Math
Department Learning Goals (adopted 1994)

1. Increase students' command of problem-solving tools and facility in using problem-solving strategies, through classroom exposure and through experience with problems within and outside mathematics.

   Problem-solving tools include:
   • the ability to reason
   • the ability to make connections
   • an understanding of mathematical structure.
   Problem-solving strategies are numerous and, in some cases, specific to particular subject areas or to certain levels of mathematics courses.

2. Increase students' ability to communicate and work cooperatively.

   Communication in mathematics includes the ability to express mathematical ideas both orally and in writing, as well as to read written presentations of mathematics with understanding. The ability to work cooperatively is fostered by experience in working to solve problems or complete projects as a part of a team.

3. Increase students' ability to use technology and to learn from the use of technology, including improving their ability to make calculations and appropriate decisions about the type of calculations to make.

   Using technology includes experience in using computer mathematics software. Skill in dealing with calculations includes such issues as distinguishing between approximate and exact answers, and determining bounds on error for approximate answers.

4. Increase students' knowledge of the history and nature of mathematics. Provide students with an understanding of how mathematics is done and learned so that students become self-reliant learners and effective users of mathematics.

   Knowledge of the history and nature of mathematics includes an awareness of how and why mathematics was invented throughout human history and continues to be in our own time. An understanding of how mathematics is done and learned is a crucial part of the development of any student of mathematics, affecting the attitude that the individual brings to the application of mathematics or to the independent learning of new mathematics.

E. Mapping of concentration courses to learning goals

	Goal 1	Goal 2	Goal 3	Goal 4	
Math 200	3	3	1	3	Mathematical Proofs & Structures
Math 315	3	2	1	2	Applied Combinatorics
Math 325	3	3	1	1	Mathematical Statistics I
Math 331	3	2	1	3	Survey of Geometry
Math 372	3	2	3		Computing with Mathematica
Math 395	3	2	2	2	Elementary Number Theory
Math 404	3	1	2	1	Dynamical Systems
Math 412	3	3	1	2	Modern Algebra
Math 413	3	3		2	Linear Algebra
Math 420	3	1	2	3	Stochastic Processes
Math 425	3	3	1	1	Mathematical Statistics I
Math 451	3	2		3	Advanced Calculus I
Math 452	3	3	1	3	Advanced Calculus II
Math 454	2	2	1	2	Fourier Series
Math 455	3	1		1	Complex Variables
Math 458	3	2	3	2	Wavelets
Math 462	3	2	2	1	Mathematical Modeling
Math 472	2	1	3	2	Numerical Analysis
Math 473	3	3	3	2	Matrix Computations
Math 480	2	3	2	2	History of Mathematics
Math 492	3	3	1	2	Topology

1=basic coverage, 2=substantial coverage, 3=extensive coverage