Information on Undergraduate, Graduate and PHD

Undergraduate

A degree focusing upon Computer Science or Data Science from Tufts will lay the foundation for your success, and provide you with the knowledge necessary to become a leader in the rapidly evolving discipline of computer science as well as in other computer-related fields. At Tufts, you'll learn about the challenges and research problems involved in creating new kinds of computer software.

Tufts sets students up for success. Working closely with both faculty members and the Career Center, Tufts students acquire internships and career opportunities in various sectors and locations. A tech hub, Boston is a progressive city known across the globe for its academic and professional opportunity. About 80% of Tufts engineering majors complete at least one internship, and 60% conduct research in their four years here.

BS in Computer Science (SOE) or BA/BS in Computer Science (A&S)

Tufts provides two computer science majors emphasizing a solid grounding in theoretical computer science and algorithmic knowledge, applied computer science, and software engineering skills enabling them to pursue professional careers in computing or software. Students can also opt to go on to graduate work in computer science and related disciplines. Students can major in Computer Science through the School of Engineering or the School of Arts and Sciences.

BS in Data Science (SOE)

The Bachelor of Science in Data Science in the School of Engineering is a rigorous program in the theory, methods, practices, and tools involved in using big data for science, business intelligence, and other data-intensive tasks in both science and business. It produces computer-literate data analysts who are well versed in current methods in both computational statistics and machine learning.

Minor in Computer Science

The Department of Computer Science offers a minor in computer science for students in both the School of Arts and Sciences and the School of Engineering.

Major in Cognitive and Brain Sciences

The Cognitive and Brain Science major (CBS) is an interdisciplinary major offered by the Department of Psychology. CBS students take a variety of Computer Science courses, and we have created an FAQ for CBS majors.

Bachelor of Science in Computer Science (School of Engineering)

Director: Associate Professor Alva Couch

The mission of the Bachelor of Science in Computer Science in Engineering program is to provide graduates with the durable knowledge necessary to become future leaders in the rapidly evolving discipline of computer science as well as in other computer-related fields. We aim to give each graduate a solid foundation in both computer science theory and programming practice, and to prepare each graduate for further advanced study in computer science and related fields. We aim to expose each graduate to the challenges and research problems involved in creating new kinds of computer software. We aim to give graduates the skills and commitment to lifelong learning necessary to prepare them to be effective employees or graduate students in computer-related fields. The faculty is dedicated to accomplishing this mission through integration of teaching and research.

Our program objectives include success in industry careers and graduate school. Two to five years after graduation, graduates of the BSCS program will have:

1. Succeeded and advanced in professional careers in or related to computing or software.
2. Been admitted to and advanced in graduate study in computer science.

Outcomes of the BSCS program include that:

1. Graduates should be able to use computer science theory to analyze algorithms and to reason about properties of programs, including structure, behavior, and performance.
2. Graduates should be able to solve problems by using principled methods to create, extend, and improve software.
3. Graduates should have had practice applying their knowledge and skills to open-ended problems with more than one good answer.
4. Graduates should have practice working in teams.

Additionally, the BSCS degree aims to empower our students with the ability to:

1. Analyze a complex computing problem and to apply principles of computing and other relevant disciplines to identify solutions.
2. Design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program's discipline.
3. Communicate effectively in a variety of professional contexts.
4. Recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles.
5. Function effectively as a member or leader of a team engaged in activities appropriate to the program's discipline.
6. Apply computer science theory and software development fundamentals to produce computing-based solutions. [CS]

Requirements

The Bachelor of Science in Computer Science (BSCS) requires a minimum of 120 semester-hours of study, including introductory, foundation, HASS, breadth, and concentration courses.

Introductory courses (10 courses) include Engineering 1; Engineering science 2 or an elective with attribute “Engineering requirements” and value “SOE-Engineering”; Mathematics 32, 34 or 39, and 42 or 44; Mathematics 70 or 72; two courses selected from Physics 11, Chemistry 1 or 16, and Biology 13; and one natural science or mathematics elective worth 3 or more semester hour units. For natural science courses accepted towards the Engineering degrees, refer to the online course catalog for courses with attribute “Engineering Requirements” and value “SOE-Natural Sciences.” For mathematics courses, refer to the online course catalog for courses with attribute “Engineering Requirements” and value “SOE-Mathematics”.

