

Computer Science

At the Khoury College of Computer Sciences, we are inspired by an increasingly interconnected society, informed by a rapidly changing job market, and focused on addressing the challenges of a complex world. Our goal is to equip students with knowledge as diverse as it is deep. Our programs provide a strong technical foundation and an essential understanding of computing concepts while integrating computer and data sciences across disciplines and industries.

Our master's degrees are advanced programs that are designed to prepare students to be job ready through a rigorous curriculum, innovative research, experiential learning, and a collaborative environment rich in faculty expertise.

Our research-driven doctoral programs offer students an opportunity to engage in exciting projects, a vibrant community, and a challenging curriculum that offers breadth and depth in areas both within computer science and across disciplines throughout Northeastern University.

Graduate education in computer science also features the top-ranked Northeastern co-op program, enabling students to supplement their classroom education with real-world experience in the field.

Doctor of Philosophy in Computer Science

The PhD program in computer science is designed to prepare students for careers in academia and industry—from conducting research to developing systems to publishing and presenting papers. The rigorous curriculum provides a broad background in the fundamentals of computer science and advanced courses in a wide range of focus areas.

The past decade has witnessed a dramatic increase in Northeastern's international reputation for research and innovative educational programs. Since 2012, the Khoury College of Computer Sciences has hired 30 outstanding faculty members and plans to continue this strategic growth in the coming years, advancing its position (<http://csrankings.org/>) among the nation's top research universities. Today, the college has a diverse faculty (<https://www.ccis.northeastern.edu/role/tenured-and-tenure-track-faculty/>) of 75, working in a wide range of research areas (<https://www.ccis.northeastern.edu/research/research-areas/>). Twenty-two faculty members have joint appointments with other colleges and schools, including engineering, science, business, social sciences and humanities, health sciences, law and arts, and media and design.

Master of Science in Artificial Intelligence

The Master of Science program in artificial intelligence is designed to give students a comprehensive framework for AI with specialization in one of five areas: vision, intelligent interaction, robotics and agent-based systems, machine learning, and knowledge management and reasoning. Students will engage in an extensive core intended to develop depth in all core concepts that build a foundation for AI theory and practice. Students will also be given the opportunity to build on the core knowledge of AI by taking a variety of elective courses selected from colleges throughout campus to explore key contextual areas or more complex technical applications. Program graduates will be well positioned to attain research and development positions in a rapidly growing field or to progress into doctoral-degree-related fields.

Master of Science in Data Science

Khoury College of Computer Sciences and the Department of Electrical and Computer Engineering jointly offer an interdisciplinary Master of Science program in data science. This program is designed to give students a comprehensive framework for reasoning about data. Students will engage in extensive coursework intended to develop depth in data collection, storage, retrieval, manipulation, visualization, modeling, and interpretation. Students will also be able to choose elective courses from a variety of offerings in Khoury, the College of Engineering, and throughout the campus to explore areas that generate data or specialized data science applications. Students in the MS program in data science will complete a capstone course, working with real-world data and applying what they have learned during the program. Successful program graduates will be well positioned to attain data scientist and data engineer positions in a fast-growing field or to progress into doctoral degrees in related disciplines.

Align Master of Science in Data Science

Students in the Align MS-DS program come from a variety of backgrounds, where they merge their existing knowledge with data science skills. Students will learn theoretical foundations and gain extensive experience with practical problems in the discipline, including data acquisition, storage, analysis, probabilistic modeling, model deployment, and presentation.

Master of Science in Robotics

The Master of Science in Robotics program, offered jointly by the College of Engineering and the Khoury College of Computer Sciences at Northeastern, looks at this fundamentally interdisciplinary field from three connected angles: mechanical engineering, electrical engineering, and computer science.

Through a technically challenging curriculum, hands-on learning, and industry co-op placements, students have an opportunity to gain a comprehensive understanding of the algorithms, control systems, and mechanisms used in robotics to help them stand out in the field and make a transformative impact on society.

For more information on the program, please visit the College of Engineering program page here (<https://catalog.northeastern.edu/graduate/engineering/electrical-computer/robotics-ms/>).

Master of Science in Computer Science

Northeastern's Master of Science in Computer Science is designed to prepare students for a variety of careers in computer science. The program combines both computing and important application domains—enabling students to increase their broad-based knowledge in the field while focusing on one curricular concentration selected from a range of options including artificial intelligence, computer-human interaction, graphics, programming languages, software engineering, data science, networks, theory, game design, systems, and information security.

