ARIZONA STATE UNIVERSITY

COLLEGE OF LIBERAL ARTS AND SCIENCES
Department of Mathematics and Statistics

# *COURSE ANNOUNCEMENT*

# FALL 2006

# MAT 423

# NUMERICAL ANALYSIS I

**Instructor:** **Rosemary Renaut**
**Time:** **12:15 – 1:30 Tuesday & Thursday**
**Location:** **ECG G236**
**Schedule Line #:** **31889**
**Credit Hours:** **3**

***Course Description:*** Numerical analysis is responsible for designing and analyzing the algorithms used for solving mathematical problems that arise in many fields, especially science and engineering. Most real world problems in mathematics cannot be solved exactly, so it is crucial to design and implement computational algorithms that can accurately and effectively obtain approximations to the true solution.

MAT 423 is the first course in a two course series that focuses on the design and implementation of such computational algorithms. The topics include: computer arithmetic and round off error stability, numerical linear algebra, solutions to nonlinear equations, the determination of eigenvalues, iterative procedures and optimization.

Applications from biology, physics, and medicine will be discussed. The final exam counts as a qualifier exam for the graduate program. Graduate students interested in applied mathematics are encouraged to take at least two courses in computational methods during their studies. Graduate students in computational mathematics are required to take this course or pass out of it in accordance to the departmental rules.

***Prerequisites:*** MAT 343 or MAT 342 and fluency in a computer programming language, or instructor approval.

***Textbook:*** Alfio Quarteroni, Riccardo Sacco, and Fausto Saleri, *Numerical Mathematics*, Series: Texts in Applied Mathematics, Vol. 37, ISBN 0-387-98959-5.