

2004 Annual Academic Assessment for Mathematics

Schreiner University

1. State the educational purpose of the assessment program:

The purpose of the mathematics degree program at Schreiner College is to prepare students for further study in mathematics and related fields, or to enter the working world. The assessment program attempts each term to determine if students are acquiring the skills needed for mathematical analysis and problem solving.

2. Educational goals, assessment for each goal, performance standards, and findings:

Upon graduating with a major in mathematics a student will be able to:

Goal 1: Define, analyze and solve mathematical problems. Satisfactory performance (C or better) in Calculus I, II and III, Linear Algebra, Differential Equations, Complex Variables and Probability demonstrates attainment of this goal.

2003-2004

In the Calculus classes, 91% (72 out of 79) of the students performed satisfactorily. For Linear Algebra, 100% (5 out of 5) of the students performed satisfactorily. For Differential Equations, 67% (4 out of 6) of the students performed satisfactorily. For Complex Variables, 75% (3 out of 4) of the students performed satisfactorily. For Probability, 100% (4 out of 4) of the students performed satisfactorily.

Curriculum: Emphasis will be placed on solving mathematical problems.

Faculty Development: Faculty are encouraged to keep abreast of current pedagogy in the field of mathematics.

Out-of-class Experience: Students are encouraged to practice these skills in other classes.

Goal 2: Interpret graphic information. Satisfactory performance (C or better) in Calculus I, II and III, Linear Algebra, and Probability demonstrates attainment of this goal.

2003-2004

In the Calculus classes, 91% (72 out of 79) of the students performed satisfactorily. For Linear Algebra, 100% (5 out of 5) of the students performed satisfactorily. For Probability, 100% (4 out of 4) of the students performed satisfactorily.

Curriculum: Emphasis will be placed on making and interpreting graphs.

Faculty Development: Faculty are encouraged to help students understand the importance of graphs and interpreting graphical information.

Out-of-class Experience: Students are encouraged to apply these skills in other classes.

Goal 3: Use technology for mathematical problem solving. Satisfactory performance (C or better) in Differential Equations demonstrates attainment of this goal.

2003-2004

In the Differential Equations class, 67% (4 out of 6) of the students performed satisfactorily.

Curriculum: Emphasis will be placed on using technology for mathematical problem solving.

Faculty Development: Faculty are encouraged to use appropriate technology in the classroom.

Out-of-class Experience: Students are encouraged to apply this technology to other classes when appropriate.

Goal 4: Apply mathematical concepts to solving problems in other fields. Satisfactory performance (C or better) in Calculus I, II and III, Linear Algebra, Differential Equations, Complex Variables and Probability demonstrates attainment of this goal.

2003-2004

In the Calculus classes, 91% (72 out of 79) of the students performed satisfactorily. For Linear Algebra, 100% (5 out of 5) of the students performed satisfactorily. For Differential Equations, 67% (4 out of 6) of the students performed satisfactorily. For Complex Variables, 75% (3 out of 4) of the students performed satisfactorily. For Probability, 100% (4 out of 4) of the students performed satisfactorily.

Curriculum: Emphasis will be placed on applying problem solving techniques to “real world” problems.

Faculty Development: Faculty are encouraged to use “real world” examples of problem solving in their classes.

Out-of-class Experience: Students are encouraged to practice these skills in other classes.

Goal 5: Acquire skills necessary for self-directed learning. Satisfactory performance (C or better) in Complex Variables and Probability demonstrates attainment of this goal.

2003-2004

In the Complex Variables class, 75% (3 out of 4) of the students performed satisfactorily. For Probability, 100% (4 out of 4) of the students performed satisfactorily.

Curriculum: Emphasis will be placed on learning the structure of mathematics.

Faculty Development: Faculty are encouraged to keep abreast of current pedagogy in the field of mathematics.

Out-of-class Experience: Students are encouraged to work independently on mathematical proofs.

Goal 6: Communicate mathematical understanding to others. Satisfactory performance (C or better) in Linear Algebra, Complex Variables and Probability demonstrates attainment of this goal.

2003-2004

In the Linear Algebra class, 100% (5 out of 5) of the students performed satisfactorily. For Complex Variables, 75% (3 out of 4) of the students performed satisfactorily. For Probability, 100% (4 out of 4) of the students performed satisfactorily.

Curriculum: Emphasis will be placed on students presenting mathematical concepts in oral and written form.

Faculty Development: Faculty are encouraged to keep abreast of current pedagogy in the field of mathematics.

Out-of-class Experience: Students are encouraged to observe good presentation skills in other classes.

Four students sat for the Math Major Field Exam in the 2003-2004 academic year. The students' raw scores for the exam were 23, 17, 18 and 25 out of 47 questions. One student did not take MATH 4333 Probability, another did not take MATH 4326 Introduction to Numerical Analysis, while another did not take MATH 3313 Abstract Algebra. It appears that the mandatory review did not help students' in their preparation for the major field exam as it did with last year's students.

Comments students made at the Fall 2003 oral review were as follows: (1) Make MATH 3330 Applied Statistics a required course. (2) The capstone review is a major undertaking. Require math majors to keep a notebook. On the syllabus, the math majors should be told what to put into the notebook. This will make the capstone review much easier. (3) Change the course rotations to make the flow of courses easier.

The Mathematics Department is considering requiring MATH 3330 Applied Statistics as a required course. A capstone contract is being developed to guide the mathematics majors through the capstone review. In addition to the capstone contract, students will be required to begin the review process as they complete their junior and senior level course requirements. Some revisions have been made to the course rotations.