



About the Machine Learning Methods Program

Our Specialized Certificate in Machine Learning Methods will introduce students to the subject matter using a variety of tools including Linear Algebra, Deep Learning, TensorFlow, and Deep Neural Networks (DNN).

Machine Learning is an application of artificial intelligence that provides systems with the ability to automatically learn and improve from experience without being explicitly programmed. According to a report by BCC Research, the ability of computers to "learn" without having to be programmed will continue to impact global markets in coming years. This growth is being driven by increased computing power, the expanding need for learning and prediction applications, and rising usage of the cloud for data storage.

A student completing this certificate will accumulate an important set of skills needed in current machine learning careers. Courses consist of both theoretical and practical skills complementing each other and hence enhancing the machine learning scientist abilities. Furthermore, courses are designed and classified to train students further in the field of machine learning, as well as coordinating with other engineering disciplines and industrial practices.

Why Learn Machine Learning?

Learning machine learning offers numerous benefits and opportunities, making it a valuable skillset in today's world. Here are some compelling reasons to learn machine learning:

- **High Demand:** There is a growing demand for professionals with machine learning skills across industries such as technology, finance, healthcare, e-commerce, and more. Companies are increasingly relying on machine learning to extract insights from data and make data-driven decisions.
- **Career Opportunities:** Machine learning opens diverse career opportunities in fields such as data science, machine learning engineering, artificial intelligence research, robotics, healthcare informatics, and more. With the right skills, you can pursue rewarding and high-paying careers in these fields.
- **Innovation and Advancement:** Machine learning is at the forefront of technological innovation and drives advancements in various domains, including healthcare, finance, transportation, and entertainment. By learning machine learning, you can contribute to solving complex problems and shaping the future of technology.
- **Data Analysis and Insights:** Machine learning enables you to analyze large datasets and extract meaningful insights,

patterns, and trends that may not be apparent through traditional data analysis techniques. This can help businesses make informed decisions, identify opportunities, and mitigate risks.

- **Automation and Efficiency:** Machine learning algorithms can automate repetitive tasks, streamline processes, and improve efficiency in various domains. By learning machine learning, you can develop solutions that automate tasks, optimize workflows, and enhance productivity.
- **Personal and Professional Development:** Learning machine learning enhances your analytical, problem-solving, and programming skills. It challenges you to think critically, experiment with algorithms, and develop solutions to real-world problems. These skills are valuable not only in your career but also in personal projects and endeavors.
- **Interdisciplinary Applications:** Machine learning intersects with various disciplines, including computer science, mathematics, statistics, and domain-specific fields such as healthcare, finance, and engineering. By learning machine learning, you gain a versatile skillset that can be applied across different domains and industries.
- **Futureproofing:** As technology continues to advance, machine learning is expected to play an increasingly prominent role in shaping the future. By learning machine learning now, you position yourself for long-term success and remain competitive in an evolving job market.

Overall, machine learning empowers you to tackle complex problems, drive innovation, and create impactful solutions that have the potential to transform industries and improve lives. Whether you're a seasoned professional or a beginner, investing in machine learning education can yield significant benefits and open exciting opportunities for growth and advancement.

Program Audience

The Machine Learning Methods Certificate program is designed for a diverse audience, including anyone who wishes to enhance their skills and knowledge. As demand for machine learning skills continues to grow across various industries, this versatile and sought-after skillset is becoming increasingly valuable in today's job market. Here are a few examples of roles that benefit from machine learning expertise: Data Scientist, Machine Learning Engineer, AI Research Scientist, Software Engineer (with ML Focus), Quantitative Analyst, Bioinformatics Specialist, Robotics Engineer, Computer Vision Engineer, Natural Language Processing Specialist, Healthcare Informatics Specialist.