The Humanities, Social Sciences, and Arts (HASS) requirement (24 semester hour units) includes English 1 or 3 and additional courses in Humanities, Arts, or Social Sciences. Of these courses, one course must cover ethics and social context (Engineering Management 54 or Philosophy 24), one course worth at least 3 semester hour units must be Humanities, and one course worth at least 3 semester hour units must be Social Science. Allowable courses in Humanities, Arts, and Social Sciences are listed in the online course catalog with attribute “Engineering Requirements” and possible values "SOE- HASS- Humanities," "SOE-HASS-Arts," and “SOE-HASS-Social Sciences,” respectively; courses labeled with a value of "SOE-HASS" are also acceptable. Philosophy 24 does not satisfy the requirement for three credit hours in Humanities unless Engineering Management 54 is also taken. The breadth requirement (6 semester hour units) includes one course in ethics and social context (Philosophy 24 or Engineering Management 54); and additional courses chosen either from Humanities, Arts, and Social Sciences, or from selected courses covering the broader context of engineering, including COMP 99: Internship in Computer Science. A list of selected courses appropriate for fulfilling the remaining semester hour units of the breadth requirement is available from the department.

The Engineering requirement (three courses) includes Engineering Science 3 and 4; and a statistics course chosen from Mathematics 166, Engineering Science 56, Electrical Engineering 24 or 104, Biomedical Engineering 141, Biology 132, and Physics 153.

The Computer Science major requirement (14 courses) includes Computer Science 11, 15, 40, 80 or 105, 160, 170, 97, and 98; Computer Science 61, Mathematics 61, or Mathematics 65, and five or more elective courses in Computer Science, three of which must be numbered above 100. At least two credit hours of concentration electives must be chosen from courses covering the social context of computing, including Computer Science 27, 28, 55, 116, 117, 120, 155, and 182-188. In addition, the student must complete a minimum of 40 credit hours of courses with attribute “Engineering requirements” and value “SOE-Computing,” which includes Computer Science courses as well as selected courses from other departments. All courses counted toward the major requirement must be completed with a grade of C- or better.

In addition, there are several restrictions on which courses can be counted as concentration electives. Only one of Computer Science 80 or Computer Science 105 may be counted toward the concentration. At most three semester hour units of Independent Study or Research (Computer Science 93, 94, 191, 193, or 194) and four semester hour units of thesis (Computer

Science 197) may be utilized as concentration electives. At most one course numbered 55 or 155 may be counted toward the degree. Internship credit (Computer Science 99) may not be counted toward the concentration requirement, though three semester hour units of Computer Science 99 (Internship in Computer Science) may be counted toward the breadth requirement. For a research experience, students should consider partly fulfilling concentration elective requirements via a senior thesis.

At the student's option, one concentration elective may be replaced by one course in Mathematics, selected from the following choices:

- Mathematics 51 - Differential Equations
- Mathematics 63 - Number Theory
- Mathematics 87 - Mathematical Modeling and Computation
- Mathematics 125 - Numerical Analysis
- Mathematics 126 - Numerical Linear Algebra
- Mathematics 133 - Complex Variables
- Mathematics 135 - Real Analysis I
- Mathematics 136 - Real Analysis II
- Mathematics 145 - Abstract Algebra I
- Mathematics 146 - Abstract Algebra II
- Mathematics 155 - Partial Differential Equations I
- Mathematics 156 - Partial Differential Equations II
- Mathematics 163 - Computational Geometry
- Mathematics 165 - Probability
- Mathematics 166 - Statistics

The following sample program is one way of satisfying the above requirements. Further information regarding options and procedures is available from the department.

First Year

FALL TERM

- Engineering 1
- Mathematics 32 (or 39)
- Physics 11, Chemistry 1 or 16, or Biology 13
- English 1

SPRING TERM

- Computer Science 11 Introduction to Computer Science
- Mathematics 34
- Physics 11, Chemistry 1 or 16, or Biology 13
- Humanities, social sciences, or arts elective

Sophomore Year

FALL TERM

- Computer Science 15 Data Structures
- Mathematics 42
- Natural science or mathematics elective
- Humanities, social sciences, or arts elective
- Humanities, social sciences, or arts elective

SPRING TERM

- Computer Science or Mathematics 61 Discrete Mathematics (or Mathematics 65)
- Mathematics 70 or 72 Linear Algebra
- Systems elective
- Humanities, social sciences, or arts elective
- Humanities, social sciences, or arts elective

