

APPLIED AI BACHELOR OF SCIENCE

Leading to a Bachelor of Science Degree in Bachelor of Science in Applied AI

The Bachelor of Science in Applied Artificial Intelligence (BSAI) at Wentworth Institute of Technology is an interdisciplinary, career-focused program designed to prepare graduates to apply AI ethically and effectively across diverse industries. BSAI integrates a technical core with application domain-specific pathways in Business Management, Computing, Construction Management, and Life Sciences, with future expansion into Design, Technology, and other growth fields.

Program Educational Objectives

- Apply principles of artificial intelligence to develop and deploy AI-driven solutions in real-world settings across industry, government, or nonprofit sectors.
- Collaborate effectively with interdisciplinary teams, integrating AI techniques with domain-specific knowledge in fields such as business, computing, or the life sciences.
- Demonstrate awareness of the ethical, legal, and societal implications of AI systems, and contribute to the development of responsible, transparent, and fair AI solutions.
- Engage in lifelong learning, professional development, or graduate education in AI or related areas.
- Communicate complex AI concepts, findings, and decisions effectively to both technical and non-technical audiences.

Student Outcomes

- Analyze a complex problem, and apply principles of computing, data science, and AI to identify and formulate effective solutions.
- Design, implement, and evaluate an AI-based solution to meet a given set of requirements, informed by domain knowledge in an area of application.
- Communicate effectively in a variety of professional contexts.
- Recognize professional responsibilities and make informed judgments in AI practice based on legal and/or ethical principles.
- Function effectively as a member or leader of a team engaged in activities appropriate to the program's discipline.

Four-Year Program

Total Required Credits: 120

This is a four-year full-time program, which begins in the fall semester of the student's first year and is planned to end after the summer semester of the student's fourth year.

First Year		Credits
Fall Semester		
COMP1000	COMPUTER SCIENCE I	4
AAAI1000	Introduction to Applied AI	4
MATH1825	CALCULUS FOR COMPUTING AND AI	4
English Sequence		4
Credits		16

Spring Semester		
MATH2825	LINEAR ALGEBRA FOR COMPUTING AND AI	4
MATH2300	DISCRETE MATHEMATICS	4
Domain Elective ¹		4
English Sequence		4
Credits		16

Second Year		
Fall Semester		
COMP3000	APPLICATIONS OF AI	4
PHIL4525	A.I. ETHICS	4
HSS Elective*		4
Free Elective		4
Credits		16

Spring Semester		
COMP3125	DATA SCIENCE FUNDAMENTALS	4
Free Elective		4
Domain Elective ¹		4
MATH1030 OR MATH2100	Depending on domain requirements	4
COOP2500	INTRODUCTION TO COOPERATIVE EDUCATION	0
Credits		16

Summer Semester		
COOP3000	OPTIONAL COOP EDUCATION	
Credits		0

Third Year		
Fall Semester		
COMP3001		4
CSAS4000	RESPONSIBLE APPLICATIONS OF GENERATIVE ARTIFICIAL INTELLIGENCE	4
Domain Elective ¹		4
Free Elective		4
Credits		16

Spring Semester		
COOP3500	COOP EDUCATION 1	0
Credits		0

Summer Semester		
DATA3333	PRACTICAL DEEP LEARNING	4
Domain Elective ¹		4
HSS Elective*		4
Science Elective		4
Credits		16

Fourth Year		
Fall Semester		
COOP4500	COOP EDUCATION 2 (THIS MAY BE SWITCHED WITH ANOTHER SEMESTER)	0
Credits		0

Spring Semester		
COMP4726	APPLIED LARGE LANGUAGE MODELS	4
HSS Elective*		4
Domain Elective ¹		4
Credits		12

Summer Semester

AAAI5500 Senior Design	4
Domain Elective ¹	4
Domain Elective ¹	4
Credits	12
Total Credits	120

ENGL/HSS Note

Students are required to complete:

- At least one course in Humanities: CSAS, HSSI, HIST, HUMN, LITR and PHIL
- At least one course in the Social Sciences: CSAS, HSSI, COMM, ECON, ENVM, POLS, PSYC and SOCL
- The remaining course from either the Humanities or Social Sciences category.

