COMPUTER SCIENCE

Session: Fall 2019

Course Code:	CS 2433	**Course Name:**	C/C++ Programming
Lecture:	Tu & Th: 02:00pm - 03:15pm	**Room No:**	108, MSCS Building

INSTRUCTOR		TA	
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Why Learn C/C++?

The C language has formed the basis for many languages including C++, Java, JavaScript, Go, Rust, Limbo, LPC, C#, PHP, Python, Perl, Verilog, C-shell, etc. However, learning C/C++ is still an asset to a programmer, for several reasons:

- C/C++ are middle level languages, combine features of high-level and low-level languages.
    - Can be used for low-level programming, such as scripting for drivers and kernels.
    - Supports functions of high-level programming languages, such as scripting for software applications.
- C/C++ are structured programming languages which allows a complex program to be broken into simpler programs.
- C/C++ are highly portable languages and is often the language of choice for multi-device, multi-platform app development.
- C/C++ have a rich function library.
- C/C++ are powerful, efficient and fast languages, that finds a wide range of applications:
    - GUI applications to 3D graphics for games to real-time mathematical simulations.
- C/C++ have stood the test of time. There are billions of lines of C/C++ out there running in many of the software / applications.
- C/C++ in particular are used frequently for embedded devices.

Course Objectives:

Some of the main objectives of the course are as follows:

- Develop a basic understanding of the programming environment.
- Improve programming skills of the students.
- Allow students to design, write and implement programs in C/C++.
- Give students a basic understanding of Object-Oriented Programming.

Course Outcomes:

By the end of the course, the students will be able to:
- Write good C/C++ code.
- Use good programming style for writing code in C/C++.
- Design C/C++ programming solutions to problems.
- Acquire basic understanding of algorithms.

Assignments:

Zybooks Activities	300 pts
Programming Assignments	300 pts
Mid-term	200 pts
Final Exam	200 pts

Programming assignments are one of the important components of your final grade for this course. The reason is simple: you learn a programming language best by using it. These assignments should be accomplished using the zylabs or the departmental csx server.

Exams:

There will be two midterm exams during the semester at the normal lecture time. There will also be a final exam during finals week; All of these exams will be held in the lecture hall.

Evaluation:

The grade will depend solely on the effort in earning the required points, with grades assigned on the following scale.

A: >= 90%	B: >= 80% and <90%	C: >= 70% and < 80%	D: >= 60% and < 70%	F: < 60%

Student Expectations:

To do well in the class, students are expected to
- Keep up with the zyBooks material, including the programming tasks on that site.
- Read or view the instructional material posted to Canvas frequently.
- Ask for help if any of the material covered in class is not clear.
- Complete the programming assignments and submit them before their deadlines.
- Regularly check e-mails and course website for announcements.

Academic Workload Policy:

Students should expect this class to be more challenging and take a lot of effort. The typical rule of thumb is that you should expect to spend 2-3 hours outside of class for every hour in class. This means that in addition to attending class, you should plan to spend 6-9 hours per week on average reading, doing homework and other assignments, writing programs, etc.

E-mail Policy:

E-mail is the preferred communication medium. Use *"CS 2433"* as the start of the subject/title for all e-mail communications.

Penalties for late work:

10% penalty of available points per day late. However, you cannot receive negative points for an assignment. No make-up exams will be scheduled except in extreme cases. If you are going to miss an exam or assignment, contact the instructor in advance. Exceptions can be made if a serious family or personal emergency arises.

Grade questions:

If you have any questions regarding the grading of your programming assignments or exams, you must contact the instructor within **ONE week** after the date the deliverable was graded and posted on the course website.

Incomplete:

An Incomplete will not be given, except if a serious family or personal emergency arises. A written excuse with a legitimately verifiable reason must be provided in order to receive an Incomplete.

Academic Dishonesty:

Scholastic conduct must be acceptable, that is, students are expected to do their own work. Discussion of homework assignments is encouraged, but students must work independently on their program submissions. Sharing of code is strictly forbidden. Violations of academic integrity rules will result in significant punishments, up to and including a final course grade of an F! (F-shriek, indicating an academic integrity violation on your permanent transcript).

