

**Writing and Speaking as a Tool in
Advising Second Year Undergraduates
on Applied Mathematics**

by

R. E. White

Department of Mathematics

NCSU

<http://www4.ncsu.edu/eos/users/w/white/www/white/MA226.htm>

Objectives:

- **to survey, in more depth, applied math**
(Many students are not aware of scope of math.)
- **to do this in the second year**
(Applications require a lot of math and science.)
- **to formulate a "Plan of Study" for their last two years**
(This can include traditional course work in math and sciences, intern positions, and any related activities.)

Three-week Modules in Spring of 2001:

- **Heat and pollutant transfer (R. E. White)**
- **Acoustic waves and boundary conditions (H. T. Tran)**
- **Cryptographic schemes (E. Stitzinger)**
- **Biological applications (S. Lubkin)**
- **Modeling of random phenomena (J-P. Fouque)**

Role of Writing and Speaking:

- **A two page summary of each module**

These require the student's

- (i). like/dislikes about the module,**
- (ii). relationship to other courses and**
- (iii). content summary.**

- **About a five page "Plan of Study" for the last two years**

These require the student

- (i). to focus on an area of applied math,**
- (ii). to formulate a list of relevant courses along with prerequisites, and**
- (iii). to identify any related activities such as work experience and "short" courses.**

The student is encouraged to "interview" appropriate people and to report this in their "Plan of Study."

Tentative Results from Students:

- **The module summaries reveal that the students are surprised to learn of the applicability of mathematics.**
- **The different types of mathematics, not just calculus, are also new to the students.**

Tentative Results from Faculty:

- **The faculty has been challenged to get the math content to the level of students with only multivariable calculus. This requires some "math as is needed" and some "acts of faith."**
- **From general discussions, the students seemed to be daunted to learn that applied mathematics will require a significant effort.**

Future Activities:

- **The faculty will meet in May to discuss the module content and the students' "Plans of Study."**
- **The students' assessments of the course will be considered.**
- **This course will be described at a mini-symposium on computational science and engineering education at the annual meeting of the Society for Industrial and Applied Mathematics (SIAM)**
- **Plan for the next version of this course in the spring of 2002.**