

**SUMMARY OF USEFUL FINDINGS  
MATH 220, FALL 2011, FIRST TERM OF WORKSHOPS (OPTIONAL, DURING  
TIMES OTHER THAN LECTURE)**

**1. Sections differ in student demographics:**

Section 101 has 21 math majors + 5 combined math majors = 26 out of 39

Section 102 has 7 math majors + 13 combined math majors = 20 out of 35

Section 101 has 5 majors other than Math, Stat, CS, Econ

Section 102 has 11 majors other than Math, Stat, CS, Econ

Diagnostic pre-test averages:

Section 101: 12.45 (59%) (out of 21)

Section 102: 11.78 (56%) (out of 21)

Students in section 102 were more likely to attend lectures:

Section 101: 9 students attended 100% of lectures

Section 102: 16 students attended 100% of lectures

**2.** A great part of students does not realize that the course is difficult - until late in the course: after Midterm 2. By then it is too late to start studying seriously. It is recommended to pick challenging problems from the start of course.

<b>If you think the course content is challenging, when did you come to this conclusion?</b>			
	Math220-101 39	Math 220-102 35	total
I do not find the course content particularly challenging	7	1	7
· Within first two weeks of the course	4	1	5
· Before midterm 1	2	2	3
· After midterm 1	10	10	20
· <b>Before midterm 2</b>	<b>9</b>	<b>10</b>	<b>19</b>
· <b>After midterm 2</b>	<b>6</b>	<b>8</b>	<b>14</b>
Other	The proofs became a lot more serious after we learned all the techniques – we had to apply them correctly		$(19+14)/(39+35)= 44\%$ of students did not realize the course was hard - until too late.

**3.** A part of students stopped coming to workshops because they felt that workshops were not helping them. There may be a number of reasons for that.

First, a perceived disconnect between what instructor assigns as homework and what is being covered in the workshop. While the same concept is being illustrated, students may not see the connection because problems appear different from the ones in the homework.

Also, problems like “fake proofs” do not appear in lectures/homework - however they are important for students’ development of logic. They may not appear so to the student.

Third: workshop format. There needs to be more intensity in solving problems - quiz at the end is a good incentive. Also, having at least some homework finished before workshop makes students prepared to work on problems seriously rather than review during the session.