



Graduate Studies in the Department of Mathematical Sciences

Brief History:

- Graduate Program started 1960
- First Ph.D. 1967
- Department of Mathematical Sciences since 1971
- M.S. and Ph.D. programs restructured in the late 1970's–early 1980's

Graduate Programs

- M.S. and Ph.D. in Mathematical Sciences
- Emphasis Areas
 - algebra and discrete mathematics
 - applied analysis
 - computational mathematics
 - mathematics education
 - operations research
 - probability and statistics
- Study in all areas include courses to provide both **breadth** and **depth**
- Also Ph.D. in Management Science (with Management Department)

FACULTY INTEREST AREAS

ALGEBRA/DISCRETE MATH

Graph Theory
Combinatorics
Geometry
Coding Theory
Cryptgraphy
Discrete Mathematics
Finite Fields
Number Theory

APPLIED ANALYSIS

Nonlinear Differential Equations
Biomathematical Modeling
Financial Mathematics
Partial Differential Equations
Control Theory
Dynamical Systems
Neural Networks
Functional Analysis

COMPUTATIONAL MATHEMATICS

Fluid Dynamics
Integral Equations
Discrete Computing
Environmental Modeling
Simulation
Parallel Processing

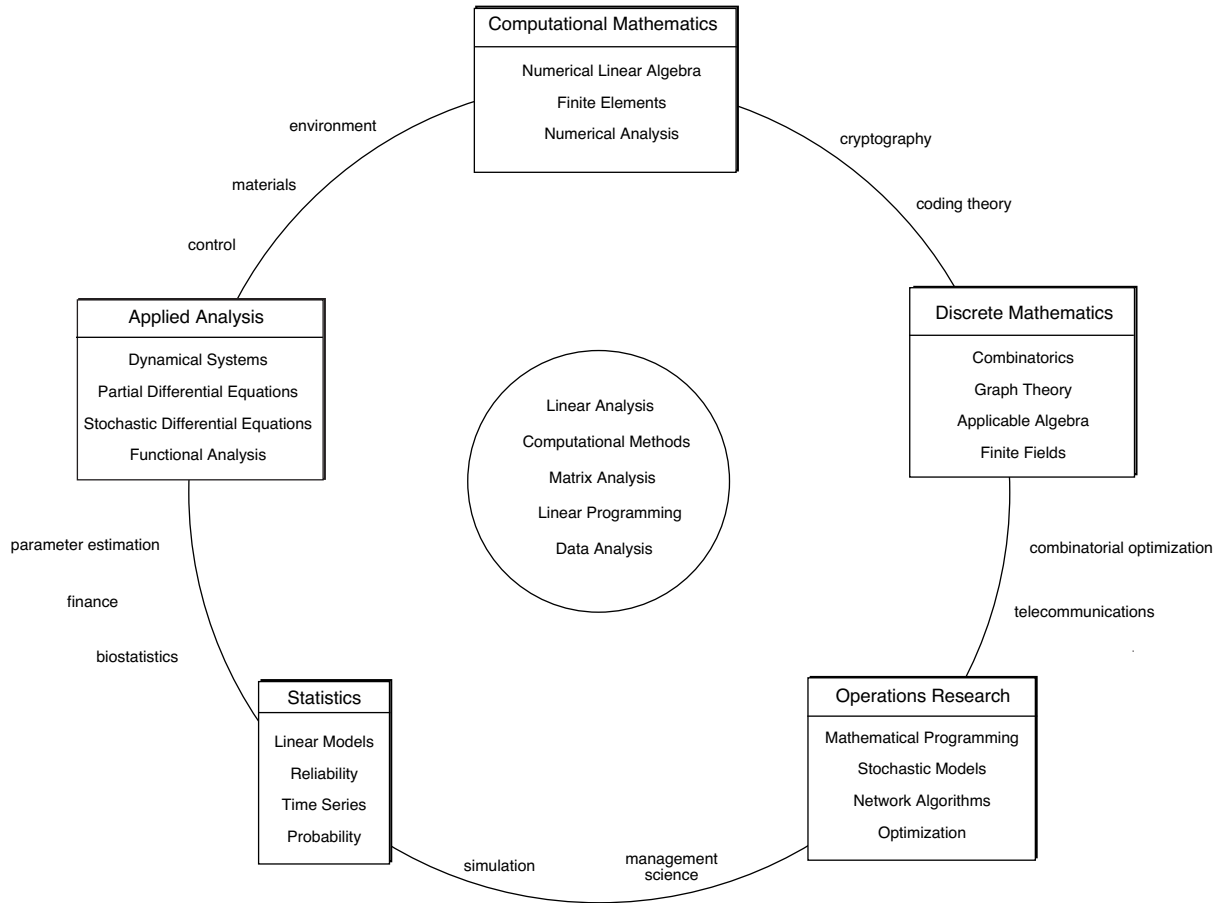
OPERATIONS RESEARCH

Mathematical Programming
Optimization
Network Algorithms
Stochastic Processes
Graph Theory
Computational OR

STATISTICS

Decision Theory
Reliability
Data Analysis
Statistical Computing
Quality Control
Sampling Theory
Biostatistics
Artificial Intelligence

Interdisciplinary Approach



Mathematical Sciences M.S. Program

- Prerequisites

- Linear Algebra
- Differential Equations
- Computer Language
- Statistics

- Foundations

- Modern Algebra
- Advanced Calculus
- Probability
- Discrete Computing Course

- Breadth Area

- Algebra
- Analysis
- Scientific Computing
- Operations Research
- Statistics

- Statistics/OR

- Recommended

- 853 Matrix Analysis
- 821 Linear Analysis
- 860 Intro. to Scientific Computation
- 810 Linear Programming
- 805 Data Analysis
- 804 Intro. to Statistical Inference
- 800 Probability
- 803 Stochastic Processes
- 814 Network Flow Programming

- Concentration

- Six Courses

- Master's Project (MthSc 892)

Mathematical Sciences Ph.D. Program

