

# Artificial Intelligence, MS (Seattle)

The Master of Science in Artificial Intelligence provides a comprehensive framework encompassing foundational algorithms, theory, and practical applications in the rapidly evolving field of AI. This program offers students the essential knowledge and skills to design, develop, and implement AI systems across various high-demand sectors. The core curriculum is designed to provide in-depth understanding of fundamental AI concepts, forming a solid foundation for both theoretical and practical aspects of artificial intelligence.

Building on this strong foundation, students can delve into advanced AI applications through interdisciplinary concentrations tailored to industry needs. These concentrations include computer vision, health data, machine learning, and robotics and agent-based systems.

The master's in artificial intelligence is an interdisciplinary degree offered by Khoury College of Computer Sciences, Bouvé College of Health Sciences, and the College of Engineering. Descriptions of the concentrations offered in this degree are as follows:

- **Computer Vision—College of Engineering**
  - The computer vision concentration offers students the knowledge and skills to drive innovation at the intersection of new and emerging vision systems and AI by utilizing AI and machine learning solutions for a wide range of applications including image enhancement/restoration, object recognition, navigation, graphics rendering, and pattern classification.
- **Health Data—Bouvé College of Health Sciences**
  - This interdisciplinary concentration is designed to prepare students to tackle pressing challenges at the intersection of artificial intelligence and health. Students work directly with real-world health and wellness data, applying cutting-edge AI techniques to problems that matter. Students integrate technical skills from their core coursework with specialized health data expertise, gaining versatility to work across the entire health ecosystem, from clinical settings to public health to digital health startups. Whether building prototype AI-driven health interventions or uncovering insights from complex datasets, students engage with authentic challenges facing the field today. Throughout the concentration, students address critical questions about equitable health technology design and responsible AI deployment in high-stakes healthcare contexts.
- **Machine Learning—Khoury College of Computer Sciences**
  - The goal of the machine learning concentration is to provide students with practical, hands-on experience in designing, implementing, and optimizing machine learning models for real-world applications. The curriculum positions graduates to pursue roles that leverage AI to drive innovation and efficiency in a wide variety of industries and domains.
- **Robotics and Agent-Based Systems—Khoury College of Computer Sciences**
  - The goal of the robotics and agent-based systems concentration is to provide students with expertise in designing and developing intelligent robotic systems and autonomous agents capable of performing complex tasks in dynamic environments. The curriculum positions graduates to pursue roles that contribute to innovations in automation, human-robot interaction, and intelligent systems design.

Students are admitted to the college associated with their concentration, and their degree is awarded by that college. Students will follow all policies associated with their college of admission.

## Program Requirements

Beginning with students admitted in the fall of 2026, all students pursuing on-ground master's degree programs must complete a university-level experiential learning requirement. This requirement may be fulfilled through the curriculum, co-op, or other work- or industry-integrated learning experiences.

Complete all courses and requirements listed below unless otherwise indicated.

## Core Requirements

A cumulative GPA of 3.000 or higher is required in the following:

| Code                    | Title                                                                                               | Hours |
|-------------------------|-----------------------------------------------------------------------------------------------------|-------|
| CS 5100                 | Foundations of Artificial Intelligence                                                              | 4     |
| CS 5130<br>and CS 5131  | Applied Programming and Data Processing for AI<br>and Recitation for CS 5130                        | 4     |
| DADS 5200<br>or DS 5020 | Mathematics for Machine Learning<br>Introduction to Linear Algebra and Probability for Data Science | 4     |

|              |                                                          |   |
|--------------|----------------------------------------------------------|---|
| EECE 5644    | Introduction to Machine Learning and Pattern Recognition | 4 |
| or DADS 7275 | Machine Learning and Data Analytics                      |   |

## Concentrations

Complete one of the following concentrations:

- Computer Vision (p. 2)—College of Engineering
- Health Data (p. 2)—Bouvé College of Health Sciences
- Machine Learning (p. 3)—Khoury College of Computer Sciences
- Robotics and Agent-Based Systems (p. 3)—Khoury College of Computer Sciences

## Program Credit/GPA Requirements

32 total semester hours required

Additional semester hours required for participation in optional co-op in certain concentrations

Minimum 3.000 GPA required

### COMPUTER VISION CONCENTRATION—COLLEGE OF ENGINEERING

| Code                                                                                       | Title                                                          | Hours |
|--------------------------------------------------------------------------------------------|----------------------------------------------------------------|-------|
| Complete 4 semester hours from the following:                                              |                                                                |       |
| EECE 5639                                                                                  | Computer Vision                                                | 4     |
| Complete 8 semester hours from the following:                                              |                                                                |       |
| EECE 5550                                                                                  | Mobile Robotics                                                |       |
| EECE 5554                                                                                  | Robotics Sensing and Navigation                                |       |
| EECE 5614                                                                                  | Reinforcement Learning and Decision Making Under Uncertainty   |       |
| EECE 5640                                                                                  | High-Performance Computing                                     |       |
| EECE 5642                                                                                  | Data Visualization                                             |       |
| EECE 5645                                                                                  | Parallel Processing for Data Analytics                         |       |
| EECE 6400                                                                                  | Special Problems in Electrical and Computer Engineering        |       |
| EECE 7370                                                                                  | Advanced Computer Vision                                       |       |
| EECE 7397                                                                                  | Advanced Machine Learning                                      |       |
| EECE 7398                                                                                  | Advanced Special Topics in Electrical and Computer Engineering |       |
| <b>Capstone</b>                                                                            |                                                                |       |
| EECE 7945                                                                                  | Master's Project                                               | 4     |
| <b>Optional Co-op</b>                                                                      |                                                                |       |
| Complete the following (students must complete ENCP 6100 to qualify for co-op experience): |                                                                |       |
| ENCP 6100                                                                                  | Introduction to Cooperative Education                          | 1     |
| ENCP 6964                                                                                  | Co-op Work Experience                                          | 0     |
| or ENCP 6954                                                                               | Co-op Work Experience - Half-Time                              |       |
| or ENCP 6955                                                                               | Co-op Work Experience Abroad - Half-Time                       |       |
| or ENCP 6965                                                                               | Co-op Work Experience Abroad                                   |       |

