

Institution: University of Rhode Island

Program: Mathematics

Degree: BA, BS pure and applied options

Chair: Lewis Pakula

Academic Year: 2007/2008

Student Learning Outcomes	Performance Criteria	Evidence of Intentional Commitment to Address and Assess Outcome(s) across the Program	Program-Level Assessment Method(s) and Timing	Expected Level of Achievement	Actual Level of Achievement	Analysis and Interpretation of Data	Actions taken
1. Develop depth and breadth in mathematical knowledge essential to the degree/program.	Show proficiency in basic skills developed in the core courses, and ability to apply the concepts and skills in upper-division courses.	Curricular mapping	Proficiency subscores in final exams. Timing: Freshman-Senior courses.	Expect 75% of students to demonstrate depth and breadth at level of B or better.			
2. Know fundamental concepts of calculus and linear algebra.	Ability to solve a variety of problems in calculus and linear algebra.	Curricular mapping	Calculus and Linear Algebra proficiency subscores in final exams. Timing: sophomore-senior years.	Expect 75% of students to master Calculus/Linear Algebra at level of B or better.	55% of students met the mastery level by showing calculus proficiency in one of three senior level courses. See Addendum	Students appear need more reinforcement of basic calculus and linear algebra for upper level courses in the program.	Will provide clear expectations of basic calculus and algebra competence on course by course basis and provide systematic means to remedy deficiencies, e.g. online tutorials, worksheets, etc.
3. Apply mathematical reasoning based on definitions, axioms and theorems to read and write mathematical proofs. [Mathematics BS Pure Math option, and Mathematics BA only]	Ability to read technical and rigorous mathematics. Ability to produce mathematical proofs in selected junior and senior level courses.	Curricular mapping	Proficiency subscores in final exams. Timing: junior and senior years.	Expect 75% of students to demonstrate proficiency at level of B or better.			

4. Read and understand mathematical language and symbols.	Ability to read technical and rigorous mathematics. Ability to rephrase mathematical statements. Ability to produce specific examples from general statements.	Curricular mapping	Proficiency subscores in final exams. Timing: junior and senior years.	Expect 75% of students to demonstrate proficiency at level of B or better.			
5. Formulate and evaluate mathematical conjectures.	Ability to state mathematical conjectures carefully, articulate assumptions, apply appropriate strategies.	Curricular mapping	Proficiency subscores in final exams and/or written projects or assignments. Sophomore through senior years.	Expect 75% of students to demonstrate proficiency at level of B or better.			
6. Use technology to do calculations, visualizations, and test hypotheses.	Ability to use technology for visualization of mathematical ideas and processes, do symbolic and numerical calculations, and to test mathematical statements.	Curricular mapping	Written projects and/or assignments using a Computer Algebra System. Students surveys. Timing: sophomore through senior years.	Expect 75% of students to demonstrate proficiency at level of B or better.			
7. Communicate mathematical ideas in written, oral, and/or electronic form.	Ability to write mathematical arguments, orally present ideas, work cooperatively in groups to solve mathematical problems, use appropriate software as a tool to support mathematical exposition.	Curricular mapping	Written projects and/or assignments. Oral presentations. Timing: freshman through senior years.	Expect 75% of students to demonstrate proficiency at level of B or better.			

8. Apply mathematical concepts and techniques to solving applied problems. [Mathematics BS, Applied Option only]	Ability to undertake real world modeling projects, solve multi-step problems, recognize and express mathematical ideas embedded in other contexts or disciplines, use technology for simulation.	Curricular mapping	Written projects and/or assignments. Timing: sophomore through senior years.	Expect 75% of students to demonstrate proficiency at level of B or better.			
9. Be able to treat a large, complex mathematical problem.	Ability to apply skills and concepts taught in classes to solve challenging problems with multiple steps and that require more than one technique at the undergraduate level.	Curricular mapping	Written projects and/or assignments. Oral presentations. Timing: junior and senior years.	Expect 75% of students to demonstrate proficiency at level of B or better.			
10. Explore advanced perspectives of mathematics and appreciate its beauty.	Possess an understanding of the breath of mathematical sciences and interconnecting principles, appreciation of connection of mathematics and other disciplines, awareness of historical and contemporary mathematics and of critical perspectives of mathematics in the modern world.	Curricular mapping	Student surveys. Timing: senior year.	Expect 75% of students to express at least an 80% satisfaction level.			

21-03-2008