

## Math Department BA/BS Program Assessment Maps

### BA Math

#### BA Math Preparation for Secondary Teaching.

Goals 1-4 are assessed for these two programs

### BS Applied Math Concentration in Statistics

### BS Applied Math Concentration in Economics and Actuarial Science

### BS Applied Math Concentration in Applied and Computational Math

Goals 2-5 are assessed for these two programs

#### Goal 1 Ability to Use and Construct Logical Arguments

The ability to reason logically to conclusions, including the ability to use precise definitions and to use various forms of logical argument. Assessment point, Math 108, BA Math, Assessed in Fall 2010. Specific LOs to be assessed are

- 1) Ability to give direct proofs
- 2) Ability to give proofs by contradiction.
- 3) Ability to give proofs by mathematical induction.
- 4) Ability to apply definitions to give proofs.
- 5) Ability to give proofs and disproofs involving quantified statements.

		<b>Math 115</b>	<b>Math 175</b>
		<b>Math 128A</b>	<b>Math 128B</b>
<b>Math 42</b>	<b>→ Math 108</b>	<b>→ Math 129A</b>	<b>→ Math 129B</b>
		<b>Math 131A</b>	<b>Math 131B</b>
		<b>Math 142</b>	<b>Math 179</b>
<b>Introduced</b>	<b>Developed</b>	<b>Enhanced</b>	<b>Mastered</b>

#### Goal 2 Ability to Communicate Mathematics Effectively

The ability to read mathematics with understanding and to communicate mathematical ideas with clarity and coherence. Assessment point, Math 104 for BA Math, Math 161B for BS Applied Math, last assessed in Spring 2007, next scheduled assessed in Fall 2012. Specific LOs to be assessed are

- 1) Ability to state a problem accurately, articulate assumptions, and describe a method of solution.
- 2) Ability to conduct independent investigation of mathematical concepts at the undergraduate level.
- 3) Ability to give written reports and oral presentations that include mathematical context which is mathematically accurate yet accessible to classmates.

		<b>Math 104</b>	<b>Math 128B</b>	
<b>Math 30W,31W, 32W</b>		<b>Math 108</b>	<b>Math 129B</b>	<b>capstone?</b>
<b>Eng 1A,1B</b>	<b>→ Math 100W</b>	<b>→ Math 161B</b>	<b>→ Math 131B</b>	<b>→ Math 203</b>
		<b>Math 178</b>	<b>Math 175</b>	
<b>Introduced</b>	<b>Developed</b>	<b>Enhanced</b>		<b>Mastered</b>

#### Goal 3 Ability to Perform Standard Mathematical Computations

Assessment point, Math 138, BA Math and BS Applied Math, last assessed in Spring 2008, next scheduled assessment in Spring 2012.

Specific LOs to be assessed are

- 1) Ability to evaluate limits.
- 2) Ability to calculate derivatives and integrals.

- 3) Ability to determine regions of convergence.
- 4) Ability to apply properties of algebraic and transcendental functions.

	<b>Math 112,113,115,175</b>	<b>geometry/topology</b>
	<b>Math 126,128AB,129AB</b>	<b>linear algebra/algebra/number theory</b>
	<b>Math 142,177,179</b>	<b>discrete math</b>
<b>Math 30,31,32,42 →</b>	<b>Math 131A,131B,132,138</b>	<b>analysis</b>
	<b>Math 133A,133B,134</b>	<b>differential equations/dynamical systems</b>
	<b>Math 143C,143M</b>	<b>numerical analysis</b>
	<b>Math 161A,161B,163,164</b>	<b>probability/statistics</b>
<b>Introduced</b>	<b>Enhanced/Developed</b>	

**Goal 4 The ability to use technology to solve mathematical problems.**

Assessment Point, Math 143C/M, BA Math and BS Applied Math, last assessed in Spring 2009, next scheduled assessment in Fall 2011. Specific LOs to be assessed are

- 1) Ability to write programs to solve mathematical problems.
- 2) Ability to use a mathematical programming environment such as MATLAB or Maple.
- 3) Ability to interpret numerical results.
- 4) Ability to understand that there are limits to numerical accuracy.

		<b>Math 178</b>	
	<b>Math 109</b>	<b>Math 129A,177</b>	<b>applied math modeling project/internship</b>
<b>Math 30,31,32 →</b>	<b>prog course →</b>	<b>Math 143C/M →</b>	<b>Math 203</b>
	<b>Math 167</b>	<b>Math 142,179</b>	<b>statistical consulting project/internship</b>
		<b>Math 161AB,163</b>	
<b>Introduced</b>	<b>Developed</b>	<b>Enhanced</b>	<b>Mastery</b>

**Goal 5 The ability to use mathematical models to solve practical problems.** Assessment Point, Math 178, BS Applied Math, Assessed in Spring 2011.

Specific LOs to be assessed are

- 1) The ability to extract relevant information from a practical problem and give a mathematical formulation of the problem.
- 2) The ability to use numerical results to validate (or modify) a model and to understand the limitation of a model.
- 3) The ability to clearly describe models including an analysis of the strengths and weaknesses of models and their relationship to the underlying problem.

		<b>Math 112</b>	
		<b>Math 129A,177</b>	<b>applied math modeling project/internship</b>
<b>Math 30,31,32 →</b>	<b>Math 178 →</b>	<b>Math 133AB</b>	<b>→ Math 203</b>
		<b>Math 142,179</b>	<b>statistical consulting project/internship</b>
		<b>Math 161AB,163</b>	
<b>Introduced</b>	<b>Developed</b>	<b>Enhanced</b>	<b>Mastered</b>