

 <b>FLORIDA ATLANTIC UNIVERSITY</b>	<b>NEW COURSE PROPOSAL</b> <b>Undergraduate Programs</b>		UUPC Approval <u>3/25/24</u> UFS Approval _____ SCNS Submittal _____ Confirmed _____ Banner Posted _____ Catalog _____
	<b>Department</b> Electrical Engineering and Computer Science <b>College</b> Engineering and Computer Science <i>(To obtain a course number, contact <a href="mailto:erudolph@fau.edu">erudolph@fau.edu</a>)</i>		
<b>Prefix</b> COP  <b>Number</b> 3274	<i>(L = Lab Course; C = Combined Lecture/Lab; add if appropriate)</i>  <b>Lab Code</b> C	<b>Type of Course</b> <div style="border: 1px solid red; padding: 2px;">Lecture/Lab</div>	<b>Course Title</b> Systems Programming with C++
<b>Credits</b> <i>(See Definition of a Credit Hour)</i> 3	<b>Grading</b> <i>(Select One Option)</i> <b>Regular</b> <input checked="" type="radio"/> <b>Sat/UnSat</b> <input type="radio"/>	<b>Course Description</b> <i>(Syllabus must be attached; see <a href="#">Template</a> and <a href="#">Guidelines</a>)</i> This course builds on the foundations of programming skills, with an introduction to C++, machine characteristics and low-level data representation, memory management, modern libraries and language features, Linux system, interacting with operating-system services, and introduction to concurrent programming.	
<b>Effective Date</b> <i>(TERM &amp; YEAR)</i> Fall 2024	<b>Prerequisites, with minimum grade*</b> COP 2220C or COP 3035C with a minimum grade of C		<b>Corequisites</b> CEN 3062C
		<b>Registration Controls</b> <i>(Major, College, Level)</i>	
<b>*Default minimum passing grade is D-. Prereqs., Coreqs. &amp; Reg. Controls are enforced for all sections of course</b>			
<b>WAC/Gordon Rule Course</b> <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No  WAC/Gordon Rule criteria must be indicated in syllabus and approval attached to proposal. See <a href="#">WAC Guidelines</a> .		<b>Intellectual Foundations Program (General Education) Requirement</b> <i>(Select One Option)</i>  None  General Education criteria must be indicated in the syllabus and approval attached to the proposal. See <a href="#">Intellectual Foundations Guidelines</a> .	
<b>Minimum qualifications to teach course</b> Masters in Computer Science or a related field			
<b>Faculty Contact/Email/Phone</b> Michael DeGiorgio / mdegior@fau.edu / 7-0003		<b>List/Attach comments from departments affected by new course</b>	
<b>Approved by</b> Department Chair <u>Hari Kdva</u> College Curriculum Chair <u>Hongbo Su</u> College Dean <u>[Signature]</u> UUPC Chair <u>Korey Sorge</u> Undergraduate Studies Dean <u>Dan Meeroff</u> UFS President _____ Provost _____			<b>Date</b> <u>3/11/2024</u> <u>3/14/24</u> <u>3/14/24</u> <u>3/25/24</u> <u>3/25/24</u> _____ _____

Email this form and syllabus to [mjenning@fau.edu](mailto:mjenning@fau.edu) seven business days before the UUPC meeting.



## FLORIDA ATLANTIC UNIVERSITY

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**CAP 3274C**  
**Systems Programming with C++**  
Date:  
Building: Room:  
**3 Credit(s)**

### Instructor Information

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TBD

**Email:**

**Office:**

**Office Hours:**

**Phone:**

**TA Name:** TBD, Will be announced on Canvas when details become available

**Office:**

**Office Hours:**

**Telephone: Email:**

### Course Description

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This course builds on the foundations of programming skills, with an introduction to C++, machine characteristics and low-level data representation, memory management, modern libraries and language features, Linux system, interacting with operating-system services, and introduction to concurrent programming.