- Student's curriculum includes at least two graduate courses in each of the five areas: algebra/discrete math, analysis, computational math, operations research, and probability/statistics
- Curriculum includes twenty or more 800/900 level graduate courses
gives depth to [concentration](#) area and to a supporting [secondary](#) area
- Timeline
 - take preliminary exams in three areas selected from:
[algebra, analysis, computational mathematics,](#)
[operations research, statistics, stochastic processes](#)
 - Ph.D. advisor and committee formed
 - comprehensive exam
 - dissertation defense
- Preliminary exams are offered in January and late May/early June
- Ph.D. advisory committee (four members) reflects breadth and interdisciplinary nature of the program

A Sampling of Recent M.S. Graduates

Project Title (Initial Employment)

“Solution Approaches to the Path-Preservation Cutset Problem” (Satellite Systems Engineer, Lockheed Martin)

“Vibration Suppression of Simple Space Station Models Using Position and Velocity Feedback” (Naval Air Systems Command)

“Implementation of Multiple Criteria Dynamic Programming Procedures for Affordable Decision Making” (Analyst, Scientific Research Corporation)

“Statistical Analysis of Penaeid Shrimp Toxicity Values” (Database Marketing Analyst, Rodale, Inc)

“Automating External Radiation Beam-On Time Using Statistical Techniques” (Risk Analyst, Bank USA)

“Characterization, Enumeration, and Products of Involutory Matrices” (National Security Agency)

“An Introduction to Numerical Modeling of Stock Options” (Milliken & Company)

“Using Multicommodity Networks to Model a Manufacturing Distribution System” (Sonoco Corp.)

“Bayesian Inferences” (Bank One)

A Sampling of Recent Ph.D. Graduates

Dissertation Title (Initial Employment)

“Norm-Based Evaluation and Approximation in Multicriteria Programming” (Information Technology Specialist in Information Management, BMW)

“Root-Based Polynomial Compositions over Finite Fields” (Davies Fellow, NRC/ARL/USMA Fellowship)

“Solution Approaches for a Multi-Dimensional Scheduling Problem in the Apparel Industry” (Analyst, Technology Strategy, Inc.)