Junior Year

FALL TERM

- Computer Science 160 Algorithms
- Systems elective
- Computer Science elective
- Humanities, social sciences, or arts elective
- Breadth elective

SPRING TERM

- Computer Science 40 Machine Structure and Assembly-Language Programming
- Computer Science elective
- Humanities, social sciences, or arts elective
- Breadth elective

Senior Year

FALL TERM

- Computer Science 97 Senior Capstone Project I
- Computer Science 105 Programming Languages
- Computer Science elective
- Probability & Statistics Elective
- Humanities, social sciences, and arts elective

SPRING TERM

- Computer Science 98 Senior Capstone Project II
- Computer Science 170 Theory of Computation
- Computer science elective
- Computer science elective
- Humanities, social sciences, and arts elective

Students in the Bachelor of Science in Computer Science program in the School of Engineering must earn a C- or better in 75% of concentration courses. They also must have a C- or better in two-thirds of 120 credit hours of courses.

Bachelor of Arts/Bachelor of Science Major in Computer Science (Arts & Sciences)

Director: Associate Professor Mark Sheldon

Computer Science isn't just for engineering majors. Undergraduates in the School of Arts and Sciences also have the flexibility to pursue a major in the dynamic field of computer science.

Students in the School of Arts and Sciences may fulfill the major requirements for Computer Science as outlined below. Students who fulfill these requirements may ask for either a BA or a BS — the requirements are the same. Students in the School of Engineering should refer to Bachelor of Science in Computer Science.

Computer Science Major Requirements

The major in Computer Science requires 10 courses: eight courses in computer science and two courses in mathematics. The computer science courses must include Computer Science 15, 40, 80 or 105, 160, and 170 and the remaining courses must be numbered above 15. Only one of Computer Science 80 or 105 may be counted toward the major. No more than one Directed Study (93, 94, 193, 194) may be counted toward the major. The mathematics courses are Linear Algebra (which can be taken as Mathematics 70 or 72) and Discrete Mathematics (which can be taken as Computer Science 61 or Mathematics 61 or 65). Only one of Computer Science/Mathematics 61, or Mathematics 65 may be counted toward the major. All courses to be counted toward the major must be completed with a grade of C- or better.

The introductory courses Computer Science 10 and 11, as well as Mathematics 4, 14, 30, and 32, do not count toward the major. Computer Science 55, 99, 139, 155, and 182-188 do not count toward the major. The above are minimal requirements for the concentration. For students who desire a stronger program, the following courses are recommended: Computer Science 97, 98, 111, and 181; as well as Mathematics 145, 165, and 166.

The Department of Computer Science also offers a BSCS in the School of Engineering.

Grade Requirements

BA/BS students majoring in Computer Science must have a grade of C- or better in all ten concentration courses ("10-Courses/C-" requirement).

Forms

All forms for CS undergraduate students.

Bachelor of Science in Data Science

Co-Directors: Associate Professor Alva Couch (Computer Science) and Professor Mai Vu (Electrical and Computer Engineering)

Data Science refers to the principles and practices in data analysis that support data-centric real-world problem solving. The Bachelor of Science in Data Science (BSDS), jointly administered by the departments of Computer Science and Electrical and Computer Engineering, is offered to students in the School of Engineering who desire to concentrate on applying computing to scientific and engineering analysis and problem solving. The BSDS is designed both as a stand-alone major and a double major option for those students in the School of Engineering who wish to add data science to an existing engineering major. The BSDS degree is only available to students in the School of Engineering. Double majoring in the BSDS and Bachelor of Science in Computer Science (BSCS) programs is not practical and will not be permitted due to overlap between the major concentrations.

Bachelor of Science in Data Science

The mission of the BSDS is to prepare students for Data Science careers in engineering, science, medicine, and other disciplines. The objectives of the BSDS program include that graduates should have, after five years:

1. Succeeded and advanced in professional careers in or related to data science, analysis, and interpretation, and/or
2. Been admitted to and advanced in graduate study in data science and related fields.

The outcomes of the Bachelor of Science in Data Science include the following:

1. Graduates will demonstrate facility in a variety of data analysis techniques, including machine learning, optimization, statistical decision-making, information theory, and data visualization.
2. Graduates will be qualified to engage in interdisciplinary projects with data analytics components, including facility in communicating with engineers, scientists, and computing professionals.
3. Graduates will have been exposed to the ethical and scientific obligations of the data analyst.

