



## **COURSE 2336, 01+ , Data Structures**

COURSE SYLLABUS: Spring 202

### **INSTRUCTOR INFORMATION**

Instructor:	Dr. Kaoning Hu
Office Location:	JOUR 220
Office Hours:	TBA
Office Phone:	903-886-5406
Office Fax:	903-886-5404
University Email Address:	kaoning.hu@tamuc.edu
Preferred Form of Communication:	Email
Communication Response Time:	1~2 business days

### **COURSE INFORMATION**

Materials – Textbooks, Readings, Supplementary Readings

#### Textbook Required

Malik, D. S. "C++ Programming: From Problem Analysis to Program Design", 6ed. (or higher) Cengage Learning, 2013. (ISBN: 978-1133626381). (7<sup>th</sup> edition published in 2014, and 8<sup>th</sup> edition published in 2017).

#### Software Required

Dev C++, Visual Studio, Xcode, or any other C++ compiler

### **Course Description**

This course continues with the concept of abstract data structures (classes) begun in COSC 1337 Programming II and concentrates on building programming tools known as container classes which can be used to store and manipulate data. Topics covered include address variables, linked lists, stacks, queues, recursion, analysis of algorithm efficiency, binary search trees, and hash tables.

*The syllabus/schedule are subject to change.*

## **Student Learning Outcomes**

After completion of this course, you will be able to use classes to implement the basic data structures (stacks, queues, linked lists, trees, and hash tables) and to use predefined classes from the Standard Template Library. You will be able to design and code a program for application areas in which these data structures would be useful. Given multiple algorithms to solve the same problem, you will be able to estimate which algorithm would be more efficient in terms of time and memory required.

1. Use address variables.
2. Use the linked list data structure.
3. Use the stack data structure.
4. Use the queue data structure.
5. Design, code, and use recursive functions.
6. Understand Big-O notation (for algorithm efficiency): what it means, how it is determined, and why it should be considered in effective programming.
7. Use the binary tree data structure and a hash table.
8. Integrate the use of container classes (user-created or STL) into a moderately complex program solution.

## **COURSE REQUIREMENTS**

### **Minimal Technical Skills Needed**

- The use of Microsoft PowerPoint and at least 1 C++ compiler
- CSCI 152 Min Grade C or COSC 1337 Min Grade C

### **Instructional Methods**

We will have weekly lectures. Slides, supplementary materials, and assignments will be released via D2L. *Please upload your assignments to the appropriate folders on D2L.*

### **Student Responsibilities or Tips for Success in the Course**

1. Attend every lecture as long as you are able to.
2. Check D2L at least twice a week.
3. Read the textbook before and after every lecture, and use the slides as your guideline.
4. Start your homework assignments early.
5. Do your own work. If you have difficulties in an assignment, ask the instructor. Do not copy other people's work.
6. Contact the instructor when you are confused.
7. Seek help from lab tutors in Jour 101 or 200 when you need.

## **GRADING**

Final grades in this course will be based on the following scale:

A = 90%-100%

B = 80%-89%

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C = 70%-79%

D = 60%-69%

F = 59% or Below

Your weighted total grade will be computed using the following weights.

- Midterm and final exams: 50%
- Quizzes: 15%
- Assignments: 25%
- Exercise participation: 10%

### **Assessments**

Assignments will be graded on the following:

- meet specification of assignment
- have good organization and logic
- demonstrate good form, including remarks and indentation
- on-time (Late submission subject to the penalty.)

Quizzes and exams are graded based on the correctness of the answers. Exercise sheets are graded based on whether the student has participated in the exercise. (i.e. You receive the credit as long as you work on the exercise question, even if your answer is incorrect.)

All exams are comprehensive. The time and location of each exam will be announced one week before the exam.

Quizzes are not comprehensive unless otherwise specified. The time of each quiz will be announced in the meeting before the quiz.

The number of assignments and quizzes are negotiable.

## **TECHNOLOGY REQUIREMENTS**

### **LMS**

All course sections offered by Texas A&M University-Commerce have a corresponding course shell in the myLeo Online Learning Management System (LMS). Below are technical requirements

LMS Requirements:

<https://community.brightspace.com/s/article/Brightspace-Platform-Requirements>

LMS Browser Support:

[https://documentation.brightspace.com/EN/brightspace/requirements/all/browser\\_support.htm](https://documentation.brightspace.com/EN/brightspace/requirements/all/browser_support.htm)

YouSeeU Virtual Classroom Requirements:

<https://support.youseeu.com/hc/en-us/articles/115007031107-Basic-System-Requirements>

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## ACCESS AND NAVIGATION

You will need your campus-wide ID (CWID) and password to log into the course. If you do not know your CWID or have forgotten your password, contact the Center for IT Excellence (CITE) at 903.468.6000 or [helpdesk@tamuc.edu](mailto:helpdesk@tamuc.edu).

**Note:** Personal computer and internet connection problems do not excuse the requirement to complete all course work in a timely and satisfactory manner. Each student needs to have a backup method to deal with these inevitable problems. These methods might include the availability of a backup PC at home or work, the temporary use of a computer at a friend's home, the local library, office service companies, Starbucks, a TAMUC campus open computer lab, etc.

## COMMUNICATION AND SUPPORT

If you have any questions or are having difficulties with the course material, please contact your Instructor.

