

CENTER FOR COMPUTATIONAL SCIENCE AND ENGINEERING

The Center for Computational Science and Engineering (CCSE) (<https://cse.mit.edu>) is an interdisciplinary academic unit of the MIT Schwarzman College of Computing (<https://computing.mit.edu>) that offers graduate-level education in computational science and engineering (CSE) (<https://catalog.mit.edu/interdisciplinary/graduate-programs/computational-science-engineering>). The CSE field centers on the development and analysis of state-of-the-art methods for computation, and their innovative application to problems of science and engineering interest. CSE synthesizes intellectual foundations in applied mathematics, statistics, computer science, and the full range of science and engineering disciplines into a discipline of its own—one that links the digital and physical worlds.

Key elements of CSE graduate education include computational mathematics (numerical analysis, optimization, model reduction, high-dimensional approximation), uncertainty quantification, statistical inference, and inverse problems, along with simulation methods ranging from numerical methods for partial differential equations to molecular simulation to Monte Carlo methods. Data-driven methods (e.g., scientific machine learning and computational statistics) are prominent threads within CSE, as are high-performance computing, mathematically oriented programming languages, and their broader links to algorithms and software.

CCSE's faculty comprise approximately 70 core members and affiliates from across the Institute, including the School of Engineering, School of Science, Schwarzman College of Computing, Sloan School of Management, and the School of Architecture and Planning. These faculty represent over 14 departments, including the eight that participate in the interdisciplinary CSE doctoral program: Aeronautics and Astronautics; Chemical Engineering; Civil and Environmental Engineering; Materials Science and Engineering; Mechanical Engineering; Nuclear Science and Engineering; Earth, Atmospheric and Planetary Sciences; and Mathematics.

For more information about CCSE or CSE graduate programs, visit the CCSE website (<https://cse.mit.edu>).