Requirements

The following requirements apply to the Class of 2027. Visit the Student Life website to review the degree sheet for your anticipated graduation year.

The Bachelor of Science in Data Science is a rigorous program open to students in the School of Engineering. The program requires 38 courses, including introductory, foundation, HASS, breadth, and concentration courses. The BSDS is designed both as a standalone major and a double major option for those students in Engineering who wish to add data science to an existing engineering major. Students adding Data Science as a second major must fulfill all of the requirements on the degree sheet, subject to School of Engineering double-counting rules.

Please see the Class of 2027 degree sheet and sample program for more details. seven courses must include:

- A) One course in data infrastructure (including Computer Science 51, 112, 114, 115, 116, 117, 118, 119, 120, 122, 123, and 151).
- B) One course in data analytics and/or interfaces (including Computer Science 52, 136, 137, 138, 141, 142, 143, 152, 166, 167, 169, 171, 175, 177, and 178).
- C) One course in computational and theoretical aspects of data science (including Computer Science 131, 153, 160, and 168; Mathematics 123, 125, and 126; and Electrical Engineering 127, 130, 133, 140 and 159).
- D) Two additional courses chosen from (A)-(C) or from additional courses Math 51, 63, 87, 153, 155, 156; ME 150; or CEE 187; and may include at most one credit of Independent Study or Research (DS 93, CS 93, 94, 191, or 193; EE 93, 94, 95, 96, 191, 192) and at most one credit of thesis (CS 197 or EE 197). Requirements also include a senior capstone experience including Data Science 97 and 98 (Senior Capstone Project in Data Science I and II).

For a research experience, students should consider partly fulfilling concentration elective requirements via a senior thesis, coordinated with the capstone experience and breadth elective choices.

Forms

All forms for CS undergraduate students.

Minor in Computer Science

Program Advisor: Lecturer Mark Sheldon

The undergraduate minor in Computer Science is open to undergraduates in the Schools of Arts and Sciences and Engineering, and consists of five courses, including Computer Science 15; two courses chosen from Computer Science 40, 105, 160, and 170; Computer Science/Mathematics 61 or Mathematics 65; and one additional elective course in computer science numbered above 15. Only one of Computer Science 80 or 105 may be counted toward the minor. Only one of Computer Science/Mathematics 61 or Mathematics 65 may be counted toward the minor. Computer Science 55 and 155 may not be used as the computer science elective. All courses to be counted toward the minor must be completed with a grade of C- or better.

Five courses are required for a minor

- Computer Science 15 (3 credits)
- Computer Science/Mathematics 61 or Mathematics 65
- Two courses chosen from Computer Science 40, 105, 160 and 170
- One additional elective course in computer science numbered above 15

Forms

All forms for CS undergraduate students.

BA/BS in Cognitive and Brain Science

Cognitive and Brain Science (CBS) is an inherently interdisciplinary area, drawing on psychology, neuroscience, linguistics, philosophy of mind, computer science, and biology. A Cognitive and Brain Science degree provides an excellent preparation for careers in the sciences, computer fields, health professions, law, and education.

Students majoring in Cognitive and Brain Science usually receive a Bachelor of Science degree.

Learning Objectives

Program Requirements and Policies

- A total of thirteen courses are required for the CBS major. Unless specified otherwise, courses counted towards the major must be at least three (3) semester-hour credits.
- Students scoring 4 or 5 on the Psychology AP exam, 6 or 7 on the International Baccalaureate (Higher Level) exam, or A or B on the GCE A-level exam earn credit for PSY 1. In other words, the student earns 3 semester-hour credits and does not need to take PSY 1 for the major. Students may substitute Child Study and Human Development 1 for PSY 1 for prerequisite purposes, but they must take an additional psychology course in order to reach the 13 courses required for the major.
- In addition to the required courses, Cognitive and Brain Science majors are encouraged to complete a senior research project which entails either (a) completing an honors thesis in Psychology, Child Study and Human Development, Computer Science, or Philosophy; (b) completing a year-long research experience with a faculty member in one of these departments or with a faculty member in the Neuroscience Department of the Medical School; or (c) completing a faculty-supervised review paper of the literature on a particular issue within one of these areas. Planning for such projects should begin by the end of junior year.
- Please note that Computer Science 11 has prerequisites that must be satisfied before enrolling.