### Prerequisites

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COP 2220C or COP 3035C with a minimum grade of C

## Corequisites

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CEN 3062C

## Instructional Method

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### In-Person

This course may be offered in in-person, hybrid, or fully online modes

## Required Texts/Materials

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Tour of C++, A (C++ In-Depth Series) 3rd Edition by Bjarne Stroustrup.

## Course Objectives/Student Learning Outcomes

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At the end of this course, students should be able to:

- Write C/C++ code using pointers and explicit memory allocations;
- Debug C/C++ programs;
- Read and write basic Makefiles;
- Explain the process of making a system call;
- Write programs that interact with files, directories, and the network using the POSIX library;
- Write multi-threaded programs;

## Faculty Rights and Responsibilities

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Florida Atlantic University respects the rights of instructors to teach and students to learn. Maintenance of these rights requires classroom conditions that do not impede their exercise. To ensure these rights, faculty members have the prerogative to:

- Establish and implement academic standards.
- Establish and enforce reasonable behavior standards in each class.
- Recommend disciplinary action for students whose behavior may be judged as disruptive under the Student Code of Conduct [University Regulation 4.007](#).

## Disability Policy

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In compliance with the Americans with Disabilities Act Amendments Act (ADAAA), students who require reasonable accommodations due to a disability to properly execute coursework must register

with Student Accessibility Services (SAS) and follow all SAS procedures. SAS has offices across three of FAU's campuses – Boca Raton, Davie and Jupiter – however disability services are available for students on all campuses. For more information, please visit the SAS website at [www.fau.edu/sas/](http://www.fau.edu/sas/).

## **Course Evaluation Method**

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Your grade in the class will be broken into the following components:

- **Lab Exercises:** 20%
- **Homework:** 40%
- **Midterm Exam:** 20%
- **Final Exam:** 20%

## **Code of Academic Integrity**

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Students at Florida Atlantic University are expected to maintain the highest ethical standards. Academic dishonesty is considered a serious breach of these ethical standards, because it interferes with the university mission to provide a high quality education in which no student enjoys an unfair advantage over any other. Academic dishonesty is also destructive of the university community, which is grounded in a system of mutual trust and places high value on personal integrity and individual responsibility. Harsh penalties are associated with academic dishonesty. For more information, see [University Regulation 4.001](#).

## **Attendance Policy Statement**

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Students are expected to attend all their scheduled University classes and to satisfy all academic objectives as outlined by the instructor. The effect of absences upon grades is determined by the instructor, and the University reserves the right to deal at any time with individual cases of non-attendance. Students are responsible for arranging to make up work missed because of legitimate class absence, such as illness, family emergencies, military obligation, court-imposed legal obligations, or participation in University-approved activities. Examples of University-approved reasons for absences include participating on an athletic or scholastic team, musical and theatrical performances, and debate activities. It is the student's responsibility to give the instructor notice prior to any anticipated absences and within a reasonable amount of time after an unanticipated absence, ordinarily by the next scheduled class meeting. Instructors must allow each student who is absent for a University-approved reason the opportunity to make up work missed without any reduction in the student's final course grade as a direct result of such absence.

## **Religious Accommodation Policy Statement**

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In accordance with the rules of the Florida Board of Education and Florida law, students have the right to reasonable accommodations from the University in order to observe religious practices and beliefs regarding admissions, registration, class attendance, and the scheduling of examinations and work assignments. University Regulation 2.007, Religious Observances, sets forth this policy for FAU and may be accessed on the FAU website at [www.fau.edu/regulations](http://www.fau.edu/regulations).

Any student who feels aggrieved regarding religious accommodations may present a grievance to the executive director of The Office of Civil Rights and Title IX. Any such grievances will follow Florida Atlantic University's established grievance procedure regarding alleged discrimination.

## **Time Commitment Per Credit Hour**

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For traditionally delivered courses, not less than one (1) hour of classroom or direct faculty instruction each week for fifteen (15) weeks per Fall or Spring semester, and a minimum of two (2) hours of out-of-class student work for each credit hour. Equivalent time and effort are required for Summer Semesters, which usually have a shortened timeframe. Fully Online courses, hybrid, shortened, intensive format courses, and other non-traditional modes of delivery will demonstrate equivalent time and effort.