Students with a three English course sequence may use the third English course to satisfy a Humanities requirement.

A minimum of 20 credits total, including English, humanities, and social science credit, is required to complete the humanities and social sciences graduation requirement.

At least one of the HSS electives must be an Ethics course.

Math Placement (<https://catalog.wit.edu/academic-policies-procedures/ug/math-placement/>) may alter the course schedule above.

Science Electives

Course	Title	Credits
BIOL1100	CELL & MOLECULAR BIOLOGY	4
BIOL1700	ANATOMY & PHYSIOLOGY I	4
BIOL2200	ADVANCED MOLECULAR BIOLOGY	4
BIOL3000	APPLICATIONS IN GENETICS	4
CHEM1100	GENERAL CHEMISTRY I	4
CHEM1600	GENERAL CHEMISTRY II	4
PHYS1250	ENGINEERING PHYSICS I	4
PHYS1750	ENGINEERING PHYSICS II	4
PHYS2000	INTRODUCTION TO ASTRONOMY	4
PHYS3100	MODERN PHYSICS	4

The following courses require School approval to satisfy the Science Elective requirement

BIOL2990	INDEPENDENT STUDY IN BIOLOGY	4
BIOL3800	SPECIAL TOPICS IN BIOLOGY	4
CHEM2990	INDEPENDENT STUDY IN CHEMISTRY	4
CHEM3800	SPECIAL TOPICS IN CHEMISTRY	4
PHYS2990	INDEPENDENT STUDY IN PHYSICS	4
PHYS3800	SPECIAL TOPICS IN PHYSICS	4

Domain Electives

Students will choose one of several application domains to contextualize their AI education. These domains include both foundational and advanced coursework from a partner discipline, allowing students to apply AI techniques to domain-specific challenges.

A total of 28 semester credit hours of domain electives must be taken as part of the program. Eight of those credits must be STEM courses. Students declare their chosen domain by the end of their first term.

It currently offers the following domains:

- Business Management:
- Computing
- Construction Management
- Life Sciences

Their curriculum structure and course list are shown below.

Business Management Domain

Students complete a minimum of 28 credits:

- MGMT1000–Introduction to Management (required).
- At least 8 credits of STEM-designated courses from the following list, such as Decision Analysis, Systems Analysis, or Cybersecurity.

Course	Title	Credits
MGMT1025	COMPUTER BUSINESS APPLICATIONS	4
MGMT1500	DECISION ANALYSIS FOR BUSINESS	4
MGMT2525	SYSTEMS ANALYSIS, DESIGN, AND IMPLEMENTATION	4
MGMT2560	CYBERSECURITY LAW AND POLICY	3
MGMT2650	CYBERSECURITY PLANNING	3
MGMT2800	CYBERSECURITY MANAGEMENT	4
MGMT2000	MANAGEMENT INFORMATION SYSTEMS	4
MGMT2175	INTRODUCTION TO SUPPLY CHAINS	4
MGMT3250	MANAGERIAL ACCOUNTING	4
MGMT2550	APPLIED PROJECT MANAGEMENT	4

- Remaining credits can come from either the list above or the list below.

Course	Title	Credits
MGMT2750	INTEGRATIVE FINANCIAL ACCOUNTING	4
MGMT2100	MANAGEMENT COMMUNICATIONS	4
MGMT2850	PRINCIPLES OF MARKETING	4
MGMT3650	BUSINESS LAW	4
MGMT3700	HUMAN RESOURCES & LABOR MANAGEMENT	3
MGMT3900	OPERATIONS MANAGEMENT	4
MGMT4400	BUSINESS NEGOTIATION PRINCIPLES	3
MGMT3225	GLOBAL BUSINESS	4
MGMT3070	TECHNOLOGY ACQUISITION PROJECTS	4
MGMT3160	PROJECT RISK	4
MGMT3550	ENTREPRENEURIAL FINANCE	4
MGMT3575	ENTREPRENEURIAL MINDSET	4
MGMT4225	ENTREPRENEURIAL LEADERSHIP	4
MGMT3080	MARKETING FOR ENTREPRENEURS	4
MGMT2150	CORPORATE FINANCE	4