- Students are encouraged, after consultation with their advisor, to augment the Cognitive and Brain Science major by taking electives in Psychology, Anthropology (150), Biology (13, 14, 116, 134), and Math (11, 12, 13, 121).
- Please note that CBS majors with an advisor from a department other than Psychology should follow that department's policies for completing the senior degree sheet paperwork. The second signature on that degree sheet will come from a representative of that department, not from Psychology.

Course Requirements

Part I

The following seven required courses:

- Psychology 1: Introduction to Psychology
- Psychology 9: Introduction to Cognitive and Brain Sciences
- Psychology 31: Statistics for the Behavioral Sciences (or one of: BIO 132, CEE 6/CH 36, CEE 156, CSHD 140)
- Psychology 32: Experimental Psychology
- Psychology 64 (cross listed as Philosophy 15/Linguistics 15): Introduction to Linguistics
- Computer Science 11: Introduction to Computer Science
- Psychology 195: Senior Seminar in Cognitive & Brain Science (Please note: PSY 195 meets in the fall semester only)

Note: The CBS steering committee strongly recommends that CBS majors, especially those seeking a greater emphasis in the computation side of Cognitive Science, also take Computer Science 15 and Computer Science/Math 61 as many (but not all) upper level Computer Science courses require these courses as prerequisites.

Part II

One course from each of the following three groups:

GROUP A
Psychology 11: Developmental Psychology
Psychology 25: Physiological Psychology
Psychology 26: Animal Learning and Cognition
Psychology 27: Perception
Psychology 28: Cognitive Psychology
Psychology 29: Human Neuropsychology
Psychology 103: Brain & Behavior
CSHD 51/151: Intellectual Development

GROUP B
Computer Science 15: Data Structures

Computer Science 131: Artificial Intelligence
Computer Science 133: Human-Robot Interaction
Computer Science 134: Computational Models in Cognitive Science
Computer Science 138: Reinforcement Learning
Computer Science 139: Ethics for AI Robotics
Computer Science 150AA: Assistive Algorithms
Computer Science 150DR: Developmental Robotics
Computer Science 150NLP: Natural Language Processing
Computer Science 171: Human Computer Interaction
Classics 161: Intro to Digital Humanities
Classics 162: Natural Language Processing and the Human Record

GROUP C
Philosophy 3: Language and Mind
Philosophy 33 or 103: Logic
Philosophy 191-02: Foundations of Cognitive Science
Psychology 150: Semantics
Psychology 151: Syntactic Theory
Psychology 155: Phonological Theory

Part III

A total of three courses taken from at least two of the following groups (only one of which may be independent study/directed research; also note that courses used to fulfill Part II. requirements above may not be double counted toward Part III. as well):

GROUP A
Psychology 80: Psychology of Music
Psychology 91/92: Research in Psychology
Psychology 103: Brain and Behavior
Psychology 112: Biological Basis of Psychopathology
Psychology 116: Psychology of Fear
Psychology 117: Autism and Neurodevelopmental Disorders
Psychology 118: Topics in Infancy
Psychology 121: Applying Cognition to Education
Psychology 122: Cognitive Aging
Psychology 123: Psychopharmacology
Psychology 124: Cognition of Games People Play
Psychology 126: Origins of Cognition
Psychology 127: Behavioral Endocrinology
Psychology 128: Nutrition and Behavior
Psychology 129: Cognitive Neuroscience
Psychology 131: Neuropsychology of Cognition
Psychology 139: Social Cognition
Psychology 140: Probabilistic Models of Perception and Cognition
Psychology 142: Seminar in Affective Neuroscience

Psychology 144: Memory and Retention
Psychology 145: Mental Representation
Psychology 146: Comparative Cognition and Behavior
Psychology 147: Multitasking
Psychology 153: Cognitive Neuroscience of Language Processing
Psychology 154: Psychosis
Psychology 156: Long Term Memory Processes
Psychology 157: Multisensory Perception
Psychology 191/192: Independent Research in Psychology
Psychology 199: Senior Honors Thesis
Biology 134: Neurobiology

