**Course Syllabus**: COSC 1337 (3-3-1) – Programming Fundamentals II

Credit Spring 2025

Synonym 84773-006

**Lecture:** Online - Async

**Lab:** Online

Friday 5:30 AM – 6:30 PM

# **Instructor**: Haytham Mohamed

**Office**: TBD

**Office Hours:** Friday 5:30 AM – 6:30 PM

# **E-mail:** haytham.mohamed@austincc.edu

**Course Description:** Review of control structures and data types with emphasis on structured data types. Applies the object-oriented programming paradigm, focusing on the definition and use of classes along with the fundamentals of object-oriented design. Includes basic analysis of algorithms, searching and sorting techniques, and an introduction to software engineering.

This course is an introduction to the C++ programming language and its subset, the C programming language.  Program structure, block, storage types, console and file I/O, functions, arrays, strings, pointers, call-by-reference, call-by-value, and dynamic memory allocation will be discussed.  The concept and use of classes will be covered in some detail.  The differences between C++ and C will also be discussed.

**Prerequisite:** COSC 1336 or instructional program approval. Course Type: T.

**Course Rationale:**  This course is designed to teach students the C++ programming language and introductory and intermediate programming concepts with examples and applications using the C++ language.  The course builds and extends topics covered in the prerequisite course, COSC 1336 and prepares students for more advanced programming courses such as ITSE 2331 (Advanced C++ Programming) as well as for entry level programming employment.  The course is required for an Associate Degree in several Computer Information Systems and Computer Science degree areas.

**Course Objectives/Learning Outcomes:**

1. Demonstrate a thorough understanding of modular programming by designing programs that require the use of programmer-defined functions.
2. Demonstrate a thorough understanding of arrays by designing and implementing programs that search and sort arrays.
3. Demonstrate a thorough understanding of the object-oriented programming concepts of encapsulation, data abstraction and composition by designing and implementing classes including the use of overloaded functions and constructors.
4. Demonstrate a thorough understanding of the concept of pointers and dynamic memory allocation by designing and implementing programs using pointers and dynamic memory allocation.
5. Demonstrate a thorough understanding of the implementation of programmer-defined functions and classes by writing code, performing unit testing and debugging of multiple complex programs.
6. Demonstrate good documentation style in all of the programs written in this course.
7. Demonstrate proficiency in implementing data validation code, performing unit testing, and developing test plans while implementing robust solutions to the assignments in this course.
8. Demonstrate a thorough understanding of stream input/output for both console and files.
9. Demonstrate an understanding of the differences between C and C++ in the areas of strings, pass by reference/passing pointers, and structs by designing and implementing programs that use C strings, C++ strings, C language structs and classes.

**SCANS (Secretary’s Commission on Achieving Necessary Skills):**

Refer to <http://www.austincc.edu/cit/courses/scans.pdf> for a complete definition and explanation of SCANS. The following list summarizes the SCANS competencies addressed in this particular course:

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| --- | --- | --- | --- |
| **RESOURCES**  1.1 Manages Time | **INTERPERSONAL**  2.1 Participates as a member of a team  2.6 Works with Cultural Diversity | **INFORMATION**  3.1 Acquires and Evaluates Information  3.2 Organizes and Maintains Information  3.3 Uses Computers to Process Information | **SYSTEMS**  4.1 Understands Systems  4.2 Monitor and Corrects Performance  4.3 Improve and Designs Systems |
| **TECHNOLOGY**  5.1 Selects Technology  5.2 Applies Technology to Task  5.3 Maintains and Troubleshoots Technology | **BASIC SKILLS**  6.1 Reading  6.2 Writing  6.3 Arithmetic  6.4 Mathematics  6.5 Listening | **THINKING SKILLS**  7.2 Decision Making  7.3 Problem Solving  7.4 Mental Visualization  7.5 Knowing How to Learn  7.6 Reasoning | **PERSONAL SKILLS**  8.1 Responsibility  8.2 Self-Esteem  8.3 Sociability  8.4 Self-Management  8.5 Integrity/Honesty |

**Approved Text and Teaching Materials:**

*Starting out with C++: Early Objects* *(9th edition).* Gaddis, Walters, Muganda, Pearson, 2016. (ISBN- 9780134400242).

**Instructional Methodology:**  This course will have both lecture and lab each week.  The CIS open labs are available for students for work outside of scheduled lab time.

