>

## **Student Absence for Observance of Religious Holy Days**

A student who intends to observe a religious holy day should make that intention known in writing to the instructor prior to the absence. See ASU Operating Policy 10.19 Student Absence for [Observance of Religious Holy Day](#)<sup>9</sup> for more information.

## **Title IX at Angelo State University**

Angelo State University is committed to providing and strengthening an educational, working, and living environment where students, faculty, staff, and visitors are free from sex discrimination of any kind. In accordance with Title VII, Title IX, the Violence Against Women Act (VAWA), the Campus Sexual Violence Elimination Act (SaVE), and other federal and state laws, the University prohibits discrimination based on sex, which includes pregnancy, and other types of Sexual Misconduct. Sexual Misconduct is a broad term encompassing all forms of gender-based harassment or discrimination and unwelcome behavior of a sexual nature. The term includes sexual harassment, nonconsensual sexual contact, nonconsensual sexual intercourse, sexual assault, sexual exploitation, stalking, public indecency, interpersonal violence (domestic violence or dating violence), sexual violence, and any other misconduct based on sex.

You are encouraged to report any incidents involving sexual misconduct to the Office of Title IX Compliance and the Director of Title IX Compliance/Title IX Coordinator, Michelle Miller, J.D. You may submit reports in the following manner:

Online: [Incident Reporting Form](#)<sup>10</sup>

Face to Face: Mayer Administration Building, Room 210

Phone: 325-942-2022

Email: [michelle.miller@angelo.edu](mailto:michelle.miller@angelo.edu)

Note, as a faculty member at Angelo State, I am a mandatory reporter and must report incidents involving sexual misconduct to the Title IX Coordinator. Should you wish to speak to someone in confidence about an issue, you may contact the University Counseling Center (325-942-2371), the 24-Hour Crisis Helpline (325-486-6345), or the University Health Clinic (325-942-2171).

For more information about resources related to sexual misconduct, Title IX, or Angelo State's policy please visit the [Title IX website](#).<sup>11</sup>

## Information About COVID-19

Please refer to ASU's [COVID-19 \(Coronavirus\) Updates](#)<sup>12</sup> web page for current information about campus guidelines and safety standards as they relate to the COVID-19 pandemic.

## Modifications to the Syllabus

This syllabus, including grade evaluation and course schedule, is subject to modification. In particular, the COVID-19 pandemic may require significant changes in course delivery and content on potentially short notice.

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<sup>1</sup> <https://blackboard.angelo.edu/>

<sup>2</sup> <https://www.angelo.edu/current-students/student-handbook/>

<sup>3</sup> <https://www.angelo.edu/academics/catalog/>

<sup>4</sup> <https://www.angelo.edu/live/files/27603-student-handbook-2020-21#page=96>

<sup>5</sup> <https://www.angelo.edu/current-students/disability-services/>

<sup>6</sup> <https://www.angelo.edu/content/files/14197-op-1011-grading-procedures>

<sup>7</sup> <https://www.angelo.edu/student-handbook/community-policies/academic-integrity.php>

<sup>8</sup> [https://www.angelo.edu/current-students/writing-center/academic\\_honesty.php](https://www.angelo.edu/current-students/writing-center/academic_honesty.php)

<sup>9</sup> <https://www.angelo.edu/content/files/14206-op-1019-student-absence-for-observance-of>

<sup>10</sup> <https://www.angelo.edu/incident-form>

<sup>11</sup> <https://www.angelo.edu/title-ix>

<sup>12</sup> <https://www.angelo.edu/covid-19/>