

South Plains College
Common Course Syllabus: COSC 1437
Revised August 2021

Department: Mathematics, Engineering, and Computer Science

Discipline: Computer Science

Course Number: COSC 1437

Course Title: Programming Fundamentals II

Available Formats: hybrid

Campuses: Levelland

Course Description: This course focuses on the object-oriented programming paradigm, emphasizing the definition and use of classes along with fundamentals of object-oriented design. The course includes basic analysis of algorithms, searching and sorting techniques, and an introduction to software engineering processes. Students will apply techniques for testing and debugging software. (This course is included in the Field of Study Curriculum for Computer Science.)

Prerequisite: Successful completion with a grade of 'C' or better in COSC 1436

Credit: 4 **Lecture:** 3 **Lab:** 3

Textbook: Starting Out with C++: From Control Structures through Objects, 9th Edition, Tony Gaddis. 2018. ISBN 978-0-13-449837-9. You must have a paper or digital copy of this book. You do NOT need to buy the online access card with this book. (You may use a previous version of the book, as long as you are willing to reconcile page numbers and assignment numbers.)

Supplies: You must have access to a laptop or desktop where you can write programs. Microsoft Visual C++ Community 2019 is installed on our lab computers. You may install this software on a home computer for no charge. Be sure to register (for free) so it doesn't expire in 30 days. Install download from:

<https://visualstudio.microsoft.com/downloads/>

You will need a **USB flash drive** to store your projects. You must bring this drive to class every day. It is recommended that you back up your files on this drive to a home computer or other media.

This course partially satisfies a Core Curriculum Requirement: None

Core Curriculum Objectives addressed:

- **Communications skills**—to include effective written, oral and visual communication
- **Critical thinking skills**—to include creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information
- **Empirical and quantitative competency skills**—to manipulate and analyze numerical data or observable facts resulting in informed conclusions

Student Learning Outcomes: Upon completion of this course and receiving a passing grade, the student will be able to:

1. Identify and explain a programming development lifecycle, including planning, analysis, design, development, and maintenance.
2. Demonstrate a basic understanding of object-oriented programming by using structs and classes in software projects.
3. Use object-oriented programming techniques to develop executable programs that include elements such as inheritance and polymorphism.
4. Document and format code in a consistent manner.
5. Apply basic searching and sorting algorithms in software design.
6. Apply single- and multi-dimensional arrays in software.
7. Use a symbolic debugger to find and fix runtime and logical errors in software.
8. Demonstrate a basic understanding of programming methodologies, including object-oriented, structured, and procedural programming.
9. Describe the phases of program translation from source code to executable code.

Student Learning Outcomes Assessment: A pre- and post-test questions will be used to determine the extent of improvement that the students have gained during the semester

Course Evaluation: There will be departmental final exam questions given by all instructors.

Attendance/Student Engagement Policy: Attendance and engagement are the most critical activities for success in this course. The instructor maintains records of the student's attendance and submission of assignments throughout the semester. The student is expected to attend at least eighty percent (80%) of the **total** class meetings **and** submit at least eighty percent (80%) of the **total** class assignments to have the best chance of success. If the student fails to meet these minimum requirements, the instructor may remove the student from the class with an X, upon their discretion, to help the student from harming their GPA. If the student can not receive an X, the instructor will assign an F.

Plagiarism violations include, but are not limited to, the following:

1. Turning in a paper that has been purchased, borrowed, or downloaded from another student, an online term paper site, or a mail order term paper mill;
2. Cutting and pasting together information from books, articles, other papers, or online sites without providing proper documentation;
3. Using direct quotations (three or more words) from a source without showing them to be direct quotations and citing them; or
4. Missing in-text citations.

Cheating violations include, but are not limited to, the following:

1. Obtaining an examination by stealing or collusion;
2. Discovering the content of an examination before it is given;
3. Using an unauthorized source of information (notes, textbook, text messaging, internet, apps) during an examination, quiz, or homework assignment;
4. Entering an office or building to obtain an unfair advantage;
5. Taking an examination for another;
6. Altering grade records;
7. Copying another's work during an examination or on a homework assignment;

8. Rewriting another student's work in Peer Editing so that the writing is no longer the original student's;
9. Taking pictures of a test, test answers, or someone else's paper.

COVID Syllabus Statement: It is the policy of South Plains College that as a condition of on-campus enrollment, all students are required to engage in safe behaviors to avoid the spread of COVID-19 in the SPC community. There will be no requirement for face coverings at any location on any South Plains College campus or classroom. Faculty, staff, or students may continue to wear a mask voluntarily, but there will be no requirements for face coverings in any circumstance. Students who believe they have been exposed or may be COVID-19 positive, must contact Health Services, DeEtte Edens, BSN, RN at (806) 716-2376 or dedens@southplainscollege.edu.

