

*Seminar for Pre-Service Mathematics Teachers: Overview and Conclusions*

The one-credit-hour seminar *Mathematics for Teachers* seminar was designed to deepen the understanding of mathematics of pre-service high school mathematics teachers. We chose topics that were interesting, challenging, and connected with basic high school mathematics. Students had some choice in selecting topics during the semester.

Five pre-service mathematics teachers met once a week for an hour-long seminar/discussion guided by two faculty members (from the College of Education—Dr. Doug Jones—and from the Department of Mathematics—Dr. Steve Seif). Before each meeting Dr. Seif wrote out a set of notes; the core of each set of notes was a sequence of problems, leading to some fairly significant piece of mathematics. The notes were distributed at the beginning of each seminar. A student volunteer took notes of the discussion; these notes were distributed by the student at the beginning of the next class. (A sample of student notes is available here.)

The discussion was organized around a *directed discovery* method. Dr. Jones's questions required that students formulate the extent of their understanding and locate the ideas and conclusions that caused them difficulty.

The topics that worked the best were chosen by the students and then focused by the two instructors so that the mathematics was challenging but also directly transferrable to the high school classroom. These topics were

- counting and finite probability
- limits

Another major topic, equation-solving, was reasonably successful. The topic is an important one and a clear understanding (at an advanced level) would be beneficial for a pre-service mathematics teacher. A good deal more work needs to go into developing an interesting and relevant three- to five-hour discussion module.

Questions, suggestions etc. are more than welcome. Please send these to:

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At this website the following course materials are available:

1. Seminar discussion/problems, Weeks 1-13.
2. Syllabus
3. Advertisement to encourage students to sign up for the course.
4. Course goals (such a list is required for an Arts & Sciences course at UK)
5. Sample "student notes", written by a student after a seminar and distributed to the students and instructors at the beginning of the next seminar.