Align Master of Science in Computer Science

MSCS-Align students come from a wide variety of backgrounds—with undergraduate majors ranging from math, biology, history, engineering, and classics. In this program, students have an opportunity to acquire both the knowledge needed to transition into a new career and the practical skills to build the next great app.

MSCS-Align Online—Take online courses from anywhere, with the flexibility to complete the courses fully online or transfer to one of our strategically located campuses after you've completed the bridge portion of the program. Align Online students will also have three in-person campus visits during the first two semesters to form peer and professional connections. The MSCS-Align Online option is not an F-1 compliant program.

Graduate Certificate in Cloud Software Development

The Graduate Certificate in Cloud Software Development provides students of all backgrounds with the foundational skills needed to pursue a career in cloud computing. Through a four-course program that emphasizes hands-on, industry-facing experiential learning—via Khoury College's partnerships with leading cloud platform companies like AWS, Google, and Microsoft—you'll gain the technical ability, exposure, and experience to work on any cloud computing platform, as well as the career-building resources to put you on the fast track in this growing field.

Graduate Certificate in Computer Science

The postbaccalaureate certificate is designed to give students a solid foundation in the mathematical and theoretical underpinnings of computer science, including the areas of discrete mathematics, basic programming, data structures, object-oriented programming, algorithms, and computer systems. The goal of the certificate is to provide foundational knowledge in computer science that is valuable in both the workplace for career advancement as well as to those looking to move into graduate programs within the discipline.

The Graduate Certificate in Computer Science will serve as the foundational premaster's courses in the Align program.

Graduate Certificate in Data Analytics

The interdisciplinary Graduate Certificate in Data Analytics is offered through a collaboration between the Khoury College of Computer Sciences and the College of Social Sciences and Humanities. The certificate curriculum emphasizes the skills needed to bridge between emerging technological capacities and traditional policymaking processes. The program is designed to provide students with foundational knowledge in data science—including data management, machine learning, data mining, statistics, and visualizing and communicating data—that can be applied to data-driven decision making in any discipline.

Graduate Certificate in Inclusive Computer Science Education

The Graduate Certificate in Inclusive Computer Science Education is designed to prepare students to teach computer science principles and concepts in the context of a K–12 environment. Building on the successful Computer Science—Align program, this certificate assumes no prior computer science experience. Through coursework and project-based learning, students have an opportunity to obtain the foundational knowledge necessary to teach basic computing concepts and programming at a variety of educational levels both as stand-alone courses and integrated into other disciplines. The certificate emphasizes how teachers can create an inclusive classroom environment, actively work to dispel stereotypes, and build student confidence. Students who finish this certificate will be well positioned to obtain K–12 certification in computer science.

Programs

Doctor of Philosophy (PhD)

- Computer Science (<https://catalog.northeastern.edu/graduate/computer-information-science/computer-science/computer-science-phd/>)
- Network Science (<https://catalog.northeastern.edu/graduate/social-sciences-humanities/interdisciplinary/network-science-phd/>)

Master of Science (MS)

- Artificial Intelligence (<https://catalog.northeastern.edu/graduate/computer-information-science/computer-science/artificial-intelligence-ms/>)
- Data Science (<https://catalog.northeastern.edu/graduate/computer-information-science/computer-science/data-science-ms/>)
- Data Science—Align (<https://catalog.northeastern.edu/graduate/computer-information-science/computer-science/data-science-ms-align/>)
- Game Science and Design (<https://catalog.northeastern.edu/graduate/arts-media-design/art-design/game-science-design-ms/>)
- Internet of Things (<https://catalog.northeastern.edu/graduate/engineering/electrical-computer/internet-things-ms/>)
- Robotics (<https://catalog.northeastern.edu/graduate/engineering/electrical-computer/robotics-ms/>)

Master of Science in Computer Science (MSCS)

- Computer Science (<https://catalog.northeastern.edu/graduate/computer-information-science/computer-science/computer-science-mscs/>)
- Computer Science—Align (<https://catalog.northeastern.edu/graduate/computer-information-science/computer-science/computer-science-mscs-align/>)

Graduate Certificate

- Cloud Software Development (<https://catalog.northeastern.edu/graduate/computer-information-science/computer-science/cloud-software-development-graduate-certificate/>)
- Computer Science (<https://catalog.northeastern.edu/graduate/computer-information-science/computer-science/computer-science-graduate-certificate/>)
- Data Analytics (<https://catalog.northeastern.edu/graduate/computer-information-science/computer-science/data-analytics-graduate-certificate/>)
- Inclusive Computer Science Education (<https://catalog.northeastern.edu/graduate/computer-information-science/computer-science/inclusive-computer-science-education-graduate-certificate/>)