Student Code of Conduct Policy: Any successful learning experience requires mutual respect on the part of the student and the instructor. Neither instructor nor student should be subject to others' behavior that is rude, disruptive, intimidating, aggressive, or demeaning. Student conduct that disrupts the learning process or is deemed disrespectful or threatening shall not be tolerated and may lead to disciplinary action and/or removal from class.

Diversity Statement: In this class, the teacher will establish and support an environment that values and nurtures individual and group differences and encourages engagement and interaction. Understanding and respecting multiple experiences and perspectives will serve to challenge and stimulate all of us to learn about others, about the larger world and about ourselves. By promoting diversity and intellectual exchange, we will not only mirror society as it is, but also model society as it should and can be.

Disability Statement: Students with disabilities, including but not limited to physical, psychiatric, or learning disabilities, who wish to request accommodations in this class should notify the Disability Services Office early in the semester so that the appropriate arrangements may be made. In accordance with federal law, a student requesting accommodations must provide acceptable documentation of his/her disability to the Disability Services Office. For more information, call or visit the Disability Services Office at Levelland (Student Health & Wellness Office) 806-716-2577, Reese Center (Building 8) 806-716-4675, or Plainview Center (Main Office) 806-716-4302 or 806-296-9611.

Nondiscrimination Policy: South Plains College does not discriminate on the basis of race, color, national origin, sex, disability or age in its programs and activities. The following person has been designated to handle inquiries regarding the non-discrimination policies: Vice President for Student Affairs, South Plains College, 1401 College Avenue, Box 5, Levelland, TX 79336. Phone number 806-716-2360.

Title IX Pregnancy Accommodations Statement: If you are pregnant, or have given birth within six months, Under Title IX you have a right to reasonable accommodations to help continue your education. To [activate](#) accommodations you must submit a Title IX pregnancy accommodations request, along with specific medical documentation, to the Director of Health and Wellness. Once approved, notification will be sent to the student and instructors. It is the student's responsibility to work with the instructor to arrange accommodations. Contact the Director of Health and Wellness at 806-716-2362 or [email rcanon@southplainscollege.edu](mailto:rcanon@southplainscollege.edu) for assistance.

Campus Concealed Carry: Texas Senate Bill - 11 (Government Code 411.2031, et al.) authorizes the carrying of a concealed handgun in South Plains College 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 South Plains College policy, license holders may not carry a concealed handgun in restricted locations. For a list of locations and Frequently Asked Questions, please refer to the Campus Carry page at: <http://www.southplainscollege.edu/campuscarry.php> Pursuant to PC 46.035, the open carrying of handguns is prohibited on all South Plains College campuses. Report violations to the College Police Department at 806-716-2396 or 9-1-1.

SPC Bookstore Price Match Guarantee Policy: If you find a lower price on a textbook, the South Plains College bookstore will match that price. The difference will be given to the student on a bookstore gift certificate! The gift certificate can be spent on anything in the store.

If students have already purchased textbooks and then find a better price later, the South Plains College bookstore will price match through the first week of the semester. The student must have a copy of the receipt and the book has to be in stock at the competition at the time of the price match.

The South Plains College bookstore will happily price match BN.com & books on Amazon noted as *ships from and sold by Amazon.com*. Online marketplaces such as *Other Sellers* on Amazon, Amazon's Warehouse Deals, *fulfilled by Amazon*, BN.com Marketplace, and peer-to-peer pricing are not eligible. They will price match the exact textbook, in the same edition and format, including all accompanying materials, like workbooks and CDs.

A textbook is only eligible for price match if it is in stock on a competitor's website at time of the price match request. Additional membership discounts and offers cannot be applied to the student's refund.

Price matching is only available on in-store purchases. Digital books, access codes sold via publisher sites, rentals and special orders are not eligible. Only one price match per title per customer is allowed.

Note: The instructor reserves the right to modify the course syllabus and policies, as well as notify students of any changes, at any point during the semester.

SPC Tutors

Tutoring is FREE for all currently enrolled students. Make an appointment or drop-in for help at any SPC location or online! Visit the link below to learn more about how to book an appointment, view the tutoring schedule, get to know the tutors, and view tutoring locations. <http://www.southplainscollege.edu/exploreprograms/artsandsciences/teacheredtutoring.php>

Tutor.com

You also have 180 FREE minutes of tutoring with tutor.com each week, and your hours reset every Monday morning. Log into Blackboard, click on the "Course Resources" link on the left-hand side to access "Tutor.com."

