Doctor of Engineering in Artificial Intelligence & Machine Learning

Information Session
Monday, July 3rd

Cohort Begins August 2023

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Director, Online Engineering Programs
Professor of Engineering Management and Systems Engineering
Information Session Agenda

☑ Overview of The George Washington University

☑ Doctor of Engineering (D.Eng.) in Artificial Intelligence & Machine Learning
  • Overview
  • Academic Requirements
  • Application Information

☑ Q & A Session
The George Washington University

- Chartered in 1821 by an Act of Congress
- 10 colleges and schools, including the School of Engineering & Applied Science
- More than 15,000 graduate students
- Alumni network of over 300,000 living alumni in more than 130 countries
- Accredited by the Middle States Commission on Higher Education
- GW’s Online Graduate Engineering Masters Programs ranked #12 by US News
Our Online Program

• We offer 6 Masters and 4 Doctoral degrees fully online. The online degrees are identical to their on-campus equivalents.

• Online classes meet synchronously via Zoom and are recorded for viewing throughout the semester

• Supported by Blackboard, GW’s web-based course management software

• Exams are taken through a secure testing platform
Doctor of Engineering
Artificial Intelligence & Machine Learning

The D.Eng. in Artificial Intelligence & Machine Learning is designed to provide students with a deep understanding of the latest AI and machine learning techniques, as well as hands-on experience in applying the latest tools to real-world problems.

Graduates of this program are equipped to lead AI and machine learning projects and teams in a wide range of industries, including computation, finance, healthcare, autonomous manufacturing, and more.
Program Overview

• Classroom Phase (24 credit hours)
  • 8 graduate-level, 3-credit-hour courses
• Research Phase (24 credit hours)
  • Culminates in Praxis defense
• Total of 48 credit hours
• Program Begins: August 2023
• Target Graduation Date: August 2025
Curriculum

SEAS 8500 Fundamentals of AI-Enabled Systems (3 credits)
SEAS 8505 Applied Machine Intelligence (3 credits)
SEAS 8510 Analytical Methods for Machine Learning (3 credits)
SEAS 8515 Data Engineering for AI (3 credits)
SEAS 8520 Deep Learning and ML Operations (3 credits)
SEAS 8525 NLP, Computer Vision, & Reinforcement Learning (3 credits)
SEAS 8550 Privacy and Organizational Issues in AI (3 credits)
SEAS 8599 Praxis Development for AI (3 credits)

SEAS 8588 Praxis Research for DEng in AI & ML (24 credits)

Schedules, regulations and policies subject to change; course substitution in the curriculum is usual and should be expected.
Each course is graded on a curve so that every course ends with a GPA of approximately 3.6.

After completion of the classroom phase with a GPA of 3.2 or higher, and no grade below B-, students begin praxis research.

<table>
<thead>
<tr>
<th>Grade</th>
<th>GPA Pts</th>
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<tbody>
<tr>
<td>A</td>
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<td>A-</td>
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<td>B+</td>
<td>3.3</td>
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<td>B</td>
<td>3</td>
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<td>B-</td>
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Coursework Calendar

<table>
<thead>
<tr>
<th>Semester</th>
<th>Session</th>
<th># Courses</th>
<th># Credit Hours</th>
<th>Session Dates</th>
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<tbody>
<tr>
<td>Fall 2023</td>
<td>First</td>
<td>2</td>
<td>6</td>
<td>August 12 ─ October 14, 2023</td>
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<tr>
<td></td>
<td>Second</td>
<td>2</td>
<td>6</td>
<td>October 28 ─ January 20, 2024</td>
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<tr>
<td>Spring 2024</td>
<td>First</td>
<td>2</td>
<td>6</td>
<td>February 3 ─ April 6, 2024</td>
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<tr>
<td></td>
<td>Second</td>
<td>2</td>
<td>6</td>
<td>April 20 ─ June 29, 2024</td>
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*No classes on Thanksgiving, Christmas, New Year, and Memorial Day Weekends*

- Each course consists of 10 class meetings on Saturdays:
  - Morning Class 9:00a-12:00p (Eastern)
  - Afternoon Class 1:00p-4:00p (Eastern)
Research Requirements

• Praxis Research
  • Research courses consist of minimum half-hour individual meetings with your advisor initially every other week
  • During this stage, students will develop and write a praxis
  • Praxis defenses are scheduled for the end of the final semester of research

• Research course SEAS 8588 Praxis Research (24 credits)
  • Session I: Summer 2024, 3 credit hours
  • Session II: Fall 2024, 9 credit hours
  • Session III: Spring 2025, 9 credit hours
  • Session IV: Summer 2025, 3 credit hours
Sample Praxis Research Areas

- Developing algorithms and methods that can explain how AI systems reach their decisions or predictions, making them more transparent and trustworthy
- Investigating how reinforcement learning can improve robotic performance and control, particularly in complex environments
- Examining how to ensure that AI systems are fair and unbiased in their decision-making, particularly in areas such as hiring, lending, and criminal justice
- Developing more advanced natural language processing models and algorithms that can understand and interpret human language more accurately and effectively
Admissions Requirements

• A bachelor’s and master’s degree, at least one of which must be in the following field: engineering, computer science, mathematics, physics, or a closely related field from accredited institutions

• A minimum graduate level GPA of 3.2

• Relevant professional experience
Application Process

Apply online at: https://seasonline.gwu.edu/apply/deng-ai/

Send Official Academic Transcripts Directly from the Institution to:

- Electronic Transcripts:
  
  AIdoctorate@gwu.edu

- Paper Transcripts:
  
  Online Engineering Programs Office
  The George Washington University
  170 Newport Center Drive, Suite 260
  Newport Beach, CA 92660

All submitted materials remain property of GW Online Engineering Programs
If Prior Institutions you attended use Parchment Transcript Services:

Send transcripts to this address to ensure receipt.
Application Deadline: **July 15, 2023** *(or when the cohort is full)*
Admitted Students

• Admission decisions are communicated via email.

• Admitted applicants must return a reply card and a non-refundable tuition deposit of $995 (applied to the first session’s tuition) in order to secure their slot in the cohort.

• Tuition is $1,750 per credit
Contact Information

Online Engineering Programs Office
Shahram Sarkani, Ph.D., P.E., Director

▪ Admissions Team
  • Adsdoctrate@gwu.edu
  • Tel: 833-330-1454

▪ Doctoral Administrative Team
  • seasdoc@gwu.edu

▪ Online Technical Support Team
  • seasonline@gwu.edu
  • Tel: 202-422-2806
Answers to Frequently Asked Questions

• Transfer credit is not allowed toward doctoral programs.
• Students should expect to spend approximately 20 hours a week on coursework/research, including class attendance.
• Your research topic will be finalized during your last session (SEAS 8588 – Praxis Development for AI )
• Your research advisor will be assigned by the Online Engineering Programs Office after the successful completion of your coursework.
Any Questions?

To protect your privacy, questions regarding individuals’ specific application, degrees, background, or experience will not be answered during this Q&A session.