

From: Eric Pappas, Ed.D.
Director, MSE / ESM Advanced Engineering
Writing and Communications Program

Date: October 14, 2000

Subject: A brief history of the MSE / ESM Advanced Engineering
Writing and Communications Program

Originally developed as an undergraduate engineering writing program in 1993, the Materials Science and Engineering Advanced Writing and Communications Program has evolved from a simple writing effort to a "workplace modeled" discipline-specific writing and communications program, and further to a comprehensive integrated engineering communications program which includes instruction in such workplace topics as public speaking, interpersonal communications, teamwork, research and professional ethics, critical and conceptual thinking, engineering design, management skills, and other professional topics.

Writing and communications instruction is integrated into eight required MSE classes and six required ESM classes; English faculty members team-teach each class with engineering faculty (we normally visit each class five or six times a semester). We use writing and communications as "tools" for teaching technical material so that little or no time is lost for teaching technical topics. In addition, MSE has recently added two required communications classes to the curriculum (one sophomore course and one junior course).

As a writing program, our first task was marketing, to convince students that writing was essential to a successful engineering career and that their chances of having a productive career was as much related to their ability to communicate the results of their work as it was to their ability to perform that same work. Through a series of efforts (speakers, faculty discussions with students, articles), students began to accept the program as, perhaps, a necessary evil, and to the point now in which they understand and enthusiastically support the program (with a few exceptions), and participate actively in a wide variety of program services and activities.

Expanding our efforts to integrate public speaking and interpersonal communications into the curriculum encountered very little resistance, and as we continue to use "workplace models" to plan some of the communications program courses, our students' understanding of our efforts has broadened as well. We find students are using their newly developed skills in other classes and in their everyday academic and professional communications. Former students continue to report using the writing and communication skills they learned in MSE and ESM regularly in their jobs, and that promotions into managerial positions often come easily.

The writing portfolios and checklists we maintain for MSE students accurately document each student's writing progress. MSE 4894 (Writing in Materials Science and Engineering), a zero-credit, zero-contact class required of each student for graduation, has been accepted by the university in lieu of the writing-intensive course requirement.

We added the Engineering Science and Mechanics Department to our program in 1994. The ESM program is in its sixth year of operation and, since ESM is larger than MSE, we've had the opportunity to develop and experiment with methods for teaching larger groups of students. In the last four years, we have assisted the Mining and Mineral Engineering Department and the Electrical Engineering Department integrate writing into their curriculums. Departments in all colleges across the university continue to use our methods and materials.

Faculty enthusiastically support our efforts to integrate writing and communication topics into the technical curriculum, and their support and expertise have been the foundation upon which we have built and expanded the program.

We have developed self-instructional material that serves as a supplement to classroom instruction. It may, as well, serve as basic instructional material for larger engineering departments, should they decide to develop writing or communication efforts. At some point, these handouts will become a Virginia Tech College of Engineering Communications Manual, with topics, material, and exercises that have grown out of our experiences with Tech students and faculty. All the material in our self-instructional packets has been developed by MSE / ESM Communications Program faculty and GTAs.

The State Council of Higher Education for Virginia Funds for Excellence Program awarded us a substantial grant to develop writing classes in five science and engineering departments. AlliedSignal Corporation (now Honeywell International) has awarded us six grants to integrate public speaking, interpersonal communications, ethics, critical and conceptual thinking, management skills, and teamwork into the communications curriculum. Other grants have allowed us to create a communications program for the National Science Foundation Summer Research Program and to develop the "College of Engineering Summer Management Communication Skills Program for Undergraduate Women" (now offered each summer).

Recent topics successfully added to the communications curriculum include critical and conceptual thinking, and creative engineering design. We are currently working the following topics into our curriculum: management and leadership skills, problem solving, and conflict negotiation. Future additions include more theoretical topics such as "ways of thinking."

From its inception, the program was, and remains, an experiment in exploring "new topics" in engineering education. While our work is very practical in its day-to-day operation, a major component of the program remains theoretical. The program is unique nationwide, and other schools have been experimenting with our program and instructional design.

Our early success with MSE students is documented in an article program founder MSE Professor Robert Hendricks and I published in Engineering Education in October 1996. The article provides quantitative and qualitative evidence that MSE students' writing (and confidence in their writing) improved significantly after only 18 months in the program, and that these students became more competitive for engineering jobs, co-ops, and graduate schools.

Our program currently includes two full-time faculty members (a director and associate director), two full-time graduate teaching assistant, two part-time staff members, and four very active undergraduate volunteers. At least a dozen other undergraduate and graduate students volunteer when needed. Our offices are in 10,12, and 14 Holden Hall.

12 / 14 Holden Hall
phone: 540-231-5305 (w) or 961-2800 (h)
email: epappas@vt.edu
fax: 540-231-8919