Computational Science, Engineering, and Mathematics

For More Information

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Overview

The program is unique in its interdisciplinary emphasis. Faculty are drawn from a large number of academic departments representing five schools and colleges. The program is designed for outstanding students who desire expertise in multiple disciplines and are willing to take on new challenges by working alongside faculty involved in research at the forefront of computational science.

Areas of Study

Graduate study in computational science, engineering, and mathematics comprises three areas: (1) applicable mathematics, (2) numerical analysis and scientific computation, and (3) mathematical modeling and applications. Within these broad areas, the student may take courses in applied mathematics and statistics, data science, numerical analysis and scientific computation, computational mechanics and physics, parallel computing and computer architecture, and mathematical modeling, and in supporting areas in science and engineering that involve mathematical modeling of physical, biological, social, or engineered systems. Students perform research in a broad range of areas, including scientific computing, uncertainty quantification, machine learning, numerical analysis, optimization, visualization, computational medicine, computational geosciences, computational materials, computational life sciences, computational physical sciences, computational engineering, and many more.

Facilities for Graduate Work

The Oden Institute for Computational Engineering and Sciences provides space and supporting resources for work in computational science, engineering, and mathematics. Extensive computational facilities include an Ethernet network supporting hundreds of general-purpose Linux workstations, and about 10 distributed memory computer clusters with between 64 and 1344 cores each. Faculty members, research staff, and graduate students also have access to large-scale supercomputing resources of the Texas Advanced Computing Center (TACC) and the POB scientific visualization laboratory. Also available are the Kuehne Physics Mathematics Astronomy Library, the Mallet Chemistry Library, the Walter Geology Library, the Perry-Castañeda Library, and the Life Science Library.