C/C++ Programming
Specialized Certificate

UC San Diego | EXTENSION

What is C/C++ Programming?

C and C++ are very powerful languages often used for operating systems, desktop applications, computer games and graphics, financial industry computation software, signal processing, encryption/decryption., embedded applications, and just about anything else requiring speed and efficiency.

Program Overview

The certificate covers the C and C++ languages and covers all important aspects of both, including how C++ adds object-oriented programming capabilities to traditional C. Upon successful completion of the program participants will receive a Specialized Certificate in C/C++ programming and acquire hands-on experience applying the core concepts and techniques they need in the world of programming.

Program Audience

Strong skills in both C and C++ languages are necessary for those seeking to become high-level program developers in areas including:

- Operating systems
- Security and encryption
- Office applications
- Games and other graphics applications
- Signal processing
- Embedded environments
- Time-critical/computation-intensive applications
- Software testing and integration
- General software development

Program Details

Prerequisites

The first core course, C/C++ Programming I: Fundamental Programming Concepts requires either the completion of Introduction to Programming or equivalent programming knowledge. Prospective students must also be familiar with

such elementary concepts as variables, constants, arithmetic operations, and logical problem solving before beginning the required courses. All required courses are designed to be taken sequentially and must be taken in the order shown on the course matrix.

The prerequisite is not required in order to complete the certificate. However, it serves as a guideline to students as to the level of knowledge required for students enrolling into the first required course in this program. Those with little to no programming experience must take the Introduction to Programming course prior to enrolling in C/C++ Programming I: Fundamental Programming Concepts. Those who wish to skip the prerequisite may do so without a department waiver. Please email infotech@ucsd.edu if you would like to see the syllabus of the prerequisite course.

Length
Most students complete the program in one year or just over one year by taking on course per quarter for four or five consecutive quarters. You have up to five years to complete all requirements for the certificate.

Cost
Each class is currently $675. The total cost of the program is $3,470, which includes the $95 certificate fee. If the "Introduction to Programming" course is waivered, the cost of the program is $2,795. Please note that all fees are subject to change and do not include books.

Requirements
There are four required courses in the C/C++ Programming certificate program. You must take the program courses in the order listed in the chart below, which shows when and in what format courses are offered.

- Those with little to no programming experience must take the Introduction to Programming course prior to enrolling in C/C++ Programming I: Fundamental Programming Concepts. Those who wish to skip the prerequisite, because they have programming experience, may do so without a department waiver.

Course Title	Course No.	Units	Course Offered			
			Fall	Winter	Spring	Summer
Prerequisite Course						
Introduction to Programming	CSE-40028	3.0	Online	Online	Online	Online
Required Courses						
C/C++ Programming I: Fundamental Programming Concepts	CSE-40475	3.0	In-class	Online	Online	Online
C/C++ Programming II: Dynamic Memory and File I/) Concepts	CSE-40476	3.0	Online	In-class	Online	Online
C/C++ Programming III: Intermediate Programming with Objects	CSE-40477	3.0	Online		In-class	Online
C/C++ Programming IV: Advanced Programming with Objects	CSE-40478	3.0	Online	Online		In-class

Electives
There are no elective courses in this program.

Frequently Asked Questions

About the Certificate

How do I apply to the certificate Program?
STEP 1: If you have a My Extension account, skip to Step 2. If you do not have a My Extension account, go to myextension.ucsd.edu, click "Create an account" on the right side of the page, and follow the instructions to create an account. Once you have a My Extension account, continue to Step 2.

STEP 2: Click on the "Apply Now" button on the certificate page. Complete the required fields on the application. Then click Save Your Work button. Once you have saved the application, the "Submit" button will appear. Click the "Submit" button to submit your application for review and consideration. Once submitted, your application cannot be changed. You can track the progress of your application at My Extension.

Is there an application fee for the certificate program?
Current application or certificate fees, if any, are listed under the "Apply Now" button on the certificate page on our website.