**Grade Policy:**

Grade will be assigned based both on concepts and practical application. Exams, in-class assignments, and lab projects will be a part of the grade. An overall grade will be assigned on the following grading scale:

90% - 100% A

80% - 89% B

70% - 79% C

60% - 69% D

0% - 59% F

**Course Requirements:**

Each student’s grade for this course consists of exams, in-class assignments, lab assignments, and attendance. All lab assignments will be submitted through Blackboard. Lab assignments have a grace period of two days after they are due for a penalty of 20%. After that, the assignment will no longer be available on Blackboard. In-class assignments are due at the end of the class in which they are assigned. Students will be allowed two pages of notes, front and back, for exams.

|  |  |
| --- | --- |
| Exam 1 | 20% |
| Exam 2 | 20% |
| Exam 3 | 20% |
| 7 labs | 40% |
| **TOTAL** | 100% |

## Course/Class Policies:

**Attendance/Class Participation**

Regular and punctual class and laboratory attendance is expected of all students. If attendance or compliance with other course policies is unsatisfactory, the instructor may withdraw students from the class. Attendance is worth 50 points, with 5 points deducted for each absence.

**Withdrawal Policy**

It is the responsibility of each student to ensure that his or her name is removed from the roll should he or she decides to withdraw from the class. The instructor does, however, reserve the right to drop a student should he or she feel it is necessary. If a student decides to withdraw, he or she should also verify that the withdrawal is submitted before the Final Withdrawal Date. Last day to add is February 8th, and the last date to withdraw for this semester is April 28, 2025. The student is also strongly encouraged to retain their copy of the withdrawal form for their records.

Students who enroll for the third or subsequent time in a course taken since Fall, 2002, may be charged a higher tuition rate, for that course. State law permits students to withdraw from no more than six courses during their entire undergraduate career at Texas public colleges or universities. With certain exceptions, all course withdrawals automatically count towards this limit. Details regarding this policy can be found in the ACC college catalog.

**Incompletes**

A student may receive a temporary grade of “I” (Incomplete) at the end of the semester only if ALL of the following conditions are satisfied:

1. The student is unable to complete the course during the semester due to circumstances beyond their control.
2. The student must have earned at least half of the grade points needed for a “C” by the end of the semester.
3. The request for the grade must be made in person at the instructor’s office and necessary documents completed.
4. To remove an “I”, the student must complete the course by two weeks before the end of the following semester. Failure to do so will result in the grade automatically reverting to an “F”.

**Statement on Scholastic Dishonesty**

A student attending ACC assumes responsibility for conduct compatible with the mission of the college as an educational institution. Students have the responsibility to submit coursework that is the result of their own thought, research, or self-expression. Students must follow all instructions given by faculty or designated college representatives when taking examinations, placement assessments, tests, quizzes, and evaluations. Actions constituting scholastic dishonesty include, but are not limited to, plagiarism, cheating, fabrication, collusion, and falsifying documents. Penalties for scholastic dishonesty will depend upon the nature of the violation and may range from lowering a grade on one assignment to an “F” in the course and/or expulsion from the college.

See the [Student Standards of Conduct](http://www.austincc.edu/student-standards-of-conduct) and [Disciplinary Process](http://www.austincc.edu/disciplinary-sanctions).

***For this course, the penalty for scholastic dishonesty is a grade of ‘F’ for the course.***

**Student Rights and Responsibilities**

Students at the college have the rights accorded by the U.S. Constitution to freedom of speech, peaceful assembly, petition, and association. These rights carry with them the responsibility to accord the same rights to others in the college community and not to interfere with or disrupt the educational process. Opportunity for students to examine and question pertinent data and assumptions of a given discipline, guided by the evidence of scholarly research, is appropriate in a learning environment. This concept is accompanied by an equally demanding concept of responsibility on the part of the student. As willing partners in learning, students must comply with college rules and procedures.

**Statement on Students with Disabilities**Each ACC campus offers support services for students with documented disabilities. Students with disabilities who need classroom, academic or other accommodations must request them through the office of Student Accessibility Services (SAS). Students are encouraged to request accommodations when they register for courses or at least three weeks before the start of the semester, otherwise the provision of accommodations may be delayed. Students who have received approval for accommodations from SAS for this course must provide the instructor with the ‘Notice of Approved Accommodations’ from SAS before accommodations will be provided. Arrangements for academic accommodations can only be made after the instructor receives the ‘Notice of Approved Accommodations’ from the student. Students with approved accommodations are encouraged to submit the ‘Notice of Approved Accommodations’ to the instructor at the beginning of the semester because a reasonable amount of time may be needed to prepare and arrange for the accommodations.

**Safety Statement**Austin Community College is committed to providing a safe and healthy environment for study and work. You are expected to learn and comply with ACC environmental, health and safety procedures and agree to follow ACC safety policies. Because some health and safety circumstances are beyond our control, we ask that you become familiar with the Emergency Procedures poster and Campus Safety Plan map in each classroom.

