Interdisciplinary Graduate Minor in

Applied Scientific Computation

The student should ensure that his or her POS meets the degree requirements. The minor degree is available through the graduate college.

General requirements:

1. Programming ability in high level language: FORTRAN, C, C++
2. At least one faculty participant in *ASC* (e.g., teaching one of the courses below) will be on the Program Of Study committee of any student in the program. That person will be in a department different from the student's major.
3. Recommendation by student's major professor and by a faculty member in the program. Graduate research that requires a significant degree of scientific computing and is in an appropriate area of science and engineering.
4. Attendance is required at seminars offered by the program

Course requirements:

A grade of B+ (3.33) or better must be obtained in all courses required for the *ASC* minor. (Any or all of these courses may be used to meet requirements of the major degree.)

a. Three mandatory courses:
   1. Numerical analysis of high performance computing: CprE/Math/ComS 525 or Introduction to Parallel Algorithms and Programming, CprE/ComS 526 or High Performance Computing for Scientific and Engineering Applications CprE 425
   2. Two out of:
      i. Numerical linear algebra: Math 562
      ii. Algorithms for partial differential equations: AerE/ME 546 or Math 517
      iii. Statistical Computing: Stat 580
      iv. Machine Learning ComS 573

b. Two courses selected from the following list: they must consist of one in the student's major field and one in another field

Fluid dynamics and heat transfer: AerE/ME 547, AerE 647
Quantum chemistry: Chem 580
Multi-phase phenomena: ME/ChE 632
Multi-scale simulation of complex flow: ME 690-O
Computational methods in electromagnetics: EE516
Bioinformatics: CprE/ComS/BCB 567
Multi-scale modeling: Math 646
Molecular simulation: ChE 642
Finite elements with applications: Math 666
Finite element analysis: EM 525
Parallel Algorithms for Scientific Applications: CprE 626