Time: Section 001: TR 9:30-12:00 PM (Tuesdays Face to Face, Thursdays Online)
Course Title: Programming Fundamentals 2
Instructor: Dr. Don Pathirage
Room: Levelland Math Building 125B
Phone: 806-716-2666 (email preferred)
Email: dpathirage@southplainscollege.edu

Office Hours:

| Mon (F2F) | Tues (F2F) | Weds (Online) | Thurs (Online) | Friday (Online) |
|---------------------------------|----------------------------------|---------------------------------|---------------------------------|---------------------------------|
| 12:15PM-1:00PM 3:00PM-4:00PM | 12:00PM-1:00PM 2:15PM -3:30PM | 12:15PM-1:00PM 3:00PM-4:00PM | 12:00PM-1:00PM 2:15PM-3:30PM | 12:00PM-1:00PM 5:00PM-6:00PM |

Or by appointment

Academic Conduct: You may discuss the lab and programming assignments with your classmates, but you must code, debug, and execute the projects on your own. Copying of another student's work or allowing your work to be copied is considered plagiarism and a failing grade for that assignment will be given to all parties involved. Cell phones **MUST** be turned off and put away during class and testing periods. Calculators will **NOT** be allowed during exams.

Assignment Policy: Current assignments and due dates will be announced in the class. **Students are expected to read the current chapter before coming to class.** During the scheduled lab, there will be lab exercises to complete and/or programming problems to start. (Programming problems will be finished on your own time). All assignments will be given a Due Date.

Lab exercises must be turned in by the due date; no late assignments will be accepted. **Lab attendance is required, and students are expected to stay for the full lab time. Your work schedule or any other schedules must not overlap with the class schedule.**

Grading Policy: There will be 3 major exams and a comprehensive final. No student will be exempt from the final. Your lab grade will be calculated from homework grades, in-class lab assignments, and programming assignments. Your final grade will be computed as follows:

| | |
|------------------|-----|
| Major Exams (3): | 50% |
| Final Exam: | 20% |
| Lab Grade: | 30% |

All tests will count towards the final grade, i.e. no exam grades will be "dropped". Only students that miss an exam due to a college-approved absence are eligible to take the makeup exam. If you miss an exam, it is your responsibility to contact me as soon as possible using email. If permission is granted for a makeup exam, I want it to be taken before the next class meeting. Missing an exam is a serious matter and it is up to the student to take the proper action, otherwise, a zero will be assigned as the exam grade.

Additional Course Objectives:

- To develop the ability to correctly analyze a variety of problems and generate appropriate algorithmic solutions.
- To introduce pointers and recursion.
- To introduce the concepts of object-oriented programming.
- To introduce data structures and abstract data types.
- To introduce C++ classes, member functions, and class operators.
- To gain further experience with the C++ programming language.

COSC1437 Fall 2021 Course Outline

This proposed schedule may change as the semester progresses! Always refer to announcements for exact dates.

| Week | Topics |
|------------------------------|--|
| 1 Aug 30 - Sep 3 | Review of C++ basic data types, control structures, arrays Chapter 9: Pointers, Addresses |
| 2 Sep 6 - Sep 10 | Chapter 9: Dynamic Memory Allocation Chapter 10: The string Class |
| 3 Sep 13 - Sep 17 | Chapter 13 Introduction to Classes, member functions |
| 4 Sep 20 - Sep 24 | Chapter 13 constructors, destructors Chapter 14: More About Classes, friends of classes |
| 5 Sep 27 - Oct 1 | Exam 1: (in-person - Room M125) (Chapters 9, 10 & 13) Chapter 14: copy constructors, and operator overloading |
| 6 Oct 4 - Oct 8 | Chapter 15: Inheritance. Base and derived classes. |
| 7 Oct 11 - Oct 15 | Chapter 15: polymorphism and virtual functions |
| 8 Oct 18 - Oct 22 | Chapter 16 Exceptions Chapter 16 Templates |
| 9 Oct 25 - Oct 29 | Chapter 17: STL, Vector Chapter 18 Linked Lists ADT |
| 10 Nov 1 - Nov 5 | Exam 2: (in-person - Room M125) (Chapters 14, 15 & 16) Chapter 18 Templated class, variations for linked lists |
| 11 Nov 8 - Nov 12 | Chapter 18: STL list Container Chapter 19 Stacks |
| 12 Nov 15 - Nov 19 | Chapter 19 Queues, STL containers Chapter 20: Recursion <i>Thurs 11/19 Last Drop Day</i> |
| 13 Nov 22 - Nov 26 | Exam 3 (Chapters 17, 18, & 19) <i>Wed 11/24 - 11/26 Thanksgiving Holiday</i> |
| 14 Nov 29 - Dec 3 | <i>Thurs 12/02 Last Drop Day</i> Chapter 20: Problem-solving with recursion |
| 15 Dec 6 - Dec 10 | Chapter 21 Binary Trees Chapter 21 Other structures. |
| 16 Dec 13 - Dec 17 | Final Exams: (in-person - Room M125) (Chapters 9, 10, 13, 14, 15, 16, 17, 18, 19, 20, 21) Thursday 12/16 8:00AM - 10:00PM |

This proposed schedule may change as the semester progresses! Always refer to announcements for exact dates.

Classroom Seating Arrangement:

