COMPUTATIONAL SCIENCE AND ENGINEERING (GRADUATE MINOR FIELD)

Graduate School

Program Website (https://cornell-cse.github.io/overview.html)

Field Description

The program in computational science and engineering (CSE) spans several dozen departments and research areas. The field is application-driven and involves a mix of applied mathematics, numerical analysis, and computer science. A priority of the CSE program is the development of a coordinated curriculum that serves computationally-oriented graduate students throughout science and engineering.

Ph.D. students at Cornell can minor in CSE. Requirements are flexible and there are many faculty members [CSE Field (https://cornell-cse.github.io/)] who can serve as the CSE advisor.

This is a minor field. Application for admission is made only to the major fields. After matriculation, a student may select minor subjects from the major or minor fields.

Graduate Minor Field Requirements

For students in graduate research degrees, earning a “minor” in a specific subject or concentration is not explicitly linked to the completion of coursework but is instead defined by the student’s special committee. Faculty serving on the student’s special committee each represent a concentration. Because many graduate faculty are active in more than one graduate field or academic discipline, students and faculty should be clear about which concentration will be represented when a committee is formed.

Faculty

Tomas Alberto Arias (http://physics.cornell.edu/tomas-arias)

- **Campus:** Ithaca - (Minor Member)
- **Concentrations:** *Computational Science and Engineering:* computational science and engineering

David S. Bindel (http://www.cs.cornell.edu/~bindel)

- **Campus:** Ithaca - (Minor Member)
- **Concentrations:** *Computational Science and Engineering:* computational science and engineering
- **Research Interests:** scientific computing

Anil Damle (http://www.cs.cornell.edu/~damle/)

- **Campus:** Ithaca - (Minor Member)
- **Concentrations:** *Computational Science and Engineering:* computational science and engineering
- **Research Interests:** computational quantum chemistry, numerical linear algebra, spectral clustering

Ashim K Datta (http://cals.cornell.edu/ashim-k-datta)

- **Campus:** Ithaca - (Minor Member)
- **Concentrations:** *Computational Science and Engineering:* computational science and engineering

Olivier Desjardins (http://www.mae.cornell.edu/mae)

- **Campus:** Ithaca - (Minor Member)
- **Concentrations:** *Computational Science and Engineering:* computational science and engineering
- **Research Interests:** computational fluid dynamics

Peter J. Diamessis (http://www.cee.cornell.edu/faculty-directory/pete-j-diamessis)

- **Campus:** Ithaca - (Minor Member)
- **Concentrations:** *Computational Science and Engineering:* computational science and engineering
- **Research Interests:** environmental fluid mechanics, high performance parallel scientific computing

Christopher J. Earls (http://www.cee.cornell.edu/faculty-directory/christopher-j-earls)

- **Campus:** Ithaca - (Minor Member)
- **Concentrations:** *Computational Science and Engineering:* computational science and engineering
- **Research Interests:** structural health monitoring, computational and structural mechanics

Fernando Escobedo (http://www.cheme.cornell.edu/faculty-directory/fernando-escobedo)

- **Campus:** Ithaca - (Minor Member)
- **Concentrations:** *Computational Science and Engineering:* computational science and engineering
- **Research Interests:** development and application of modeling and simulation methods to elucidate the structure-property relationship of soft materials, prediction of the formation of structures from synthetic and fabrication techniques and exploration of their thermophysical properties

Gregory Simon Ezra (http://chemistry.cornell.edu/gregory-sion-ezra)

- **Campus:** Ithaca - (Minor Member)
- **Concentrations:** *Computational Science and Engineering:* computational science and engineering

Peter Frazier (http://www.orie.cornell.edu/faculty-directory/peter-frazier)

- **Campus:** Ithaca - (Minor Member)
- **Concentrations:** *Computational Science and Engineering:* computational science and engineering
- **Research Interests:** Optimal learning and the exploration vs. exploitation tradeoff, at the interface between machine learning and sequential decision-making under uncertainty

H. Oliver Gao (http://www.engineering.cornell.edu/faculty-directory/h-oliver-gao)

- **Campus:** Ithaca - (Minor Member)
- **Concentrations:** *Computational Science and Engineering:* computational science and engineering

- **Research Interests:** transportation and environment, energy sustainability

Shane G. Henderson (http://www.orie.cornell.edu/faculty-directory/shane-g-henderson)

- **Campus:** Ithaca - (Minor Member)
- **Concentrations:** *Computational Science and Engineering:* computational science and engineering
- **Research Interests:** computational biology, discrete event simulation, structured simulation optimization, general variance reduction techniques, regenerative methods of simulation, dependence structures and input uncertainty

Yong L Joo (http://www.cheme.cornell.edu/faculty-directory/yong-l-joo)

- **Campus:** Ithaca - (Minor Member)
- **Concentrations:** *Computational Science and Engineering:* computational science and engineering
- **Research Interests:** structure, rheology and processing of advanced polymeric materials, numerical simulations of viscoelastic fluid flows with molecular models, hydrodynamic instabilities in viscoelastic fluids

Nathan Kallus (http://www.orie.cornell.edu/faculty-directory/nathan-kallus)

- **Campus:** Cornell Tech (NYC) - (Minor Member)
- **Concentrations:** *Computational Science and Engineering:* computational science and engineering
- **Research Interests:** optimization, statistics, machine learning, operation management

Steve Lantz (http://www.cac.cornell.edu/~slantz)

- **Campus:** Ithaca - (Minor Member)
- **Concentrations:** *Computational Science and Engineering:* computational science and engineering
- **Research Interests:** high performance computing, parallel computing, numerical modeling and simulation, fluid dynamics, plasma physics

Adrian Lewis (http://www.orie.cornell.edu/faculty-directory/adrian-s-lewis)

- **Campus:** Ithaca - (Minor Member)
- **Concentrations:** *Computational Science and Engineering:* computational science and engineering

Christopher R. Myers (http://physics.cornell.edu/christopher-myers)

- **Campus:** Ithaca - (Minor Member)
- **Concentrations:** *Computational Science and Engineering:* computational science and engineering
- **Research Interests:** computational systems biology, complex systems, scientific computing, biological information processing

Samuel Epstein Otto (http://www.mae.cornell.edu/faculty-directory/sam-otto)

- **Campus:** Ithaca - (Minor Member)
- **Concentrations:** *Computational Science and Engineering:* computational science and engineering
- **Research Interests:** Scientific computing, scientific machine learning, and nonlinear systems arising in continuum mechanics

Perrine Pepiot (http://www.engineering.cornell.edu/faculty-directory/perrine-pepiot)

- **Campus:** Ithaca - (Minor Member)
- **Concentrations:** *Computational Science and Engineering:* computational science and engineering
- **Research Interests:** novel modeling tools to allow for a much stronger chemical insight into CFD and increase the impact of numerical approaches in the design and optimization of energy systems

Sara C. Pryor (http://www.eas.cornell.edu/faculty-directory/sara-c-pryor)

- **Campus:** Ithaca - (Minor Member)
- **Concentrations:** *Computational Science and Engineering:* computational science and engineering
- **Research Interests:** climate simulation

Patrick M. Reed (http://www.cee.cornell.edu/faculty-directory/patrick-michael-reed)

- **Campus:** Ithaca - (Minor Member)
- **Concentrations:** *Computational Science and Engineering:* computational science and engineering
- **Research Interests:** Sustainable water management given conflicting demands from renewable energy systems, ecosystem services, expanding populations, and climate change. Tools bridging sustainability science, risk management, economics, multiobjective decision making, operations research, computer science, high performance computing and advanced spatiotemporal visualization and uncertainty modeling techniques.

David B Shmoys (http://infosci.cornell.edu/content/shmoys)

- **Campus:** Ithaca - (Minor Member)
- **Concentrations:** *Computational Science and Engineering:* computational science and engineering

Huseyin Topaloglu (http://www.orie.cornell.edu/faculty-directory/huseyin-topaloglu)

- **Campus:** Cornell Tech (NYC) - (Minor Member)
- **Concentrations:** *Computational Science and Engineering:* computational science and engineering
- **Research Interests:** stochastic and dynamic programming

Alex John Townsend (http://math.cornell.edu/alex-townsend)

- **Campus:** Ithaca - (Minor Member)
- **Concentrations:** *Computational Science and Engineering:* computational science and engineering
- **Research Interests:** numerical analysis and scientific computing

Zheng Jane Wang (http://physics.cornell.edu/jane-wang)

- **Campus:** Ithaca - (Minor Member)
- **Concentrations:** *Computational Science and Engineering:* computational science and engineering

David Paul Williamson (http://infosci.cornell.edu/content/williamson)

- **Campus:** Ithaca - (Minor Member)
- **Concentrations:** *Computational Science and Engineering:* computational science and engineering