“Quantifying Error in the Analysis of Partitioning Interwell Tracer Tests” (Analyst, Solipsys Corporation)

“Full-Load Truck Routing with Time Windows” (IBM)

“Some Issues in Nonparametric Regression Inference” (Talus Solutions, Inc.)

“Stochastic Models for Workstation Utilization” (GE Capital Mortgage Corporation)

“Addressing Formulation Size, Strength, and Structure in Modeling Discrete Decision Problems” (Dickinson College)

“Using a Circadian Rhythms Model to Identify Optimal Shift Work Schedules” (Western Carolina University)

“Stochastic Minimum Spanning Trees” (Denison University)

Recent Industrial Employers

The Acacia Group

Bank One

Blue Cross/Blue Shield

Centers for Disease Control

J. D. Edwards

Fair, Isaac and Company

First USA Bank

GTE

Institute for Defense Analyses

Lucent Technologies

Micron Technology Inc.

Naval Air Systems Command

Rodale Press

SAIC

Scientific Research Corporation

Solipsys Corporation

Sparta Inc.

Technology Strategy Inc.

Unisys

Axiom Corporation

Bank USA

BMW

Department of Defense

Ericsson Inc.

First Union Securities

Greenville Hospital System

IBM Corporation

Lockheed Martin

Melita International

Milliken & Company

National Security Agency

Sabre Systems

SAS Institute

Software Technology Inc.

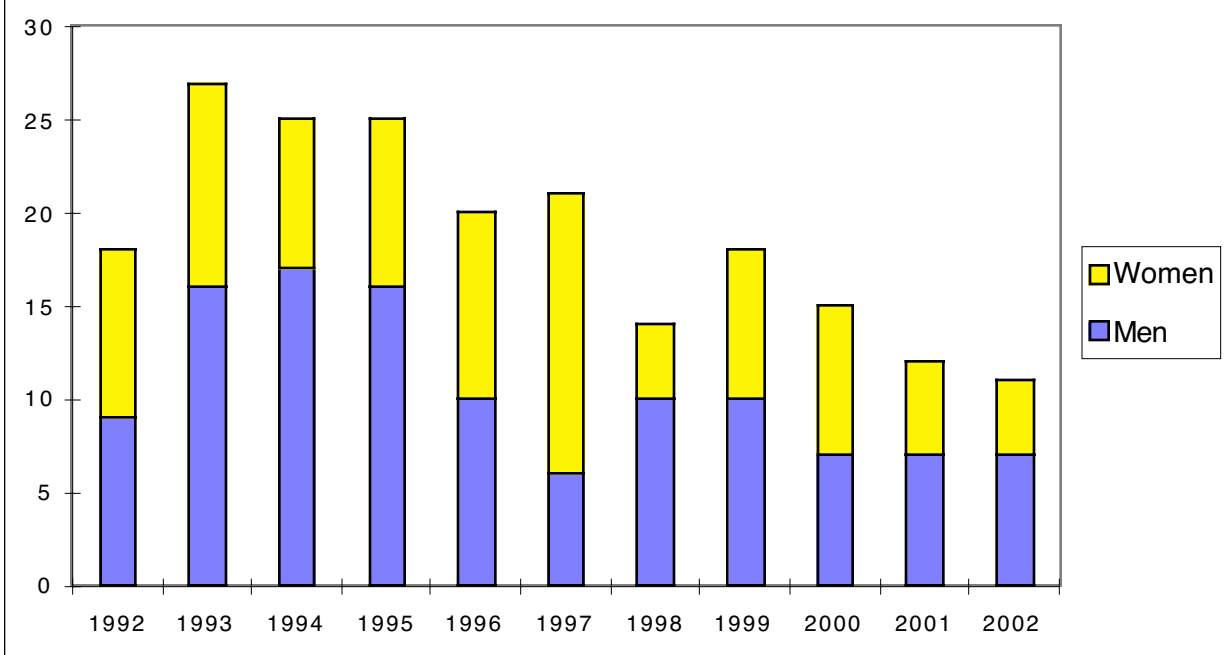
Sonoco

Talus Solutions, Inc.