Please note, you are expected to conduct yourself professionally with respect and courtesy to all. Anyone who thoughtlessly or intentionally jeopardizes the health or safety of another individual will be immediately dismissed from the day’s activity, may be withdrawn from the class, and/or barred from attending future activities.

**Freedom of Expression Policy**

It is expected that faculty and students will respect the views of others when expressed in classroom discussions.

**Tutoring**

Free tutoring is provided for this course both on line and face-to-face.  For online schedules and details please refer to [http:://www.austincc.edu/cit](http://www.austincc.edu/cit) .

**Student Files – Privacy**

Their instructor for educational and academic reasons may view the information that a student stores in his/her student volume in the Computer Studies Labs.

**Concealed Handgun Policy**

ACC faculty may notify students in their classes or learning environment about the Texas Campus Carry law taking effect at Austin Community College (and other Texas community colleges) on August 1, 2017. The following is recommended syllabus language, approved by legal counsel and the college. For courses including ACC-sponsored field activities, language is still being drafted.

The Austin Community College District concealed handgun policy ensures compliance with Section 411.2031 of the Texas Government Code (also known as the Campus Carry Law), while maintaining ACC’s commitment to provide a safe environment for its students, faculty, staff, and visitors.

Beginning August 1, 2017, individuals who are licensed to carry (LTC) may do so on campus premises except in locations and at activities prohibited by state or federal law, or the college’s concealed handgun policy.

It is the responsibility of license holders to conceal their handguns at all times. Persons who see a handgun on campus are asked to contact the ACC Police Department by dialing 222 from a campus phone or 512-223-7999.

Refer to the [concealed handgun policy online](http://www.austincc.edu/campus-carry).

**Use of ACC E-mail**

All College e-mail communication to students will be sent solely to the student’s ACCmail account, with the expectation that such communications will be read in a timely fashion. ACC will send important information and will notify you of any college related emergencies using this account. Students should only expect to receive email communication from their instructor using this account. Likewise, students should use their ACCmail account when communicating with instructors and staff. [Instructions for activating an ACCmail account](http://www.austincc.edu/accmail/activation-and-login-assistance).

**Student and Instructional Services**

ACC strives to provide exemplary support to its students and offers a broad variety of opportunities and services. [Information on these services and support systems is available here](http://www.austincc.edu/support-and-services). Links to many student services and other information can be found at [Current Students](http://www.austincc.edu/current-students/). ACC Learning Labs provide free tutoring services to all ACC students currently enrolled in the course to be tutored. The [tutor schedule for each Learning Lab may be found here](http://www.austincc.edu/support-and-services/tutoring-and-academic-help/tutoring-services-and-schedules). For help setting up your ACCeID, ACC Gmail, or ACC Blackboard, see a Learning Lab Technician at any [ACC Learning Lab](http://www.austincc.edu/campus-contacts?field_contact_campus_value=All&field_contact_office_or_dept_value=Learning+Lab).

**Tentative Course Schedule**

*Late lab assignments are accepted for 24 hours, with a grade penalty of 20%*

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| --- | --- | --- | --- | --- | --- |
| **Week** | **Chapter** | **Description** | **Exams** | **Assignments** | **Assignments Due** |
| 2/17/25 | 1 & 2 | Syllabus, Introduction, Input and data types |  |  |  |
| 2/24/25 | 3 & 4 | Expressions, Making Decisions |  | Lab 1 |  |
| 3/3/25 | 5 & 6 | Looping & Functions |  | Lab 2 | Lab 1 |
| 3/10/25 | 7 | Class and Objects |  | Lab 3 | Lab 2 |
| 3/17/25 |  | Spring Break |  |  |  |
| 3/24/25 | 8 | Arrays | Exam 1 (1-7) | Lab 4 | Lab 3 |
| 3/31/25 | 9 | searching and Sorting |  | Lab 5 | Lab 4 |
| 4/7/25 | 10 | Pointers |  | Lab 6 | Lab 5 |
| 4/14/25 | 10 | More on Pointers |  |  |  |
| 4/21/25 | 11 | Object Oriented Programming | Exam 2 (8 - 10) |  |  |
| 4/28/25 | 12 & 13 | Strings, Advance File IO |  |  | Lab 6 |
| 5/5/25 | 15 | Polymorphism & Virtual |  | Lab 7 |  |
| 5/12/25 |  |  | Exam 3 (11 - 13,15) |  | Lab 7 |

**NOTE:**  Course Schedule subject to change as required. Scheduled chapters should be read!