

ANNUAL FACULTY REVIEW, 2010

Faculty Member's Statement

Doug Bullock

Department of Mathematics

TEACHING

Course Load

Spring 10: Math 170, Calculus I 4 credits 44 enrolled
Fall 10: Math 170, Calculus I 4 credits 42 enrolled

Issues from 2009 Evaluations

1. Spring semester complaints about exam length and difficulty. Assessment data confirmed that the exams were not successfully measuring some things. In particular, assessment of performance on more difficult problems was confounded by the effects of time pressure.
2. Low (relative to others) numerical score on "Available out of class". This was not reinforced in the written evaluation comments.

Solutions Proposed in 2009 Statement

1. Switch to a 100 minute exam format.
2. Although not driven by evaluation data I proposed a change in homework policy. Rather than collect and grade only one or two items per week, I would require students to turn in all assigned homework.

Actions Taken During 2010

1. I made the switch to 100 minute exams in 2009, beginning with the fall semester. I continued to use longer exams in 2010.
2. I did not switch homework policies until the fall semester of 2010. In fall of 2010 I collected all homework each week. I graded one or two items carefully. A student grader checked all other items and assigned a grade based on the percentage of problems reasonably completed. The student grader provided no feedback, but did effectively enforce a certain volume of homework activity.

Results Observed After 2010

1. The long form exams had positive effects observable as early as fall 2009. In the three semesters since making this change there have been no negative comments on exam length. Student performance on harder exam items now acts as an assessment of problem solving and critical thinking skills without simultaneously assessing the ability to deal with time pressure.
2. Spring 2010 evaluations, from before I switched the homework policy, included a few suggestions to grade more homework and one suggestion to enforce greater student accountability for their homework. This is precisely what the new policy was meant to do. It was implemented in fall 2010. Fall 2010 evaluations contain no negative comments about the homework structure, although one student suggested that even more homework should be assigned.

Review of 2010 Written Evaluations

I have evaluations from both semesters. Numerical scores are not significantly different from my historical averages, but this year yielded an unusually rich collection of comments and suggestions for improvement. Although I taught Math 170 twice the courses were different in a few ways. In the spring I collaborated with two other instructors on common midterm exams and some common homework assignments. In the fall we changed textbooks. Both of these led to some student comments.

Spring 2010: There were three suggestions that were repeated often enough to stand out.

- Nine students were opposed to the common exam structure, noting in particular that exam problems were less familiar than they expected and less like homework than they would prefer.

This is to be expected. The concern will be addressed in future semesters by default, since I don't have access to a common exam time. However, I believe that a competent teacher should be able to prepare his students to be successful on a reasonable exam written in an entirely different style. My co-instructors wrote ordinary exams with a normal balance of problems and range of difficulty. Student performance on these exams was not substantially different than what I expected or what I have observed in the past. Despite this being the top concern of students I would continue the practice if I could.

- Four students mentioned that exams were not returned quickly enough. True enough. My personal standard remains one week at the longest. I did, in fact, violate this once and pushed it to the limit on several homework assignments.
- Five students commented that I was sometimes rushed in lecture and perhaps "overcaffeinated". True enough. I observed this myself and attribute it to not planning lectures as carefully as I used to.

Fall 2010: There was only one repeated concern. I write a lot of my own homework sets, but since I follow the text somewhat I created a lot of new material because we switched to a new book. I made several typographical errors in either the homework problems or in the answers that I supplied. This was directly and forcefully pointed out by 8 students.

Review of 2010 Numerical Evaluations

Spring 10, Calculus I

Question	Respondents	Average
1. Organized and prepared	33	1.27
2. Clarity of expression	33	1.18
3. Encourages critical thinking	33	1.15
4. Respect for questions	33	1.14
5. Available out of class	30	1.43
6. Clear objectives	33	1.18
7. Value of homework	31	1.33

Fall 10, Calculus II

Question	Respondents	Average
1. Organized and prepared	23	1.35
2. Clarity of expression	23	1.00
3. Encourages critical thinking	23	1.09
4. Respect for questions	23	1.09
5. Available out of class	23	1.43
6. Clear objectives	23	1.26
7. Value of homework	23	1.30

I am content with these numbers. Availability is persistently the worst score. This does not seem correctable while I am serving as chair. Item 1 scores a bit worse than some others. This is bothersome, particularly as it corroborates written remarks about rushed lectures and errors in my homework assignments.

Proposed Actions in 2011

1. This is my second term using the new text so I expect that I will write much less original homework and that this will lower the rate of typographical errors.
2. I hope to find time to write more scripted or at least more carefully planned lectures to address the issues about preparedness and rushed delivery. I am not optimistic that I can locate extra time to do this.

RESEARCH/CREATIVE ACTIVITY

I continue to do a small amount of research, now supported by a small amount of NSF funding, on strategies to improve retention of STEM majors. Two papers listed as accepted last year have been published in peer reviewed proceedings. New output in 2010 consists of one poster presentation and one article in preparation.

Publications

- **D. Bullock**, J. Callahan, A. Alhgren, C. Schrader, Y. Ban, *The Implementation of an Online Mathematics Placement Exam and its Effects on Student Success in Precalculus and Calculus*, ASEE Annual Conference & Expo, Austin, TX AC 2009-1783 (2009).
- J. Callahan, S.Y. Chyung, J. Guild, K. Bridges, **D. Bullock**, C. Schrader, *Improving Students' Learning in Precalculus with E-Learning Activities and through Analyses of Student Learning Styles and Motivational Characteristics*, ASEE Annual Conference & Expo, Austin, TX AC 2009-1783 (2009).

Articles in Preparation

- J. Callahan, S. Shadle, J. Garzolini, G. Hunt, J. Guarino, **D. Bullock**, *The Idaho Science Talent Expansion Program: Improving Freshman Retention for STEM Majors*.

Abstract submitted, reviewed and accepted for ASEE Annual Conference & Expo, Vancouver, BC, Canada, (2011).

Posters

- J. Callahan, J. Garzolini, **D. Bullock**, J. Guarino, S. Shadle, D. Wilkins, C. Schrader, *The Idaho Science Talent Expansion Program*, National Science Foundation Annual STEP PI Grantee Meeting 2010.

PROFESSIONALLY-RELATED SERVICE

- President's Leadership Academy.
- Alternative Academic Calendar Committee.
- Science Competition Day (scoring only, no committee work).
- Chair, Math Department.