1 Teaching Statement

I have been extremely fortunate to have had some dedicated teachers who influenced my intellectual development and my life. My first memory of such a teacher goes as far back as the fourth grade. A teacher can inspire, motivate, and be a positive force in one's life. A teacher who does not take the responsibility seriously can cause serious damage to an individual and to the society.

I hope to give my students what the teachers, whose memories I cherish, gave me: I want the students to develop independent and creative thinking. I want to provide intellectual stimulation. I want to help students see the beauty of mathematics which I myself find so enchanting.

1.1 Philosophy

In upper division and graduate courses I try to communicate my own enthusiasm about the field to students. In lower division classes I respect students' interests and choices, at the same time trying to give them tools to succeed in the course and in the program of their choice.

I try to help students, who are afraid of mathematics, to get over their fears and to learn to enjoy mathematics, by being considerate, helpful, and patient with them. I try to explain the material in a context the students can understand by giving several examples from day-to-day life. I use humor to help my students relax and feel friendly. I collect little anecdotes, and analogies, to help me be a better communicator.

1.2 Experience

I have been teaching Mathematics for the last twenty years. I taught as a graduate student teaching assistant at Indiana University from 1986 to 1994. I received my Ph.D. in 1994 and joined the University of Nevada at Reno, where I currently hold a position as a tenured Associate Professor. In the last twelve years, I have taught at University of Nevada at Reno, University of California at Irvine and at the Tata Institute of Fundamental Research. The courses I have taught include: Finite Mathematics, College Algebra and Trigonometry, Business Calculus, Calculus I, II, III, Ordinary Differential Equations, Introduction to Statistics, Linear Algebra, Abstract Algebra, Set Theory, Metric Space Topology, Point-Set Topology, Fundamental Groups and Covering Spaces, Singular Homology Theory, Cohomology Theory, Measure Theory, Differential Topology, Knot Theory, and Complex Analysis.

I have served on several Masters thesis committees in the Mathematics Department and both M.S. and Ph.D. committees in Computer Science and in Chemistry. I have supervised undergraduate research projects.

In Summer 2005, I was appointed as the Core Mathematics Director, a new position created by the University Core Curriculum office in conjunction with the Department of Mathematics and Statistics. In this capacity I have been overseeing the curriculum development, coordination, and assessment of undergraduate mathematics courses which satisfy the general education requirements.
1.3 Strategy

The courses I teach are well organized. On the first day of classes I distribute copies of the syllabus containing a list of sections to be covered, exam dates, the grading scheme, and in a lower division course: a list of homework problems for several sections in advance. I regularly collect and grade homework, and give several exams throughout the semester. Whenever appropriate I assign labs or group projects requiring each group to turn in an essay based on the work. At the end of a term I give a comprehensive final exam. I post solutions to quizzes and exams on my course web page and in the library.

For examples of my course pages, go to http://wolfweb.unr.edu/homepage/naik/ and click on one of the courses.

I prepare my lectures carefully and use technology and visual aids wherever I can. I adjust the class pace for the average student without omitting any important topics.

I keep a strong student interested by pointing out subtle points, further connections, and at times by suggesting problems outside the homework.

I strongly encourage questions and class participation by sometimes inviting students to present their work on the board. I encourage, and sometimes require, group-work.

I keep regular office hours and add extra hours as the semester progresses. I invite students to set up appointments in addition. I encourage students to see me outside class with questions.

In my office, as a strong believer in hands-on work, I ask the students several questions designed to help their understanding. I let them work on a problem at their own pace offering guidance and encouragement when needed.

In Fall 2006, I taught Real Analysis I, a measure theory course. As this is a required course for all graduate students at UNR, including ones majoring in Applied Statistics, I saw a variety of mathematical backgrounds. To help students get up to speed, the entire semester I ran an extra session on Fridays.

1.4 Technology

In my teaching I have used Minitab, Maple, an on-line homework system called Webworks, a group theory software called Finite Group Behavior. I am also familiar with ThomsonNow (ILrn) and Educo.

1.5 Student response

I always have excellent attendance in my classes, my office hours and optional review sessions. My classes have a high retention rate. Student evaluations of my instruction are consistently good. I have included the numerical summaries and selected student comments on the evaluations, at the end of this document.

