

School of Computational Science
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Dear Search Committee,

In the spring of 2004, **Hugh MacMillan** taught the second semester Numerical Analysis course, offered by the Mathematics department, and normally taken by seniors in Mathematics or Engineering. I had a personal interest in this class, and over the semester, had many conversations with Hugh about his ambitious syllabus, the computing assignments, and the reactions of the students.

An introductory course in numerical analysis requires the rapid presentation of a number of seemingly unrelated topics. The careless or hurried instructor may simply present the mathematical background and suggested solution algorithms, give a test, and move on.

Hugh saw that a more effective presentation was to teach as though he were giving the students a set of tools; as the set of tools grew, new problems could be solved. Moreover, in order to ensure that he could give his students an interesting problem to work on, he decided that he would do whatever was necessary so that, as a final problem, they would be prepared to implement a finite element solution of the Poisson equation.

This idea seemed hilarious to me at the time; as I pointed out to him, our two term *graduate* numerical analysis class does not get to this topic. But he insisted that, even if the students did not comprehend all the details, they would be so satisfied to be doing an interesting problem that they would realize that the mathematics was important, and come back to it later with a real appreciation.

As it turned out, Hugh was able to carry out his ambitious plan. His class moved at a brisk pace; he conducted his lectures in an almost conversational style, and he planned his classes carefully with his final goal in mind. On the

last day of class, he had his students present on the board all the steps in the analysis and solution of a finite element formulation of Poisson's equation, as he had hoped.

Having mistakenly said it couldn't be done, I must congratulate Hugh on a determined and successful effort to impart to his students a knowledge and appreciation of mathematics that they will never forget.

My overall judgment is that Hugh is a serious and effective teacher, who has an an easy rapport with students. He expects a lot from his students, but offers all the preparation, motivation and support necessary for them to succeed. He will make a fine teacher in any department.

Sincerely,

John Burkardt

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