Is this program in-class or online?
The courses alternate between in-class and online offerings per quarter. All in-class courses use a blended approach, meaning that they combine face-to-face classroom methods with computer-mediated learning activities. For online classes, all assignments and test/quizzes are completed online and submitted through Blackboard, our online learning platform.

Can the prerequisite be waived if I have taken a programming course elsewhere or have equivalent working knowledge?
The prerequisite is not required in order to complete the certificate. However, it serves as a guideline to students as to the level of knowledge required for students enrolling into the first required course in this program. Those with little to no programming experience must take the Introduction to Programming course prior to enrolling in C/C++ Programming I: Fundamental Programming Concepts. Those who wish to skip the prerequisite may do so without a department waiver. Please email infotech@ucsd.edu if you would like to see the syllabus of the prerequisite course.

Is financial aid available?
- UCSD Extension offers continuing education loans through UC Approved Lenders. Each institution offers low competitive interest rates and flexible payment options. You are also encouraged to contact your personal financial institution about possible lending solutions. Direct links to UC Approved Lenders can be found can be found on our website's Financial Resources page. The Employment Development Department (EDD) provides a comprehensive range of employment and training services in partnership with state and local agencies/organizations. More information is available on their website at edd.ca.gov.
- Career Centers Located throughout San Diego County offer their communities comprehensive employment and training services benefiting both business and job seekers. More information is available on their website at workforce.org.
- Please click here for information about Veteran's Benefits.
- Free Application for Federal Student Aid (FAFSA) funds are limited to degree programs only, and cannot be used for courses or certificate fees at UCSD Extension.

Is this certificate program open to non-California residents?
Yes, the program is open to non-California residents, including non-US residents. The tuition is the same for all students. If you have questions about how enrolling in courses may or may not affect your visa status, please contact our International Department at ipinfo@ucsd.edu or (858) 534-6784.

If I work full-time, will I still be able to complete this program?
Yes. Our programs are designed to be working-student friendly and most of our students are working professionals. The courses are typically three units, which amounts to approximately 27-30 hours of class time.

Will I get any hands-on experience in the program?
Most courses combine theory with hands-on exercises.

Is the program accredited?
UC San Diego is accredited by the Western Association of Schools and Colleges (WASC). UC San Diego Extension — like all other UC San Diego schools, colleges, and departments — is accredited by WASC through the University. All courses and certificate programs offered by UC San Diego Extension have been developed and are administered in accordance with Extension policy and the regulations of the Academic Senate of the University of California.

Will this program prepare me for a certification exam?
This program is not aligned with any one certification exam. Our programs are designed to provide students with knowledge that will make them valuable in the workforce.

Do you provide job or internship placement?
No, we do not currently offer job placement assistance, internships, or career services assistance.

About the Courses

When does course enrollment open for each quarter?
Our classes post to our website and become open for enrollment approximately two months prior to the new quarter starting. If you would like to get an email reminder you can sign up for our newsletter(s) in My Extension, under the "Preferences" tab.

When should I enroll in a course?
We recommend enrolling as soon as possible, as occasionally classes will reach capacity.

Once I have enrolled in a course, when will I get online access to it?
If you have enrolled at least three days before the course begins, you will have access starting on the first day of class. You should receive an email from Student Services with instructions for how to login to the course. If you have enrolled on or after the start date of the course, you will have access to the course within one business day.

How are the online courses formatted?
The online courses are asynchronous. They have a start and end date but all the lessons are uploaded on Blackboard, our online learning management system, so that you can learn at your own pace. However, please be aware that you may have weekly assignments, quizzes and/or tests that are due on specific dates. Please click here to take a sample course tour to see if this format suits your learning style (click on the words Take a Course Tour in the upper right-hand corner of the page). You should also click on the grey student tab and then select getting started for a more in-depth view of our online Blackboard system.

For online courses, will I ever need to attend in person?
The online courses in this program are offered entirely online. All course requirements, including lectures, tests, quizzes, and assignments will be completed online. You will not be required to attend in person.