Course	Title	Credits
MGMT2350	FINANCIAL INSTITUTIONS AND MARKETS	4
MGMT4200	INVESTMENTS	4
MGMT3150	INTRODUCTION TO ENTERPRISE RESOURCE PLANNING	4
MGMT3165	INTRODUCTION TO LEAN SIX SIGMA	4
MGMT4275	SUPPLY CHAIN LOGISTICS AND PLANNING	4

Elective choices enable students to focus on areas such as data-informed decision-making, enterprise systems, finance, operations, supply chain management, or marketing. Technical fluency is developed through the Applied AI core, enabling students to apply AI tools within business contexts.

Computing Domain

The Computing domain provides students with strong foundations in computer science and modern AI techniques. The curriculum emphasizes data structures, algorithms, probability theory, and both classical and contemporary machine learning methods.

While students may fulfill their statistics requirement through either **MATH 1030** or **MATH 2100** in the shared core, those pursuing the Computing domain are expected to take **MATH 2100** to ensure adequate preparation in probability and statistics. Students complete 28 credits of computing-related coursework, including:

Course	Title	Credits
COMP1050	COMPUTER SCIENCE II	4
COMP2000	DATA STRUCTURES	4
COMP2350	ALGORITHMS	4
COMP4700 or COMP5700	FOUNDATIONS OF CLASSICAL AI	4
MATH4050	MACHINE LEARNING	4
COMP/DATA/MATH Elective		4
COMP/DATA/MATH Elective		4

This sequence integrates theoretical foundations with practical experience in designing, implementing, and evaluating AI systems. Students gain the computational thinking and analytical skills necessary to build reliable and scalable AI solutions.

Construction Management Domain

Students in the Construction Management domain complete the following courses alongside the Applied AI core. These courses provide a foundation in building construction, BIM (Building Information Modeling), plan reading, estimating, project management, and project scheduling. The curriculum emphasizes the full construction lifecycle, from design to delivery, while integrating emerging AI-driven tools such as computer vision for site monitoring, large language models for document analysis, and IoT sensors for safety and efficiency.

A minimum of **28 credits** must be completed in this domain, including two Construction Management electives. Electives may be chosen from any **CONM** course offerings.

Course	Title	Credits
CONM1200	BUILDING CONSTRUCTION	4
CONM1525	INTRODUCTION TO BUILDING INFORMATION MODELING (BIM)	2
CONM1550	INTRODUCTION TO PLAN READING & SPECIFICATIONS	2
CONM2200	ESTIMATING	4
CONM3100	CONSTRUCTION PROJECT MANAGEMENT	4
CONM3201	CONSTRUCTION PROJECT SCHEDULING (CONM Elective)	4
CONM4825	ARTIFICIAL INTELLIGENCE IN CONSTRUCTION	4
CONM Elective		4

Life Sciences Domain

The Life Sciences domain prepares students to apply artificial intelligence and data science methods to problems in biology, biotechnology, and medicine. Students gain foundational knowledge in cellular and molecular biology, chemistry, and genetics, while developing computational skills for analyzing biological data and simulating complex systems.

Students complete the 32 credits of STEM-designated courses listed below and need not take another Science course, and can count that requirement as fulfilled.

Course	Title	Credits
BIOL1100	CELL & MOLECULAR BIOLOGY	4
BIOL2200	ADVANCED MOLECULAR BIOLOGY	4
CHEM1100	GENERAL CHEMISTRY I	4
CHEM1600	GENERAL CHEMISTRY II	4
CHEM2000	BASICS OF ORGANIC & BIOCHEMISTRY	4
BIOE2100	BIostatistics FOR BIOENGINEERS	4
BIOE3500	GENETICS AND TRANSGENICS	4
BIOE4400	SYNTHETIC BIOLOGY	4