### Technical Support

If you are having technical difficulty with any part of Brightspace, please contact Brightspace Technical Support at 1-877-325-7778. Other support options can be found here:

<https://community.brightspace.com/support/s/contactsupport>

### Interaction with Instructor Statement

To communicate with me about this course you are to use the email address on this syllabus. Please include the course number in the beginning of the subject field for every email message. During the week, you can generally expect a response to your emails within 1 business day. *If you do not receive my response in 2 business days, please send a second email to me.*

You can also call me at my office or stop by my office during office hours. You can also schedule an appointment by email.

My office location, phone number, and office hours are subject to change and amendment.

## COURSE AND UNIVERSITY PROCEDURES/POLICIES

### Course Specific Procedures/Policies

Attendance is required but not graded. The student is responsible to manage their own time.

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Late submission of assignment subject to the penalty: 20% if no later than 7 calendar days;  
No grade if later than 7 calendar days.

Make-up quizzes/exams are given only if there is an emergency. If you take a make-up quiz/exam, you may receive a different set of questions with approximately the same difficulty level as the regular quiz/exam. Alternatively, you may also choose to receive a grade based on your in-class ranking in the next quiz/exam.

Extra credit may be possible.

### **Syllabus Change Policy**

The syllabus is a guide. Circumstances and events, such as student progress, may make it necessary for the instructor to modify the syllabus during the semester. Any changes made to the syllabus will be announced in advance.

## **University Specific Procedures**

### **Student Conduct**

All students enrolled at the University shall follow the tenets of common decency and acceptable behavior conducive to a positive learning environment. The Code of Student Conduct is described in detail in the [Student Guidebook](#).

<http://www.tamuc.edu/Admissions/oneStopShop/undergraduateAdmissions/studentGuidebook.aspx>

Students should also consult the Rules of Netiquette for more information regarding how to interact with students in an online forum: <https://www.britannica.com/topic/netiquette>

### **TAMUC Attendance**

For more information about the attendance policy please visit the [Attendance](#) webpage and [Procedure 13.99.99.R0.01](#).

<http://www.tamuc.edu/admissions/registrar/generalInformation/attendance.aspx>

<http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/13students/academic/13.99.99.R0.01.pdf>

### **Academic Integrity**

Students at Texas A&M University-Commerce are expected to maintain high standards of integrity and honesty in all of their scholastic work. For more details and the definition of academic dishonesty see the following procedures:

[Undergraduate Academic Dishonesty 13.99.99.R0.03](#)

<http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/13students/undergraduates/13.99.99.R0.03UndergraduateAcademicDishonesty.pdf>

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[Graduate Student Academic Dishonesty 13.99.99.R0.10](#)

<http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/13students/graduate/13.99.99.R0.10GraduateStudentAcademicDishonesty.pdf>

### **Students with Disabilities-- ADA 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 have a disability requiring an accommodation, please contact:

#### **Office of Student Disability Resources and Services**

Texas A&M University-Commerce

Gee Library- Room 162

Phone (903) 886-5150 or (903) 886-5835

Fax (903) 468-8148

Email: [studentdisabilityservices@tamuc.edu](mailto:studentdisabilityservices@tamuc.edu)

Website: [Office of Student Disability Resources and Services](#)

<http://www.tamuc.edu/campusLife/campusServices/studentDisabilityResourcesAndServices/>

### **Nondiscrimination Notice**

Texas A&M University-Commerce will comply in the classroom, and in online courses, with all federal and state laws prohibiting discrimination and related retaliation on the basis of race, color, religion, sex, national origin, disability, age, genetic information or veteran status. Further, an environment free from discrimination on the basis of sexual orientation, gender identity, or gender expression will be maintained.

### **Campus Concealed Carry Statement**

Texas Senate Bill - 11 (Government Code 411.2031, et al.) authorizes the carrying of a concealed handgun in Texas A&M University-Commerce buildings only by persons who have been issued and are in possession of a Texas License to Carry a Handgun. Qualified law enforcement officers or those who are otherwise authorized to carry a concealed handgun in the State of Texas are also permitted to do so. Pursuant to Penal Code (PC) 46.035 and A&M-Commerce Rule 34.06.02.R1, license holders may not carry a concealed handgun in restricted locations.

For a list of locations, please refer to the [Carrying Concealed Handguns On Campus](#) document and/or consult your event organizer.

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Web url:

<http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/34SafetyOfEmployeesAndStudents/34.06.02.R1.pdf>

Pursuant to PC 46.035, the open carrying of handguns is prohibited on all A&M-Commerce campuses. Report violations to the University Police Department at 903-886-5868 or 9-1-1.

## **COURSE OUTLINE / CALENDAR**

Week 1	Introduction and review of Programming I & II
Week 2	Review of Programming I & II – structures and classes
Week 3	Review of Programming I & II – functions
Week 4	Pointer variables & dynamic variables
Week 5	Pointer variables & dynamic variables - continued
Week 6	Linked lists
Week 7	Linked lists – continued
Week 8	Midterm Exam
Week 9	Stacks
Week 10	Stacks – continued, stack applications: function calls, postfix notation
Week 11	Recursion
Week 12	Recursion – continued
Week 13	Recursion – continued / Trees
Week 14	Trees, Binary Search Trees, Hash Tables
Week 15	Binary Search Trees, Hash Tables / final review
Week 16	Final Exam

\* The schedule is tentative and may be adjusted to fit the actual class progress.

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