## **Course Grading Scale**

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<b>Letter Grade</b>	<b>Letter Grade</b>
A	94 - 100%
A-	90 - 93%
B+	87 - 89%
B	83 - 86%
B-	80 - 82%
C+	77 - 79%
C	73 - 76%
C-	70 - 72%
D+	67 - 69%
D	63 - 66%
D-	60 - 62%

Letter Grade	Letter Grade
F	Below 60

## Grade Appeal Process

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You may request a review of the final course grade when you believe that one of the following conditions apply:

- There was a computational or recording error in the grading.
- The grading process used non-academic criteria.
- There was a gross violation of the instructor's own grading system.

[University Regulation 4.002](#) of the University Regulations contains information on the grade appeals process

## Policy on Make-up Tests, Late work, and Incompletes

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Late submissions will not be accepted or graded.

No makeup exams will be offered.

Throughout the semester, multiple homework assignments will be posted via Canvas. For each homework assignment, you will have about a week to complete and submit your solution via Canvas. Allow enough time to submit your work since once the system is closed there will not be other possibilities to submit (don't send your work via email). Please note that the due date for homework assignments will not be updated after the assignment is posted.

## Policy on the Recording of Lectures

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Students enrolled in this course may record video or audio of class lectures for their own personal educational use. A class lecture is defined as a formal or methodical oral presentation as part of a university course intended to present information or teach students about a particular subject. Recording class activities other than class lectures, including but not limited to student presentations (whether individually or as part of a group), class discussion (except when incidental to and incorporated within a class lecture), labs, clinical presentations such as patient history, academic exercises involving student participation, test or examination administrations, field trips, and private conversations between students in the class or between a student and the lecturer, is prohibited. Recordings may not be used as a substitute for class participation or class attendance and may not

be published or shared without the written consent of the faculty member. Failure to adhere to these requirements may constitute a violation of the University's Student Code of Conduct and/or the Code of Academic Integrity.

## **Counseling and Psychological Services (CAPS) Center**

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Life as a university student can be challenging physically, mentally and emotionally. Students who find stress negatively affecting their ability to achieve academic or personal goals may wish to consider utilizing FAU's Counseling and Psychological Services (CAPS) Center. CAPS provides FAU students a range of services – individual counseling, support meetings, and psychiatric services, to name a few – offered to help improve and maintain emotional well-being. For more information, go to <http://www.fau.edu/counseling/>

## **Student Support Services and Online Resources**

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- [Center for Learning and Student Success \(CLASS\)](#)
- [Counseling and Psychological Services \(CAPS\)](#)
- [FAU Libraries](#)
- [Math Learning Center](#)
- [Office of Information Technology Helpdesk](#)
- [Center for Global Engagement](#)
- [Office of Undergraduate Research and Inquiry \(OURI\)](#)
- [Science Learning Center](#)
- [Speaking Center](#)
- [Student Accessibility Services](#)
- [Student Athlete Success Center \(SASC\)](#)
- [Testing and Certification](#)
- [Test Preparation](#)
- [University Academic Advising Services](#)
- [University Center for Excellence in Writing \(UCEW\)](#)
- [Writing Across the Curriculum \(WAC\)](#)

## **Course Topical Outline**

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1. C basics, basic program formatting/documentation standards

2. Basic machine architecture and terminology: compilation, linking, RAM, OS, etc.
3. C++ I/O, simple classes (private and public) and types
4. Class design and implementation
5. Dynamic memory allocation (new/delete), classes with dynamic data
6. Classes and inheritance in C++; overloading, overriding
7. C++ templates and STL
8. Smart pointers
9. Tools for compiling, debugging, building, and performance evaluation
10. Linux and systems calls
11. Memory management and system interface
12. File I/O
13. Concurrency, asynchronous I/O
14. Sockets and Network interfaces