Undergraduate Academic Assessment Plan Mathematics 2012 2013

Mathematics BA

College of Liberal Arts and Sciences

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Mathematics BA
College of Liberal Arts and Sciences
Undergraduate Academic Assessment Plan

Mission Statement

The mission of the mathematics major is to develop graduates who can pursue research in a graduate program, work in business and industry, and teach mathematics in secondary schools in the State of Florida. The study of mathematics builds rigorous and precise skills for organizing scientific thought. The mathematics major learns to communicate ideas clearly and to apply mathematical models to solve practical problems. The student becomes proficient in core mathematical subjects and by selecting coursework from a variety of mathematical and scientific elective areas beyond the core areas the student can pursue specific career objectives. The mission aligns with the UF and CLAS mission to produce scholarly research, conduct scholarly inquiry and provide students the basic skills, knowledge, and critical habits of mind that enable them to excel in their chosen endeavors.

Student Learning Outcomes (SLOs)

Existing SLOs in the 2012-13 undergraduate catalog:
1. Proficiency in core mathematics fields: calculus, differential equations, advanced calculus, linear algebra and abstract algebra.
2. Ability to read and to construct mathematical proofs.
3. Ability to reason in abstract mathematical systems and mathematical models.
4. Ability to read new mathematics and to formulate mathematical models and arguments.

Revised SLOs for the 2013-14 undergraduate catalog:
Content

> 1. Explain conceptual and computational competency in core mathematics: Calculus, Differential Equations, Real Analysis, Linear Algebra and Abstract Algebra.

Critical Thinking

> 2. Identify correct mathematical arguments in abstract mathematical systems.

> 3. Develop and analyze mathematical models of scientific problems.

Communication

> 4. Develop and write correct mathematical arguments.

New/Revised SLOs, 2013-14*	Link to 2012-13* SLOs
Content	
Explain conceptual and computational competency in core mathematics: Calculus, Differential Equations, Real Analysis, Linear Algebra and Abstract Algebra.	Proficiency in core mathematics fields: calculus, differential equations, advanced calculus, linear algebra and abstract algebra.
	Ability to read and to construct mathematical proofs.
Critical Thinking	
Identify correct mathematical arguments in abstract mathematical systems.	Ability to reason in abstract mathematical systems and mathematical models.
Develop and analyze mathematical models of scientific problems.	
Communication	
Develop and write correct mathematical arguments.	Ability to read new mathematics and to formulate mathematical models and arguments.

*undergraduate catalog dates

Curriculum Map

Curriculum Map for: Mathematics BA

Program: Mathematics   College of Liberal Arts and Sciences

Key: **I**ntroduced   **R**einforced   **A**ssessed

Courses SLOs	Course MAS4105	Course MAS4301	Course MAA4102	Course MAA4103	Additional Assessments
Content Knowledge					
#1	I R A Exam	I R A Exam	I R A Exam	I R A Exam	
Critical Thinking					
#2	I R A Exam	I R A Exam	I R A Exam	I R A Exam	
#3	I R A Exam	I R A Exam	I R A Exam	I R A Exam	
Communication					
#4	I R A Exam	I R A Exam	I R A Exam	I R A Exam	

Assessment Cycle

Starting in Spring 2008 we began collecting data from these courses as well as certain pre-requisite courses required for entry into the upper division. The data is a composite score for each section of the course during the term. Analysis and interpretation is done in the Spring semester of each year on the data from the previous Spring, Summer and Fall sessions. Improvement actions are discussed at that time and implemented the following Fall, if needed.

Assessment Cycle Chart

Assessment Cycle for: Mathematics BA

<u>Program: Mathematics</u>   <u>College of Liberal Arts and Sciences</u>

Analysis and Interpretation: Spring term annually
Improvement Actions: Fall term annually
Dissemination: Fall term annually

Year SLOs	09/10	10-11	11-12	12-13	13-14
Content Knowledge					
#1	x	x	x	x	x
Critical Thinking					
#2	x	x	x	x	x
#3	x	x	x	x	x
Communication					
#4	x	x	x	x	x

Methods and Procedures

SLO Assessment Matrix

The SLO Assessment Matrix is new for the 2012-13 Academic Assessment Plans. We have populated the matrix to the extent possible with the information we have available. Please complete the matrix.

Assessment Method - For each SLO, please enter the assessment method you are using – exam (course, internal, or external), project, paper, presentation, performance, etc.

Measurement – list the measurement procedure you use for this outcome. It can be a faculty-developed rubric with the minimum acceptable level identified, an exam score and the minimum passing score, or other measurement. **Required for 2012-13: Include at least one example of a rubric used to assess an SLO.**

SLO Assessment Matrix for 2012-13

2012-13 Student Learning Outcome	Assessment Method	Measurement Procedure
Explain conceptual and computational competency in core mathematics: Calculus, Differential Equations, Real Analysis, Linear Algebra and Abstract Algebra.	Exams	
Identify correct mathematical arguments in abstract mathematical systems.	Exams	
Develop and analyze mathematical models of scientific problems.	Exams	
Develop and write correct mathematical arguments.	Exams	

Assessment is based on standard embedded questions into the mid-term and final examinations for the courses. Grading of the questions is based on rubrics developed for each question.

Indirect Assessments

Retention of students in the mathematics program will be reviewed as an indirect assessment of the major. Recognition of our mathematics students through scholarships and awards is an indirect assessment of the success of the major.

Sample Rubric

SLO	Excellent	Good	Insufficient
1	Clearly and profoundly demonstrates conceptual and computational competency in core mathematics.	Demonstrates considerable conceptual and computational competency in core mathematics.	Unable to demonstrate considerable conceptual and computational competency in core mathematics.
2	Clearly and consistently identifies correct mathematical arguments in abstract mathematical systems.	Often identifies correct mathematical arguments in abstract mathematical systems.	Unable to identify mathematical arguments in abstract mathematical systems.
3	Clearly reasons in abstract mathematical systems and mathematical models.	Mostly reasons in abstract mathematical systems and mathematical models.	Unable to reason in abstract mathematical systems and mathematical models.
4	Clearly reads new mathematics and to formulate mathematical models and arguments	Mostly reads new mathematics and to formulate mathematical models and arguments	Unable to read new mathematics and to formulate mathematical models and arguments

Assessment Oversight

Oversight is by the Undergraduate Committee Upper Division of the Mathematics Department. The Chair of this committee is the Undergraduate Coordinator. The other members of the Committee are appointed annually. The current listing of the committee is at

http://www.math.ufl.edu/committees.html

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