UC San Diego | Extension

Additive Manufacturing

Specialized Certificate

The Field of Additive Manufacturing

Originally used for rapid prototyping, Additive M (AM) has evolved into what we know today as 3D printing. Additive Manufacturing is the process of joining materials, layer upon layer, to create an object from a 3D model. Typically, these 3D models are designed utilizing computer-aided-design (CAD) software or a 3D object scanner. This transformative approach that goes from digital to physical enables the creation of stronger, lighter, and more complex products used across many industries including Healthcare, Aerospace, and Automotive.

Additive Manufacturing has revolutionized manufacturing operations and industrial production by offering a more dynamic and flexible digital process. AM provides Engineers with the ability to design and produce parts that incorporate complex structures and materials without requiring assembly. Additionally, they can customize products, produce small quantities at a reasonable price, and increase efficiency by reducing lead times and costs.

Program Overview

The Additive Manufacturing Certificate is designed for professionals, engineering graduates or those seeking to enter the field of AM – 3D printing. Through hands-on experience participants will learn the principles, standards, materials and application of Additive Manufacturing. This highly practical program will allow students to enter the field of Additive Manufacturing.

Program Benefits

- Hands-on experience with applications of modeling AM using SolidWorks and CATIA V5.
- Learn to design components for appropriate use in AM and measure parts in according to industry standards (GD&T).
- Developed and taught by industry professionals.
- Immediately applicable skills

Key Program Topics

- **SolidWorks** computer-aided design and analysis software
- **Additive Manufacturing** technologies**,** printing process, materials, and post-processing.
- **Geometric Dimensioning & Tolerancing** (GD&T) practical applications
- **Industrial Robotics** introduction to basic concepts and programming
- **CATIA V5** 3D Product Lifecycle Management software for product development and CAD.

Program Details

Prerequisites
There are no prerequisites required to enroll in the certificate program.

Requirements
There are five mandatory courses required to complete the certificate.

Course Title	Course No.	Units	Course Offered			
			Fall	Winter	Spring	Summer
Required Courses (All required)						
SolidWorks for 3D printing	MAE-40043	3.0		Online		Online
Additive Manufacturing Technologies	MAE-40038	3.0	Online		Online	
Geometric Dimensioning & Tolerancing (GD&T)	MAE-40031	3.0	Hybrid	Online	In-Class	Online
Fundamentals of CAD with CATIA V5	MAE-40042	3.0		Online		Online
Fundamentals of Industrial Robotics	CSE-41335	3.0	Online		Online	

Length
The Additive Manufacturing certificate can be completed in five consecutive quarters.

Cost
The program costs approximately $3,970 including the certificate fee and the required courses. This is an *estimate* of the full cost of the program. This estimate may vary based on a variety of factors. The cost of attendance does not include required textbooks, software, parking, transportation, or personal expenses. *All estimated costs are subject to change*; current fees and textbooks are listed on our website.

Program fees are paid on a per-course basis, when you enroll in a course.

Frequently Asked Questions

About the Certificate

How do I apply to the certificate program?
STEP 1: If you have a My Extension student 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 the "Save" 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 enrollment fees, if any, are listed under the "Apply Now" button on the certificate page on our website.

Can I register for the certificate program at any time?
Yes, you may enroll in the program at any time. However, it is recommended that you enroll as soon as possible. The program curriculum may be updated at any time; if certificate requirements change, you must adhere to the curriculum *at the time of your enrollment into the certificate*. Enrolling in the certificate also gives you access to quarterly, personalized enrollment reminders from the program manager.

Can this certificate program be completed entirely online?
Although most of the courses in the program are taught online, one required courses will require the students to attend courses in San Diego at this time. However, this might change in the future if the course is moved to an online format.

How long do I have to complete the certificate?
You officially have five years from when you begin taking courses in the program to complete all requirements for the certificate.

If I already have the skills taught in one of the courses, can I skip that course?
If you have taken a course from an accredited university covering the learning objectives of a program course, you may be able to transfer your previous coursework to Extension. If you have not taken a course elsewhere, but already have the skills covered in a course, you may be able to substitute an alternate Extension course in its place. Please contact the program representative at unexengr@ucsd.edu or 858-534-1566 for more information.

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 vary between two and three units, which amount to approximately 18-20 hours of class time for a two unit course and 27-30 hours of class time for a three unit course.

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. However, SolidWorks for 3D printing course prepares students to take the CSWA-AM certification.

How do I get my certificate once I have completed the requirements?

When you have paid your certificate fee and successfully completed all program requirements, you will need to request an audit by Student Services. To request an audit:

- In your My Extension account, click on "My Courses."
- On the right side of the page under "My Certificates," click on the name of the certificate.
- On the right side of the page under "Tools," click on "Request Certificate Audit."
- Complete and submit the form that appears.

Once you have formally submitted your audit request, your certificate will be mailed to the address we have on file for you within ten business days.

Do you provide job or internship placement?

No, we do not currently offer job placement assistance, internships, or career services assistance.

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 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.

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'd 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.

How do I access my online course?
To access your online course, first login to your My Extension account then choose "My Courses" from the menu. From your list of courses, select the course you would like to access and then click the link that appears in the "Location" section. You will then be redirected to the Learning Management System (LMS) where your course is located.

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.

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 the courses they are interested in.

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 on the course page in our website, and you can also find it in My Extension by clicking on "My Courses" and then the name of the course.

What are the grading options for courses?
You may take a course 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.

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 9-10 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 under the Program Requirements section of this document.

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. For online courses, students should plan to spend approximately 8-10 hours per week viewing lectures and completing coursework.

How are online classes formatted?
The online courses are asynchronous: they have a start and end date but all the lessons are uploaded on our online learning management system, so you can learn at your own pace. There are no face-to-face class sessions. However, please be aware that you may have weekly assignments, quizzes, or tests that are due on specific dates.

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.

How do I communicate with a course instructor if I have a question during the course?
Each instructor has his/her own preferred method of communication and response policy, which will be detailed on the course syllabus. However, most instructors utilize email or the discussion board and will respond within 24-48 hours.

Will I get any hands-on experience in the program?
Most courses combine theory with hands-on exercises. For more information about practical experience in any course, visit the course page on our website.

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.

After I enroll in a course, how can I retrieve a receipt or enrollment verification for my records?
Login to your My Extension account and select "Documents" as the top of the page.

How will I receive my final course grade?
Once the course is completed, the instructor has 10 business days to submit your grades. Once grades have been posted, you can view and print them from your My Extension account.

What if I am having trouble with our Learning Management System 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.

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 858-534-1566. For administrative questions, please contact our Student Services Department at unex-reg@ucsd.edu or (858) 543-3400.