MATHEMATICS & COMPUTER SCIENCE ASSESSMENT PLAN

Rationale

The Mathematics & Computer Science Department contributes to the mission of the University by providing a mathematics major, a computer science major, service to other departments and colleges, general education and remedial education. Each of these five components has somewhat different purposes and objectives; the Department has identified goals, established assessment tools and set benchmarks for each. We aim to measure whether students are meeting our goals for their mathematics and computer science education, and to measure whether our programs are meeting the goals for what we claim we want to teach. The assessment plan is organized toward producing an annual report of assessment results.

Remedial Courses

Goal: Students will develop the arithmetic, algebraic, geometric, and problem-solving skill sets necessary to succeed in subsequent courses. Assessment tool: Success rate in subsequent courses requiring quantitative skills.

General Education Courses

The Department has not set goals or assessment tools for general education courses, pending the University's overhaul of general education.

Service Courses

Goal 1: Students will develop a conceptual understanding of appropriate course content. Assessment tool: a departmentally approved set of conceptual common final questions for each course.

Goal 2: Students will develop problem-solving skills appropriate to the level of each course. Assessment tool: (Math for Elementary Teachers): Praxis Exam. Assessment tool: (Calculus I and II): A Gateway Exam on basic differentiation and integration skills. Assessment tool: (Math 122, 124, 234, 253): A departmentally approved set of common final problems for each course.

Mathematics Major

Goal 1: Students will demonstrate expertise in the core topics of mathematics. Assessment tool: (Calculus): Same as for service courses. Assessment tool: (Linear Algebra): A short on-line exam administered after the end of Math 264.

Goal 2: Students will demonstrate ability to solve advanced mathematical problems, apply various methods of mathematical proof, and communicate solutions in writing. Assessment tool: Each senior mathematics major will submit a formal written proof completed in one of his or her advance theory courses as a requirement to pass Math 499.

Goal 3: Students will demonstrate the ability to comprehend advanced mathematics, and present the material orally. Assessment tool: Each senior mathematics major will give a fifty-minute capstone presentation in Math 499.

Goal 4: Students will be aware of and involved with mathematics outside the classroom. Assessment tool: An annual survey of participation.

Goal 5: Students will be provided a wide range of elective courses from which to choose. Assessment tool: Number of courses offered and enrollment in each course.

Goal 6: Students will utilize their mathematics education in either their careers or in the pursuit of graduate work. Assessment tool: Career Center survey.

Computer Science Major

Goal 1: Students will demonstrate expertise in the development and design of software. Assessment tool: Programming assignments in CS 257.

Goal 2: Students will have a working knowledge of the theoretical foundations of the discipline. Assessment tool: Exam and homework questions in CS 372 pertinent to the areas of algorithm analysis and computability.

Goal 3: Students will demonstrate the ability to communicate computer science-related topics in written and oral form. Assessment tool: Records of presentations and written assignments from CS 493.

Goal 4: Students will be informed, educated citizens in terms of the social and ethical implications of the use of computer technology. Assessment tool: Records of pressentations and written assignments from CS 493.

Goal 5: Students will be provided with an up-to-date understanding of the field. Assessment tool: CS faculty will be active in CS-related professional organizations, evidenced by Faculty Activity Reports of CS faculty.

Goal 6: Students will have foundational experiences in a number of sub-areas of computer science. Assessment tool: Correspondence between the VU CS curriculum and the ACM/IEEE model curriculum.

Goal 7: Students will utilize their computer science education in either their careers or in the pursuit of graduate work. Assessment tool: Career Center survey.