Program Overview

Prerequisites

There are no hard prerequisite courses required to complete this certificate. Students need to have understanding of college-level algebra and calculus or equivalent knowledge before taking [Linear Algebra for Machine Learning](#) required course. Before enrolling into [Fundamentals of Data Science](#) course students need to have prior knowledge of statistics for data analytics or equivalent practical experience, as well as a basic understanding of the Python Programming Language. You can test your level of statistical knowledge by taking the online [Self-Assessment Quiz](#).

Requirements

Students will be required to take two (2) required courses and two (2) electives, totaling twelve (12) units, to obtain the certificate.

Required Course Complete six (6) units					
TITLE & COURSE NUMBER	UNITS	FALL	WINTER	SPRING	SUMMER
Linear Algebra for Machine Learning CSE-41287	3.0	Online	Online	Online	Online
Fundamentals of Data Science CSE-41258	3.0	Online		Online	
Elective Courses Complete six (6) units					
TITLE & COURSE NUMBER	UNITS	FALL	WINTER	SPRING	SUMMER
Probability and Statistics for Deep Learning CSE-41305	3.0	Online		Online	
Practicum for Deep Neural Networks CSE-41311	3.0		Online		Online
Deep Learning Using TensorFlow CSE-41312	3.0	Online		Online	

Length

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

Cost

The total estimated cost of completing two required and two elective courses is \$3,145.00, which includes a \$95 certificate fee. This amount does not include the cost for textbooks. Please note that all fees are subject to change, so students are advised to visit [certificate page](#) to see what current course prices are.

Electives

Students need to choose and successfully complete two (2) courses from the elective course section. Please refer to [certificate page](#) to download current course certificate matrix.

Frequently Asked Questions

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 in this program are offered in online format only. For online classes, all assignments and test/quizzes are completed online and submitted through Canvas, our online learning management system.

Can the prerequisite be waived if I have taken a programming course elsewhere or have equivalent working knowledge?

The recommended prerequisite courses are not required to complete the certificate. However, it serves as a guideline to students as to the level of knowledge required for students before enrolling into the required and elective courses. For

each course there is more information available in “Prerequisite” section. Those who wish to skip the prerequisite may do so without a department waiver. Please email unex-techdata@ucsd.edu if you would like to see the syllabus of the prerequisite course.

Is financial aid available?

- UC San Diego Division of Extended Studies 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 UC San Diego Division of Extended Studies.

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 Division of Extended Studies — 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 Division of Extended Studies have been developed and are administered in accordance with Division of Extended Studies 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 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 are posted to our website and become open for enrollment approximately two months prior to the new quarter starting. If you would like to receive 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 at least three business days before the course start date, 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 on 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?

Online courses are asynchronous with prerecorded lectures, corresponding PowerPoints, and subsequent materials as provided by the instructor. They have a start and end date, but all the lessons are uploaded to our 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. To access your online course, first login to your [My Extension](#) account, next select "My Courses" from the menu. From your list of courses, select the course you would like to access, and 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.

We are currently using Canvas as our (LMS) for all our online courses. While students do not get access to their respective courses until the first day of the course, we encourage students who are new to Canvas to click on the following link to Canvas and: [Take the free tour of Canvas](#).

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 my 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.

When does enrollment for a course close?

We recommend students to enroll early in their courses of interest because they can be closed for 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.

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, 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 [MyExtension](#), 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 Division of Extended Studies 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 to accept Division of Extended Studies credits.

Are courses transferrable?

UC San Diego Division of Extended Studies is not a degree granting institution; however, many UC San Diego Division of Extended Studies 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 can enroll in any course within this program without registering for the certificate, as long as you have met all the 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 [certificate page](#).

How can I get more information on the specific courses?

Please email unex-techdata@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 [certificate page](#). You can find information about a course instructor, including a biography and credentials, on the course page.

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.

More information:

For more information please visit [certificate page](#) or contact a program representative at unex-techdata@ucsd.edu. For administrative questions, please contact our Student Services Department at unex-reg@ucsd.edu or (858) 534-3400.