Math 205B
Winter 2018

# UPDATED GENERAL INFORMATION — MARCH 27, 2018

*Grades assignments and examinations*

The numerical grades are posted in **ilearn**, and the papers themselves will be placed in mailboxes early next week. If you have questions or concerns, please contact me so that a meeting time can be arranged.

*Second take-home assignment*

There were 40 points possible; the cutoff for the lowest A was 32, and the cutoff for the lowest B was 24. The normalized score for the assignment was determined by linear interpolation (see below).

Here are a few general comments. In the first problem, there were some incorrect signs as coefficients in the 2-chains. One way of catching such problems is to check your answer by computing the boundary of the 2-chain explicitly after finding somthing that looks right. This is a little (but not very) messy, but incorrect signs can cause all sorts of trouble so it is good to take the time to do the checking. In the second problem, it is necessary to say something about the construction of the homotopy (straight line homotopy would suffice) which shows that $\{1\} \times \mathbb{R}^{n-1}$ is a strong deformation retract of both $\mathbb{R}^n_+ - \{p\}$ and $\mathbb{R}^n_+$, and also how/why each level of the homotopy sends $\mathbb{R}^n_+ - \{p\}$ into itself. Note that the latter set is **NOT** convex.

*Grades for the second examination*

The cutoff scores are as follows:

A — 72
B — 56

The median score was 77.5.

Here is a summary of some common difficulties: In Problem 1 it was necessary to use Invariance of Domain somewhere and to acknowledge this explicitly. For Problem 2, it was not only necessary to show that if $f$ is a homeomorphism then $f^{-1}$ has a lifting; one also must show that this lifting defines an inverse to the lifting for $f$. Since 3 and 4 were removed from the examination, there are no comments on them. In Problem 5 there were some attempts to conclude that if $X$ is contractible and $A \subset X$, then $H_q(A) = 0$ for $q > 0$. This does not follow, and in fact any such assertion is systematically false. For example, the cone construction in Hatcher shows that every topological space is homeomorphic to a subset of a contractible space. Finally, in Problem 6 many answers overlooked the need to prove that the composite $j \circ p$ is homotopic to the identity on $X \times [0, 1]$. The minimum necessary is to say that these maps are homotopic by a vertical straight line homotopy (the first coordinate is fixed, the second coordinates are moved using a straight line homotopy from $t$ to 0). It would also have sufficed to give the following sort of general argument. We know that $\{0\}$ is a strong deformation retract of $[0,1]$, and we know that if $B$ is a strong deformation retract of $Y$ then for every space $X$ we know that $X \times B$ is a strong deformation retract of $X \times Y$.

Appeals regarding the grading of this examination should be submitted by the end of the Spring 2018 Quarter. Written comments should be placed on the examination indicating the problems or issues to be reconsidered. BRIEF and OBJECTIVE statements about specific issues may be included.

**Statement on final grade determination:**

As noted previously, the course grade will be determined by a weighted average of the grades on the examinations, the quizzes and the homework. The cutoff points for A, B, C, D, F will be determined individually for each each of these constituents, and for grading purposes the raw numerical scores will be normalized as follows:

4.0 = perfect score, 3.0 = lowest A, 2.0 = lowest B, 1.0 = lowest C, 0.0 = lowest D, $-1.0$ = zero score. If the raw numerical score lies between two of these values, the normalized score will be determined by linear interpolation.

EXAMPLE. If the lowest A is 88, the lowest B is 72, and a student's raw numerical score is 76, then the raw score is 4 points above the lowest B, the difference between the lowest A and the lowest is 16, and therefore the grade is $\frac{4}{16} = \frac{1}{4}$ of the way from the lowest B to the lowest A; linear interpolation means that the normalized score on the examination is **2.25**.