

Expected Educational Outcomes, Methods of Assessment, Results of Assessment, and Assessment Results Utilization

Department: Mathematics and Statistics

College: Arts and Sciences

Program: Mathematics and Statistics

Degree: BS or BA

Expected Educational Outcome (Student Learning Objectives)	Method of Assessing Learning Objectives	Results of Assessments	Description of Ways Programs Were Improved as a Result of Assessments
Working knowledge of core subjects: calculus and differential equations, linear algebra, statistics. Required courses: MA 125, 126, 227, 237, 238, 354; ST 210 or 315, ST 335.	Periodic departmental review of curricula and major requirements to ensure that they encompass all of the learning objectives. The department Curriculum Committee is charged with making this assessment and presenting recommendations for change to the department.	As a result of departmental discussion, the curriculum committee is currently considering a recommendation to make advanced calculus Math 334 an undergraduate requirement. The major motivating factor is that our own graduate program requires this course for admission. In an unrelated question, the curriculum committee is reviewing having mathematical modeling a required course.	As a result of discussions with faculty who are teaching upper level courses, we are examining the efficacy of using the graphing calculator towards our pedagogical goals.
In-depth knowledge of many areas of modern mathematics and statistics. Elective upper-division courses.	Monitoring of each student's progress by the student's advisor. The advisor designs an appropriate program of study that accomplishes core objectives in a timely fashion and is tailored to the student's interests and career goals.	Students who major in mathematics and statistics are required to see their advisor each semester. This policy is enforced through advising holds implemented by the BANNER registration system.	Faculty are rotated among the elective courses. In this way, we can best determine who among our majors will need mentoring in difficult concepts.
Understanding of the role of proof in mathematics, with the ability to	Assessment of the student's attainment of learning objectives in the context of	As a result of informal discussions, some faculty have come to the opinion	We are examining whether proof needs to be integrated into our lower

<p>construct simple proofs. Gradually developed throughout the curriculum, with increased emphasis in MA 237, 311, 316, 320, 321, 367, 334, 335, 413, 414, 434, 437 and 451.</p>	<p>the relevant courses. Students are evaluated by exams, written assignments and oral presentations. Exams are graded according to objective standards. Assessment and grading policies of junior faculty are reviewed for appropriateness to department standards. Student mastery of material and methods is necessary for success in subsequent coursework. Thus basic knowledge of core knowledge is tested not only in core courses, but repeatedly in advanced elective courses. Gradual mastery of key skills such as mathematical reasoning and proof, problem-solving and communication is evaluated throughout the curriculum, with rising expectations in the upper level courses.</p>	<p>that the concept of proof needs to be integrated throughout the curriculum. We are now examining the feasibility of introducing such a policy.</p>	<p>level courses. Part of this examination will include the technique for said introduction.</p>
<p>Problem solving: the ability to develop and use mathematical and statistical models, devise problem-solving strategies, collect and analyze data, locate suitable reference materials, and use appropriate technology. Developed throughout the curriculum, with particular emphasis in the core courses and modeling courses (ST 335 and MA 354), MA 436 and 458, and all upper-level statistics courses.</p>			

<p>Communication skills: proficiency in technical and expository writing, including writing proofs, and in oral presentation of technical material. Addressed most particularly in our W courses (MA 320, 354, 410, 413, 414, 458 and ST 480) and the Seminar in Contemporary Mathematics and Statistics (MA 150/ ST 150). Department colloquia provide students with additional models for oral expository and technical communication.</p>			<p>Our approach to communicating the professional culture seems to be effective at this point.</p>
<p>Awareness of professional culture: Familiarity with the history and modern developments of mathematics and statistics, its scope, and the wide range of occupations in which mathematicians and statisticians are currently employed. The history and development of mathematics and statistics are the subjects of MA 410 and MA 150/ ST 150. In addition, they are incorporated at relevant points in other coursework, with recent developments appearing particularly in 300 and 400-level courses. Department colloquia given by faculty and visitors help accomplish this objective, as well as resources posted on our website and bulletin boards.</p>	<p>The professional culture is communicated in diverse ways, in the classroom and in individual contacts with faculty and visitors, through the student Math-Stat Club, department colloquia and other department events. The Student Affairs Committee and Colloquium Committee are primarily responsible for these activities, which are in the scope of the annual department assessment of its accomplishments.</p>		