

Artificial Intelligence, BS (Boston)

The Bachelor of Science in Artificial Intelligence explores the full breadth of the field, from classical methods to modern, data-centric approaches. The program combines computer and data science with mathematics, statistics, and probability theory into an integrated curriculum designed to prepare students for careers in artificial intelligence.

Students gain hands-on experience with machine learning algorithms, neural networks, reinforcement learning, and generative AI. Students develop a strong theoretical foundation in computational theory and algorithmic design. The curriculum emphasizes both the technical skills needed to build AI systems and the ethical considerations essential for responsible AI development.

Through project-based learning and real-world applications, graduates emerge equipped to tackle complex problems across various industries. The program also covers emerging areas, ensuring that students are prepared for the evolving landscape of artificial intelligence technology.

Program Requirements

Complete all courses listed below unless otherwise indicated. Also complete any corequisite labs, recitations, clinicals, or tools courses where specified and complete any additional courses needed beyond specific college and major requirements to satisfy graduation credit requirements.

Universitywide Requirements

All undergraduate students are required to complete the Universitywide Requirements (<https://catalog.northeastern.edu/undergraduate/university-academics/university-wide-requirements/>).

NUpath Requirements

All undergraduate students are required to complete the NUpath Requirements (<https://catalog.northeastern.edu/undergraduate/university-academics/general-education-requirements/#nupathtext>).

Artificial Intelligence Major Requirements

Code	Title	Hours
Computer Science Overview		
CS 1200 or INPR 1000	First Year Seminar First-Year Interdisciplinary Seminar	1
CS 1210	Professional Development for Khoury Co-op	1
Fundamental Courses		
All students can take a self-assessment to attempt to place out of CS 2000 and CS 2001. Students who place out of CS 2000 and CS 2001 will instead substitute 4-5 semester hours of CS, CY, or DS coursework at the 3000 level or higher not otherwise required in the degree.		
CS 1800	Discrete Structures	4
CS 2000 and CS 2001	Introduction to Program Design and Implementation and Lab for CS 2000	5
CS 2100 and CS 2101	Program Design and Implementation 1 and Lab for CS 2100	5
Computer Science Required Courses		
CS 2700 and CS 2701	Data Structures and Analysis and Lab for CS 2700	5
CS 3200	Introduction to Databases	4
CS 3100 and CS 3101 or CS 3520	Program Design and Implementation 2 and Lab for CS 3100 Programming in C++	4
Artificial Intelligence Electives		
Complete three of the following:		12
CS 4100	Principles of Artificial Intelligence	
CS 4120	Natural Language Processing	
CS 4160	AI Policy: Machine Learning, Markets, and Morals	
CS 4130	Engineering LLM-Integrated Systems	
CS 4220	Information Retrieval	
CY 4100	AI Security and Privacy	

Artificial Intelligence Required Courses

DS 3000	Mathematical Foundations of Artificial Intelligence	4
DS 3500	Advanced Programming with Data	4
DS 4200	Information Presentation and Visualization	4
DS 4300	Large-Scale Information Storage and Retrieval	4
DS 4400	Machine Learning	4
DS 4420	Advanced Machine Learning	4
or DS 4440	Modern Neural Networks	

Presentation Requirement

Complete one of the following: 4

COMM 1112	Public Speaking	
COMM 1113	Business and Professional Speaking	
COMM 1210	Persuasion and Rhetoric	
COMM 1511	Communication and Storytelling	
THTR 1125	Improvisation	
THTR 1130	Introduction to Acting	
THTR 1180	Dynamic Presence: Theatre Training for Effective Interpersonal Interactions	
THTR 2345	Acting for the Camera	

Mathematics Foundations

MATH 1341	Calculus 1 for Science and Engineering	4
MATH 1342	Calculus 2 for Science and Engineering	4
MATH 2331	Linear Algebra	4
MATH 3081	Probability and Statistics	4

Artificial Intelligence and Ethics

PHIL 1145	Technology and Human Values	4
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Khoury Approved Electives

With advisor approval, directed study, research, project study, and appropriate graduate-level courses may also be taken as upper-division electives.

Complete 4 semester hours from within the following options: 4

CS 2300 or higher, except CS 5010		
CY 2000 or higher, except CY 4930		
DS 2500 or higher, except DS 4900		
MKTG 4606	Digital, Analytics, Technology, and Automation Research Practicum	
EECE 2160	Embedded Design: Enabling Robotics	
EECE 2322 and EECE 2323	Fundamentals of Digital Design and Computer Organization and Lab for EECE 2322	

Artificial Intelligence Related Electives in Other Units

Complete one of the following: 4

ARTG 5100	Information Design Studio 1: Principles	
ARTG 5110	Information Design History	
ARTG 5120	Research Methods for Design	
ARTG 5330	Visualization Technologies 1: Fundamentals	
ARTG 6100	Information Design Studio 2: Dynamic Mapping and Models	
CS 4350	Empirical Research Methods	
ECON 2350	Statistics for Economists	
ECON 2560	Applied Econometrics	
EECE 5639	Computer Vision	
EECE 5642	Data Visualization	
EECE 5644	Introduction to Machine Learning and Pattern Recognition	
ENVR 2500	Biostatistics	
GSND 5110	Game Design and Analysis	
GSND 6350	Data-Driven Game Design	
HINF 5101	Introduction to Health Informatics and Health Information Systems	
HINF 5102	Data Management in Healthcare	

HINF 5300	Personal Health Interface Design and Development
HINF 5301	Evaluating Health Technologies
IE 5640	Data Mining for Engineering Applications
MATH 2321	Calculus 3 for Science and Engineering
MATH 4581	Statistics and Stochastic Processes
MGSC 2301	Business Statistics
MISM 3403	Data Management for Business
MKTG 3401	Marketing Research
MKTG 3501	Marketing Analytics
PHIL 5005	Information Ethics
PHIL 5010	AI Ethics
PSYC 2320	Statistics in Psychological Research
PSYC 3466	Cognition

Writing Requirement

Code	Title	Hours
College Writing		
ENGW 1111	First-Year Writing	4
Advanced Writing in the Disciplines		
ENGW 3302 or ENGW 3315	Advanced Writing in the Technical Professions Interdisciplinary Advanced Writing in the Disciplines	4

Required General Electives

Code	Title	Hours
Complete 28 semester hours of general electives.		28

NUpath Requirements Satisfied

- Engaging with the Natural and Designed World
- Conducting Formal and Quantitative Reasoning
- Analyzing and Using Data
- Writing in the First Year
- Advanced Writing in the Disciplines
- Writing-Intensive in the Major
- Demonstrating Thought and Action in a Capstone

Integrating Knowledge and Skills Through Experience is satisfied through co-op.

Program Requirement

132 total semester hours required