### HEALTH DATA CONCENTRATION—BOUVÉ COLLEGE OF HEALTH SCIENCES

| Code                                          | Title                                                                                     | Hours |
|-----------------------------------------------|-------------------------------------------------------------------------------------------|-------|
| HLTH 5810                                     | Survey of Health-Related Data                                                             | 4     |
| HLTH 5820                                     | AI Project for Health Applications                                                        | 4     |
| Complete 4 semester hours from the following: |                                                                                           |       |
| HINF 5300                                     | Personal Health Interface Design and Development                                          |       |
| HINF 5500                                     | Artificial Intelligence and Health Informatics                                            |       |
| HLTH 5550                                     | Product Design, Development, and Innovation in Health Science                             |       |
| NNMD 5310                                     | Bioethics in the Age of Artificial Intelligence                                           |       |
| PHSC 5905                                     | Artificial Intelligence and Machine Learning in Drug Discovery: Concepts and Applications |       |
| PHTH 5320                                     | Grant Writing in Public Health                                                            |       |
| PHTH 5350                                     | Using SAS in Public Health Research                                                       |       |
| PHTH 6130                                     | Public Health Technologies: Ethics and Equity                                             |       |

Complete 4 semester hours from the following: 4

|           |                  |
|-----------|------------------|
| HLTH 6980 | Capstone         |
| HLTH 7995 | Master's Project |

#### Optional Co-op

Complete the following (students must complete HLTH 5101 to qualify for co-op experience):

|              |                                                   |   |
|--------------|---------------------------------------------------|---|
| HLTH 5101    | Professional Development for Bouvé Graduate Co-op | 1 |
| HLTH 6964    | Co-op Work Experience                             | 0 |
| or HLTH 6954 | Co-op Work Experience - Half-Time                 |   |
| or HLTH 6955 | Co-op Work Experience Abroad - Half Time          |   |
| or HLTH 6965 | Co-op Work Experience Abroad                      |   |

### MACHINE LEARNING CONCENTRATION—KHOORY COLLEGE OF COMPUTER SCIENCES

| Code    | Title      | Hours |
|---------|------------|-------|
| CS 5800 | Algorithms | 4     |

Complete 8 semester hours from the following: 8

|         |                                                       |
|---------|-------------------------------------------------------|
| CS 5180 | Reinforcement Learning and Sequential Decision Making |
| CS 5330 | Pattern Recognition and Computer Vision               |
| CS 6120 | Natural Language Processing                           |
| CS 6200 | Information Retrieval                                 |
| CS 6220 | Data Mining Techniques                                |
| CS 7140 | Advanced Machine Learning                             |
| CS 7150 | Deep Learning                                         |
| CS 7180 | Special Topics in Artificial Intelligence             |

#### Capstone

Complete 4 semester hours from the following: 4

|         |                  |
|---------|------------------|
| CS 6170 | AI Capstone      |
| CS 8674 | Master's Project |

#### Optional Co-op

Complete the following:

|            |                                          |   |
|------------|------------------------------------------|---|
| CS 6964    | Co-op Work Experience                    | 0 |
| or CS 6954 | Co-op Work Experience - Half-Time        |   |
| or CS 6955 | Co-op Work Experience Abroad - Half-Time |   |
| or CS 6965 | Co-op Work Experience Abroad             |   |

### ROBOTICS AND AGENT-BASED SYSTEMS CONCENTRATION—KHOORY COLLEGE OF COMPUTER SCIENCES

| Code    | Title      | Hours |
|---------|------------|-------|
| CS 5800 | Algorithms | 4     |

Complete 8 semester hours from the following: 8

|           |                                                       |
|-----------|-------------------------------------------------------|
| CS 5180   | Reinforcement Learning and Sequential Decision Making |
| CS 5335   | Robotic Science and Systems                           |
| EECE 5550 | Mobile Robotics                                       |
| EECE 5554 | Robotics Sensing and Navigation                       |

#### Capstone

Complete 4 semester hours from the following: 4

|         |                  |
|---------|------------------|
| CS 6170 | AI Capstone      |
| CS 8674 | Master's Project |

#### Optional Co-op

Complete the following:

|            |                                          |   |
|------------|------------------------------------------|---|
| CS 6964    | Co-op Work Experience                    | 0 |
| or CS 6954 | Co-op Work Experience - Half-Time        |   |
| or CS 6955 | Co-op Work Experience Abroad - Half-Time |   |
| or CS 6965 | Co-op Work Experience Abroad             |   |