GROUP B
Psychology 149: Psychology of Language
Psychology 150: Semantics
Psychology 151: Syntactic Theory
Psychology 152: The Psychology of Bilingualism
Psychology 153: Biological Foundations of Language
Psychology 155: Phonological Theory (if not taken to fulfill II. C above)
Psychology 180: Music, Language, and the Brain
CSHD 114: Children and New Technologies
CSHD 145: Technological Tools for Thinking and Learning
CSHD 51/151: Intellectual Development
CSHD 152: Development of Thought and Language
CSHD 155: The Young Child's Development of Language
CSHD 156: Developmental Neuroscience and Disorders of Development
CSHD 177: Bilingual Studies
CSHD 195: Developmental Disorders in Language and Reading
CSHD 250: Reading, Dyslexia, and the Brain
Education 114 (cross-listed as Linguistics/German 114): Linguistic Approaches to Second Language Acquisition

GROUP C
Computer Science 86: Object Oriented Programming for Graphical User Interfaces
Computer Science 93: Directed Study
Computer Science 94: Directed Study
Computer Science 105: Programming Languages
Computer Science 131: Artificial Intelligence
Computer Science 133: Human-Robot Interaction
Computer Science 134: Computational Models in Cognitive Science
Computer Science 135: Machine Learning and Data Mining
Computer Science 138: Reinforcement Learning
Computer Science 139: Ethics for AI Robotics
Computer Science 150AA: Assistive Algorithms
Computer Science 150AAC: Accessible and Assistive Computing
Computer Science 150DR: Developmental Robotics

Computer Science 150NLP: Natural Language Processing
Computer Science 170: Computation Theory
Computer Science 171: Human Computer Interaction
Computer Science 177: Visualization
Computer Science 178: Visual Analytics
Computer Science 193: Directed Study
Computer Science 194: Directed Study
Classics 161: Intro to Digital Humanities
Classics 162: Natural Language Processing and the Human Record

GROUP D
Philosophy 38: Rational Choice
Philosophy 114: Topics in Logic
Philosophy 116: Philosophy of Science
Philosophy 117: Philosophy of Mind
Philosophy 118: Philosophy Of Biology
Philosophy 126: Theories of Human Nature
Philosophy 130: Moral Philosophy
Philosophy/Psychology/Anthropology 132: Cognition of Society and Culture
Philosophy 133: Philosophy of Language
Philosophy 134: Philosophy of Social Science
Philosophy 170: Computation Theory
Philosophy 191-02: Foundations of Cognitive Science

Minor in Cognitive & Brain Science or Linguistics

A minor in Cognitive & Brain Science is also available and administered by the Department of Philosophy. For questions, please contact Jaouad Elkamouss or Professor Brian Epstein.

A minor in Linguistics is also available and administered by the Department of Philosophy. For questions, please contact Jaouad Elkamouss or the Co-Directors of the minor, Professor Dilip Ninan and Professor Ariel Goldberg.

Any full-time faculty member in the Department of Psychology can advise CBS majors. In addition, full-time faculty members in Computer Science (e.g., Remco Chang, Rob Jacob) or Philosophy (e.g., Stephen White, Brian Epstein) can advise CBS majors.

Master's

We provide students with the best of both worlds: a student-centered experience at a top-notch research university. You'll immerse yourself in cutting-edge, interdisciplinary work led by innovative faculty.

Master's degrees require a minimum of 30 credits and the fulfillment of at least 10 courses at the 100-level or above with grades of S (satisfactory) or at least a B-. Program requirements may vary. Our master of science programs in Computer Science allow you to study part-time, so you can get back into the job market with your updated skills. All of our MS programs can be taken on a part-time basis.

MS in Artificial Intelligence

Designed for students with a background in computer science, mathematics, or a related technical field, the MS in Artificial Intelligence curriculum covers AI concepts and techniques — including machine learning, deep learning, natural language processing, computer vision, and knowledge representation. Students will develop an ability to understand, implement, and deploy a wide range of AI technologies across disciplines, and they'll have the opportunity to work closely with faculty every step of the way.

MS in Bioengineering (Bioinformatics track)

The Bioengineering (MS) program provides a broad engineering and biotechnology curriculum, while offering a focus on a specific engineering track that best fits students' interests and career choices. This combination gives our bioengineering graduates professional flexibility, a distinct competitive advantage in the ever-changing field of bioengineering. Computer Science is the home department for students studying in the Bioinformatics track.

MS in Computer Engineering

The complexity of software and hardware systems calls for today’s computer engineers to be concerned with power consumption, security, and reliability not just functional correctness. This master’s program trains students to design hardware, software, and networking systems for the computers of today and tomorrow. The Department of Computer Science and the Department of Electrical and Computer Engineering jointly administer this degree.

