Smith and Moore, ***Calculus: Modeling and Application***, 2nd Edition
Bowdoin College, Winter/Spring 2009
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Several instructors have used the 1st edition of the text (print version) at Bowdoin College at various times during the past fifteen years. The 2nd edition (online only) was used for the first time during the Winter/Spring semester of 2009 for differential calculus. Our CAS everywhere on campus is *Mathematica*.

The most striking observation is that the students did not have any significant issue in using an online text — *none at all*. This surprised me. While I was not expecting major issues, I thought there would be at least *some* students who would find the online format a little confusing to use. (I had only a minor complaint from one student: she was having problems with the display of the text, but that was because she overlooked our instructions to use Firefox as her browser.) It should also be noted that I gave at most 10 minutes of instruction on how to use the text during our first class session, and none thereafter.

All of my 26 students had their own laptop computers, and hence they used their personal computers for the text rather than the college computer laboratory machines. This made access to the text a non-issue, especially since Bowdoin has wireless Internet available everywhere on campus. However, there was one negative aspect to this use of personal computers: since none of my students had *Mathematica* installed on their own computers, much of the power of the online text was lost for them. Fortunately it appears that Bowdoin has expanded the *Mathematica* site license for the coming academic year to allow students to place the software on their own computers. *This will greatly increase the effectiveness of the online text.*

Since the online text is not fully completed and is not intended to be an exact copy of the 1st edition, there are some sections from the original print version that do not currently appear in the online text. While new users of the text would not notice these omissions, I hope that much of the missing material will return, e.g., the S-I-R model for the spread of epidemics, and the section on chaos. (I made pdf copies of the S-I-R material and used it in that form.) This material added a depth and richness to the original text (and hence to the courses that could be taught from the text) that I would like to see included in the online revision. The primary attraction of the Smith and Moore text to those of us who use it at Bowdoin is the brilliant use of IVPs as the central concept around which the book is constructed. Extra material that enhances and enriches this approach only improves the book and gives instructors additional options in preparing their courses.

Many sections of the online text end with both a collection of *Problems* and a collection of *Exercises*. This caused some confusion for the students (and even for the instructor since several times a question would appear as both a *problem* and an *exercise*).

Bowdoin's implementation of the Smith and Moore text has a significant computer laboratory component. Several of these labs examine important applications based on IVP models — Radiocarbon Dating, Accident Reconstruction, and the S-I-R Epidemic Model. All the labs use *Mathematica*. The labs are available to any instructor upon request.

In summary, there were *no* problems encountered at Bowdoin in using the online text. Students in the current generation are so comfortable with technology that working with an online text is simply a non-issue. On the other hand, because students did not have *Mathematica* on their own computers, the actual advantages of using the online text were modest. I'm expecting a quantum leap in the effectiveness and appeal of the text in the fall semester when every student will have *Mathematica* installed on their own computers.

A complete description of the course will be found on the handout *Mathematics 161B, Differential Calculus, Course Description & Syllabus.*

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