Many times, a student has dropped by my office a semester or even a year later, and thanked me for being their teacher. When I teach lower division, students want to know if I would teach the next Mathematics class they need to take. Quite a few students register for another course with me.

Since Fall 2005, due to my assignment as the Core Mathematics Director I have only taught one graduate level class each semester. In 2005-06 I taught an Algebraic Topology sequence.
In 2006-07 I am teaching Real Analysis I and II. This is the first time that the second course in each of these sequences was able to meet the minimum required enrollment. I believe that I have been able to motivate and encourage students and help many feel enthusiastic about learning Mathematics.

1.6 Undergraduate seminars

I have given several undergraduate seminars and colloquia in U.S. and in India.

• “Introduction to the Concordance Group of Knots,” Mathematics Colloquium, Pomona College, November 2006.
• “Introduction to Knots and Links,” University of Nevada, Reno, Colloquium, Spring 2005.
• “Symmetries of Knots,” Colloquium, Indian Institute of Science, Bangalore, India, February 1999.
• “Knots and Links” University of Mumbai, Mumbai, India, February 1999.
• “Knots and Links,” VSRP lecture at the Tata Institute of Fundamental Research, Mumbai, India, June 1998.
• “Scientific Applications of Knot Theory,” University of Nevada, Reno, Colloquium, Fall 1997.
• “Invariants of Knots,” California State University, Northridge, April 1994.
• “Invariants of Knots,” Indian Institute of Technology, Kanpur, India, August 1993.
• “Invariants of Knots and Links,” A Series of Two Lectures, University of Hyderabad, Hyderabad, India, December 1991.

1.7 Undergraduate publications


1.8 Curricular development related to the graduate program

UNR currently has a Masters program. It has grown from five-six students in the mid-1990s, to the current enrollment of thirty-two. We have a growing interest in the topology program due to the successful recruiting Chris Herald and I have been doing. We have revitalized our second year algebraic topology sequence.
Teaching Statement

We routinely offer seminars and team-teach advanced topology courses in addition to our regular teaching load. Last year three of our topology students joined nationally recognized Ph.D. programs. In 2002-03 I developed the first major draft of a proposal for a Ph.D. program which is nearing the final stages of the approval process. In 1995 I revised the first-year topology sequence to offer more standard topics such as point-set topology, fundamental groups, and covering spaces.

1.9 Core Mathematics administration

In Summer 2005 the University Core Curriculum Office initiated a Core Mathematics program to oversee the curriculum development, coordination, and assessment of undergraduate mathematics courses which satisfy the general education requirements at UNR. I was appointed as the the Core Mathematics Director. In this capacity I selected and have been supervising a team of course coordinators for Precalculus Algebra, Trigonometry, Quantitative Reasoning, Introductory Statistics, Business Calculus, and Calculus I. These courses are primarily taught by temporary faculty and by graduate students. Together with the instructors and coordinators we have

- Developed an annual orientation and a mentoring program for graduate student instructors.
- Redesigned curricula to improve alignment between the Precalculus offerings.
- Began coordinating the contents, pace, and assignments in different sections of multi-section mathematics and statistics courses. Instituted common departmental final exams in lower division courses.
- Began a pilot of a large lecture section and recitations by graduate students in Precalculus algebra and Calculus I.
- Helped the University Assessment Office and the Core Curriculum Office with assessment of student learning via Pre-test/Post-test analysis as well as CLASSE surveys, an in-class version of the National Survey of Student Engagement. Helped design a survey to assess effectiveness of on-line components in classroom teaching.
- Conducted several classroom observations and prepared reports.
- Helped with scheduling and advising.
- I am listed as senior personnel on NSF Proposal 0653258, entitled Nevada STEP, to improve curriculum and retention in math, science and engineering courses, submitted October 2006.

1.10 K-12 Outreach

- Taught first through third grades in an integrated classroom once every two weeks in year 2005-06.
- Participated in the discussion of a gateway curriculum for high schools in the Washoe County School District in 2005-06.
- Conducted knot theory workshops for middle-school and high-school students in 1995-99.
- Served as the Regional Coordinator for the State of Nevada for American Junior High School Mathematics Examinations, from July 1995–June 97.