MS in Computer Science

Students in the MS degree program in Computer Science can choose to complete a master’s thesis or a course-based study track. The MS program can be completed in one year, or two years with an optional thesis. In this program, students can pursue interdisciplinary collaborations within Tufts School of Engineering and across the university. The online master's program in Computer Science offers a 100% online degree that can be completed in under two years.

MS in Computer Science - Online

For futuristic thinkers with inquisitive minds, the Tufts online Master of Science in Computer Science (MSCS) program provides students with the tools to develop innovative solutions for today’s digital challenges. You’ll benefit from working across disciplines that reflect a real-world need for computer-science solutions and expertise. From building applications to

developing large-scale software systems, you'll gain new skills and experience unique learning opportunities across an array of areas.

MS in Cybersecurity and Public Policy

The Master of Science program in Cybersecurity and Public Policy integrates technology and policy at Tufts. Students focus on international issues and responses in a wide range of in-depth cybersecurity policy focus areas, ranging from development to national security. This is a joint program between the Department of Computer Science and The Fletcher School.

MS in Data Science

The Master of Science program in Data Science prepares students with bachelor's degrees in STEM fields to prepare for careers in data analysis and data-intensive science. The program focuses on statistics and machine learning, with courses in data infrastructure and systems, data analysis and interfaces, and theoretical elements. The Department of Computer Science and the Department of Electrical and Computer Engineering jointly administer this degree.

MS in Data Science - Online

The Tufts online Master of Science in Data Science (MSDS) program prepares you for a next-generation career in data analysis and data-centric problem-solving—or for further study in the data science field. Through the program's rigorous curriculum, you'll be exposed to state-of-the-art ideas. You'll also be fully immersed in data analysis principles, methods, and practices as you build the analytic expertise to guide high-level, data-driven decision-making and look for actionable insights that could make a difference in the world. Administered jointly by the Departments of Computer Science and Electrical and Computer Engineering, and featuring courses from both, along with the Department of Mathematics, the MSDS program is interdisciplinary in nature and forward-thinking in its approach.

MS in Human-Robot Interaction

Human-Robot Interaction is an interdisciplinary effort aimed at understanding and improving all aspects of interactions between humans and robots. It draws on knowledge from computer science, mechanical and electrical engineering, as well as psychology, philosophy, anthropology, legal fields, among various others. The Department of Computer Science, the Department of Electrical and Computer Engineering, and the Department of Mechanical Engineering each now offers an MS in Human-Robot Interaction.

MS in Software Systems Development

The Master of Science in software systems development prepares students for careers in a fast-growing technology market. Students will learn how to design, build, and test systems programs in C and C++ through a set of courses containing practical experience in all aspects of C/C++ software development. Students may choose between completing a master's thesis or a course-based study track.

Dual Degree Master's Program (with Tufts Gordon Institute)

Develop your innovation, leadership and management skills and build your technical depth with the Dual Degree Master's Program. You'll earn two degrees: an MS offered by the Department of Computer Science, and an MS in Engineering Management (MSEM), Innovation & Management (MSIM), or Technology Management & Leadership (MSTML).

Learn more about the Dual Degree Master's Program and application requirements or contact tgi@tufts.edu for more information.

PhD

Doctoral degrees require the fulfillment of the specific department requirements including the number of courses with grades of S (satisfactory) or at least a B-, as well as successful completion of the qualifying examination and doctoral dissertation.

PhD in Computer Science

Tufts offers a PhD program in Computer Science, with admission granted at the department level, not to individual faculty members' research groups. At Tufts, doctoral candidates go on to change the world in successful careers in industry and academia. They teach in tenure-track positions at prestigious universities, launch innovative start-ups, and go to work at companies like Google, Microsoft, IBM, and many more.

Joint PhD in Cognitive Science

Cutting across the information and life sciences, cognitive science is a paradigmatic multi- and inter-disciplinary research program with enormous future societal benefits, especially as intelligent artificial agents are becoming part of our lives. A graduate student in the Cognitive Science Program is required to meet the requirements of their home department (Psychology, Child Study and Human Development or Computer Science) as well as the requirements for the Cognitive Science Program.

Joint PhD in Human-Robot Interaction

Doctoral students in Human-Robot Interaction have the opportunity to build a unique degree program for themselves as they lay the foundations for future generations of researchers and practitioners working with robots. Graduating doctoral candidates will receive a joint PhD in their home department (Computer Science) and in Human-Robot Interaction.