Textbook:

In this particular course an online textbook and assignment system, called zybooks will be used. Most of the assignments and programs will be covered through zybooks and zylabs, so it is must to subscribe on zybooks. Following steps is to be followed for completing the registration:

1. Sign in or create an account at learn.zybooks.com
2. Enter zybook code: OKSTATECS2433JainFall2019
3. Subscribe:
    a. Subscription cost is $77.
    b. Students may begin subscribing on Aug 05, 2019.
    c. The cutoff to subscribe is Dec 04, 2019.
    d. Subscriptions will last until Jan 03, 2020.

Additional Reading (Optional):
- *The C Programming Language, Second Edition, by Kernigan and Ritchie.*
- *C Primer Plus, Sixth Edition, Stephen Prata.*
- *Programming: Principles and Practice Using C++, Second Edition, by Bjarne Stroustrup.*
- *Absolute C++, Sixth Edition, by Walter Savitch.*
- *Professional C++, Fourth Edition, by Marc Gregoire.*
- *Practical C++ Programming, Second Edition, by Steve Oualline.*

Additional Online Resources:

- http://www.cplusplus.com , http://www.cplusplus.com/reference/
- Bjarne Stroustrup's page on C++: http://www.stroustrup.com/C++.html.
- Tutorial topics in C++: http://www.learncpp.com.html.
- Video tutorials: https://www.youtube.com/playlist?list=PLAE85DE8440AA6B83.
- Notes on Object-oriented design: https://en.wikipedia.org/wiki/Object-oriented_design.

Course Website:

OSU has switched to Canvas for all online material in all courses. Canvas is accessible via https://my.okstate.edu, https://canvas.okstate.edu. Once you are logged into the site, go to the Applications area and look for a link to Canvas. All course materials except the online textbook and its related material plus the department's csx server, will be available on the course Canvas pages for this course.

Useful Software:

- **Bloodshed Dev-C++ IDE (http://www.bloodshed.net/devcpp.html)**. **(Recommended)**
- jEdit (http://jedit.org/index.php?page=download), a powerful text.
- Code Blocks (http://www.codeblocks.org/) - a lightweight IDE.
- The atom editor (https://atom.io) - a good free code editor.
- Notepad++ (http://notepad-plus-plus.org) - a lightweight text editor for Windows.

Tentative Schedule:

SN	Date	Reading	Topic	Assignment
1	08/20/19	Chapter-1	Overview of Zybooks and Zylabs	
2	08/22/19		Introduction to C/C++	Homework-1
3	08/27/19	Chapter-2	Variables / Assignments – Part-1	
4	08/29/19		Variables / Assignments– Part-2	Homework-2
5	09/03/19	Chapter-3	Branches– Part-1	
6	09/05/19		Branches– Part-2	Homework-3
7	09/10/19	Chapter-4	Loops	Homework-4
8	09/12/19	Mid Term Exam-1		
9	09/17/19	Chapter-5	Arrays / Vectors– Part-1	
10	09/19/19		Arrays / Vectors– Part-2	Homework-5
11	09/24/19	Chapter-6	User-Defined Functions– Part-1	
12	09/26/19		User-Defined Functions– Part-2	Homework-6
13	10/01/19	Chapter-7	Objects and Classes– Part-1	
14	10/03/19		Objects and Classes– Part-2	Homework-7
15	10/08/19	Chapter-8	Pointers– Part-1	
16	10/10/19		Pointers– Part-2	Homework-8
17	10/15/19	Chapter-9	Streams– Part-1	
18	10/17/19		Streams– Part-2	Homework-9
19	10/22/19	Chapter-10	Inheritance– Part-1	
20	10/24/19		Inheritance– Part-2	Homework-10
21	10/29/19	Mid Term Exam-2		
22	10/31/19	Chapter-11	Recursion	Homework-11
23	11/05/19	Chapter-12	Exceptions– Part-1	
24	11/07/19		Exceptions– Part-2	Homework-12
25	11/12/19	Chapter-13	Templates– Part-1	
26	11/14/19		Templates– Part-2	Homework-13
27	11/19/19	Chapter-14	Containers– Part-1	
28	11/21/19		Containers– Part-2	Homework-14
29	11/26/19	Chapter-15	Searching & Sorting Algorithms– Part-1	Homework-15
30	11/28/19	Thanks Giving Day		
31	12/03/19	Chapter-15	Searching & Sorting Algorithms– Part-2	
32	12/05/19	Chapter-16	Command Line Arguments	