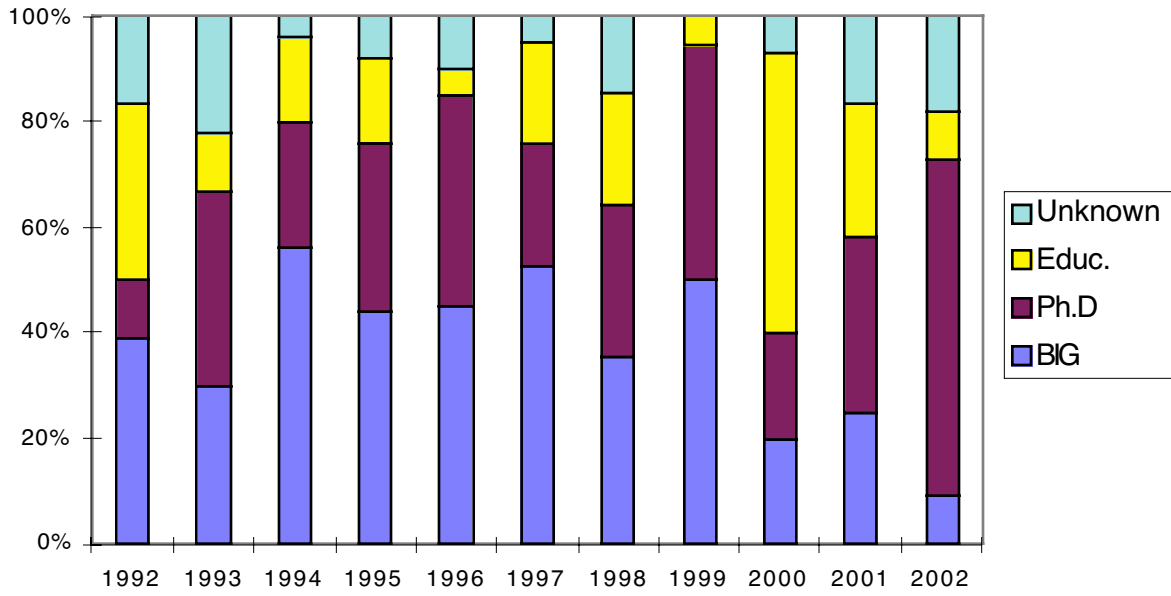
Trilogy Computing

WorldCom

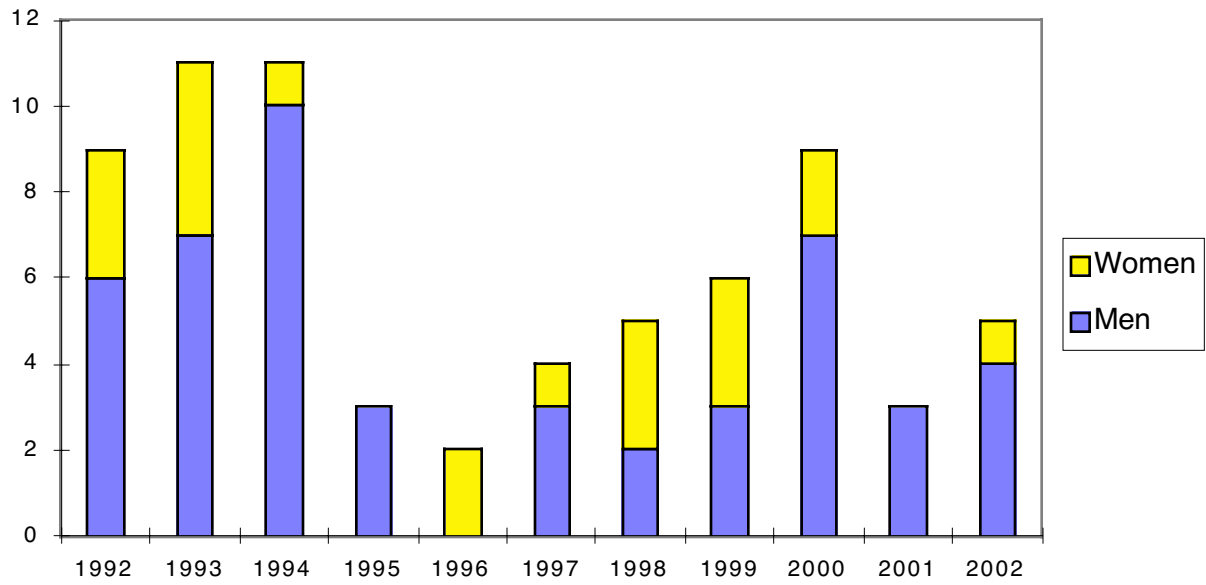
MS Graduates 1992-2002



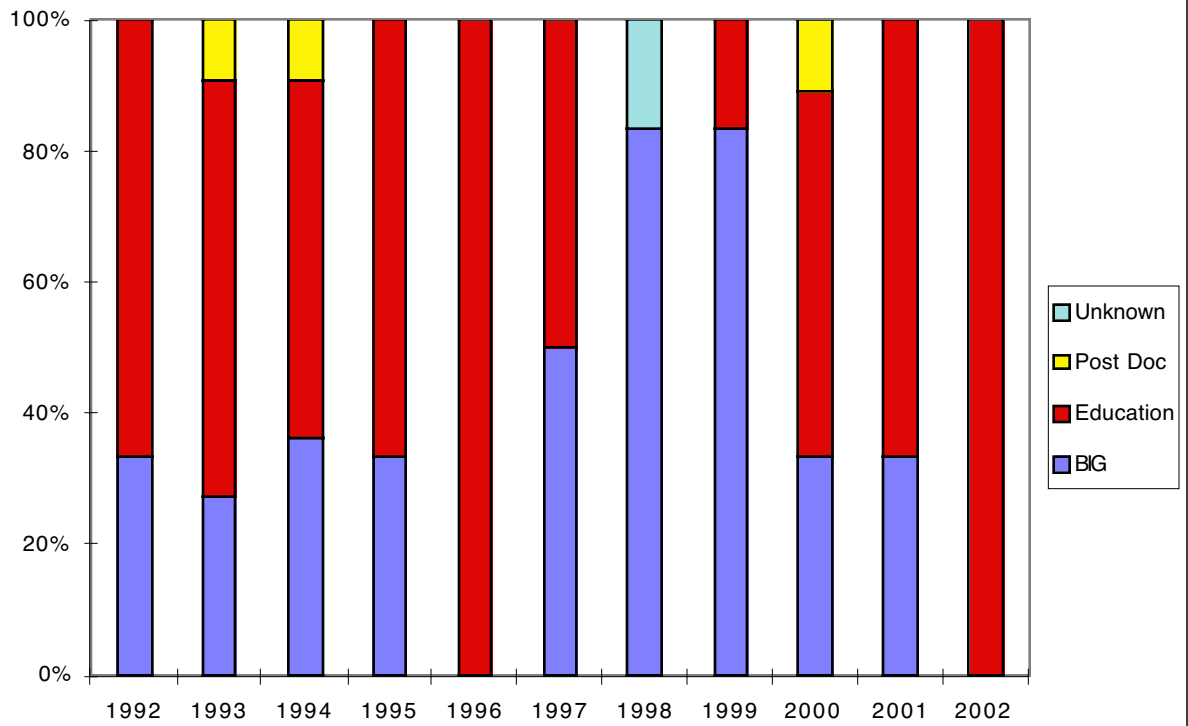
MS Graduates Employment Trends



Ph.D. Graduates 1992-2002



Ph.D. Graduates Employment Trends



Summary

- Mathematical Science Approach
 - multidisciplinary tools
 - interdisciplinary faculty
- Breadth and Depth in M.S. and Ph.D.
- Produce Graduates with Flexible Career Paths
 - education
 - business–industry–government

Other Information

- web page

www.math.clemson.edu

- links to faculty web pages
- link to the math graduate program page
- link to the Graduate School page (off the math graduate page)

- email

mathsci@clemson.edu

- telephone

[\(864\) 656-3434](tel:(864)656-3434)

- online application

www.grad.clemson.edu