

South Plains College
Common Course Syllabus: COSC 1436

Department: Mathematics, Engineering, and Computer Science

Discipline: Computer Science

Course Number: COSC 1436

Course Title: Programming Fundamentals I

Available Formats: hybrid

Campuses: Levelland

Course Description: This course introduces the fundamental concepts of structured programming, and provides a comprehensive introduction to programming for computer science and technology majors. Topics include software development methodology, data types, control structures, functions, arrays, and the mechanics of running, testing, and debugging. This course assumes computer literacy. (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 1301

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. We will use the same book for COSC1437. You do NOT need to buy an online access card with this book.

Supplies: You must have access to a laptop or desktop where you can write programs. Microsoft Visual C++ Community 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 does not expire in 30 days. Install download from:
<https://visualstudio.microsoft.com/downloads/>

You must be able to store your projects so that they are accessible from anywhere. It is recommended that you purchase a USB flash drive to bring to class. You will be able to use this drive for future computer science classes as well. It is recommended that you back up your files on this drive to a home computer or other media.

We will use Turingscraft CodeLab online software for lab assignments. Access to this website must be purchased for \$25: <https://www.turingscraft.com/>

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. Describe how data are represented, manipulated, and stored in a computer.
2. Categorize different programming languages and their uses.
3. Understand and use the fundamental concepts of data types, structured programming, algorithmic design, and user interface design.
4. Demonstrate a fundamental understanding of software development methodologies, including modular design, pseudo code, flowcharting, structure charts, data types, control structures, functions, and arrays.
5. Develop projects that utilize logical algorithms from specifications and requirements statements.
6. Demonstrate appropriate design, coding, testing, and documenting of computer programs that implement project specifications and requirements.
7. Apply computer programming concepts to new problems or situations.

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.

Student Code of Conduct Policy: Any successful learning experience requires mutual respect from the student and the instructor. Neither the instructor nor the student should be subject to others' rude, disruptive, intimidating, aggressive, or demeaning behavior. 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.

South Plains College policies concerning diversity, disabilities, non-discrimination, Title IX Pregnancy Accommodations, and Campus Concealed Carry Statements can be found here: <https://www.southplainscollege.edu/syllabusstatements/>.

South Plains College policies, return to campus plan, and protocols regarding COVID-19 can be found here: <https://www.southplainscollege.edu/emergency/covid19-faq.php>.

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 the 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."

Instructor Course Information: Fall 2023

Time: Section 001: M/W 9:30 AM - 12:00 PM (Mondays Face to Face, Wednesdays Online)

Course Title: Programming Fundamentals 1

Instructor: Don Pathirage, Ph.D.

Room: Levelland Math Building 125B

Email: dpathirage@southplainscollege.edu

Office Hours:

Mon (F2F)	Tues (F2F)	Weds (Online)	Thurs (Online)	Friday (Online)
12:00PM-1:00PM	12:00PM-1:00PM 3:45PM -5:00PM	12:00PM-1:00PM	12:00PM-1:00PM 3:45PM-5:00PM	12:00PM-1:30PM 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 during the lab. (CodeLab assignments can be finished on your own time). All assignments will be given a Due Date.

All assignments will be given a Due Date. Assignments turned in late will have 10 points deducted for each day and will be accepted **no later** than three days past the due date. **Lab attendance is required, and students are expected to stay for the full lab time. Your work schedule or any other schedule must not overlap with the class schedule.**

Grading Policy: There will be 3 major exams and a comprehensive final. All exams **must** be taken in person. No student will be exempt from the final. Your lab grade will be calculated from CodeLab 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 will 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.

When **emailing** put your course number and section number in the subject line: ex: COSC1436-001: the reason for the contact.

Additional Course Objectives:

- To develop the ability to correctly analyze a variety of problems and generate appropriate algorithmic solutions.
- To instill the principles of top-down, structured design when using the procedural programming paradigm.
- To understand the basics of computer hardware and the steps of software development.
- To understand how computers represent and store data.
- To produce programs that use conditional execution structures, iteration structures, and functions.
- To produce programs that use appropriate data types: simple variables, structures, arrays, strings, and multidimensional arrays.
- To explore the syntax and usage of the C++ programming language as a means of accomplishing the above objectives.

COSC1436 Fall 2023 Course Outline

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

Week Start date	Topics
1 Aug 28 - Sep 01	Chapter 1 Intro to Computers and Programming.
2 Sep 04 - Sep 08	<i>Mon 09/04 Labor Day Holiday.</i> Chapter 2 Intro to C++
3 Sep 11 - Sep 15	Chapter 2 Data Types and Arithmetic Operators. Chapter 3 Input, Mathematical Expressions, Type Casting, and Assignment.
4 Sep 18 - Sep 22	Chapter 3 Formatting Output Chapter 3 Library Function Calls
5 Sep 25 - Sep 29	Chapter 4 Conditions, Logical Expressions Chapter 4 If statements
6 Oct 02 - Oct 06	Exam 1 (in-person: Room M125) Chapter 4 Nested If statements, Switch statements
7 Oct 09 - Oct 13	Chapter 5 Looping Chapter 5 Nested Logic and Looping
8 Oct 16 - Oct 20	Chapter 5 Iteration, file input, and output.
9 Oct 23 - Oct 27	Exam 2 (in-person - Room M125) Chapter 6 Functions and Parameters.
10 Oct 30 - Nov 03	Chapter 6 Scope and Lifetime, Value-returning functions, Random number generator.
11 Nov 06 - Nov 10	Chapter 7 Arrays: One-dimensional arrays Chapter 7 Passing arrays as parameters
12 Nov 13 - Nov 17	Exam 3 (in-person - Room M125) Chapter 8 Sorting Algorithms for Arrays
13 Nov 20 - Nov 24	Chapter 8 Searching algorithms for arrays. <i>Wed 11/22 – 11/24 Thanksgiving holiday.</i>
14 Nov 27 - Dec 01	Two-Dimensional arrays, three or more dimensions <i>Thurs 11/30 Last Drop Day</i>
15 Dec 04 - Dec 08	Chapter 11 Abstract Data Types Arrays of Structures and Variations
16 Dec 11 - Dec 08	Final Exams: (in-person: Room M125) December 13 – 8:00 a.m.-10:00 a.m.

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