



# ISSUES IN SCIENTIFIC COMPUTING

**HARDWARE**

*Parallel architecture*  
*Shared memory*  
*Distributed memory*  
*SIMD (Cray, GPGPUs)*  
*Exascale and beyond*

## ALGORITHMS

*B-Splines*  
*Nonlinear equations*  
*Quasi-Newton methods*  
*Homotopy methods*  
*Constrained optimization*  
*Sparse iterative methods*  
*Approximation theory*

**SOFTWARE**

*Fortran 2008*  
*MPI-2*  
*Mathematica*  
*VTDIRECT95*  
*QNSTOP*  
*ACM TOMS*  
*TEX*  
*HOMPACK90*

## APPLICATIONS

*Depending on students' background and interests*