INTEGRATED APPLIED MATHEMATICS (IAM)

\# Course numbers with the # symbol included (e.g. #400) have not been taught in the last 3 years.

IAM 550 - Introduction to Engineering Computing
Credits: 4
An application driven introduction to computer-aided problem solving leveraging foundational knowledge in engineering and the physical sciences. Engineering applications are used to motivate the computational methods needed in scientific and engineering disciplines. Numerical methods, including the basic LU algorithm, one-dimensional root finding methods, and numerical differentiation and integration, are introduced as useful computational tools for tackling a broad range of engineering and scientific and engineering disciplines. Numerical methods, including the basic LU algorithm, one-dimensional root finding methods, the numerical differentiation and integration , are introduced as useful computational tools for tackling a broad range of engineering and scientific applications and to provide concrete and contextual programming experiences. MATLAB is used, with topics including scripts, functions, logical expressions, conditional statements, looping, data visualization, plotting, and recursion presented within the framework provided by both the numerical methods and the scientific or engineering problems. Laboratory included.
Prerequisite(s): MATH 426 (may be taken concurrently) with a minimum grade of D-.
Mutual Exclusion: No credit for students who have taken MATH 445.
Grade Mode: Letter Grading

IAM 751 - Introduction to High-Performance Computing
Credits: 4
Course gives an introduction to select areas of high-performance computing, providing a basis for writing and working with high-performance simulation codes. The three main topics are: 1) basic software engineering, 2) high-performance and parallel programming, and 3) performance analysis and modeling. Additional topics may include hetergeneous architectures like GPUs and data analysis/visualization. Working knowledge of a compiled programming language (C, C+ or Fortran) is required prior to taking this course.
Grade Mode: Letter Grading