What if I am having trouble with Blackboard or My Extension?
Please contact Student Services at (858) 534-3400 or unex-reg@ucsd.edu if you experience any issues logging in to any of our systems.

When does enrollment for a course close?
Enrollment in a course may be closed for one or more of the following reasons:

- The course is at capacity. If the course is at capacity you will only be able to join the waitlist. If space becomes available in the course, students on the waitlist are contacted in the order they joined the waitlist.
- The course has progressed to a point where students will no longer be able to make-up missed work and be successful in the course.
- The course is cancelled due to low enrollments.

For all three of these reasons we recommend students enroll early in their courses of interest.

When is the refund deadline for courses?
The refund deadline for courses in this program is typically one week after the start of the course. This allows you to enroll in a course and participate in the course for approximately one week to determine if the course is a good fit. Then, if needed, either you may either transfer your enrollment to a different course or submit a drop request. The exact refund deadline for each section is listed in the section notes.

What are the grading options for courses?
You can take courses for one of three options: Letter Grade, Pass/No Pass, or Not for Credit. If you are taking a course towards a certificate you *must* complete your courses for credit (i.e. Pass/No Pass or Letter Grade) and receive a C-/Pass or higher grade. Grades below a C-, No Pass, and Not for Credit will *not* count towards certificate requirements.

How will I receive my final grade?
Once the course is completed, the instructor has 10 working days to submit your grades. After the grades have been posted, you can view and print them via My Extension, your online education management portal. Please contact Student Services at 858-534-3400 or unex-reg@ucsd.edu if you experience any issues with logging in.

What kind of credit do I earn?
The courses in this program are post-baccalaureate, professional-level, credit bearing courses. Credit earned in these courses may lead to the award of a formal certificate by UC San Diego Extension or may be applied toward an academic degree or professional credential, *subject to the approval of the receiving institution*.

If you wish to transfer credit, it is your responsibility to confer with the receiving institution before enrolling, as each individual academic institution decides whether or not to accept Extension's credits.

Are courses transferrable?
UC San Diego Extension is not a degree granting institution, however many UC San Diego Extension courses can be transferred to other colleges or universities. The transferability of credit is determined solely by the *receiving* institution. You should discuss how your individual courses will transfer with the Office of the Registrar at the receiving institution *prior to enrolling*.

Can I take a course without registering for the certificate?
Yes, you may take any course in this program without registering for the certificate, provided you have fulfilled any and all prerequisites for the course.

How long is each course?
Three unit courses run for approximately 8-10 weeks. For exact course dates of upcoming sections, visit the webpage of the course you are interested in taking on our website.

When is each course offered?
Please visit the course page on our website to see when courses are typically offered. You can also see a full program schedule by clicking on the "View Schedule" button under the "Courses" section on the certificate page or on page 2 of this document.

How can I get more information on the specific courses?
Please email unexengr@ucsd.edu to request specific course syllabi.

How many hours can I expect to spend studying outside of class time?
Each student has their own learning style so this can vary greatly. As a rule of thumb, expect to spend an average of two hours studying for every hour you spend in-class.

What are the instructors' credentials?
The program courses are taught by seasoned professionals and overseen by an advisory board of leaders in the field. You can view the advisor list under the "Advisors" section on the certificate page. You can find information about a course instructor, including a biography and credentials, on the course page.

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What are the required textbooks for a course?
Instructors will post the current text requirements and recommendations on the course page on our website. Please note the textbooks requirements are subject to change every quarter and different instructors may require different books, even if they are teaching the same course in the same quarter, so be sure to check the textbook requirements *for the section in which you are enrolling*.

Will I be able to order the required textbooks before the class begins?
Yes, you can order the book(s) any time after enrolling in the course. You may order books through the campus bookstore or online retailers, such as Amazon.com.

For More Information
For program specific questions, please visit the certificate page on our website or contact a program representative at unexengr@ucsd.edu or (858) 534-9152. For administrative questions, please contact our Student Services Department at unex-reg@ucsd.edu or (858) 534-3400.