Mathematics 205ABC

Qualifying Examination, Fall 2011

This summarizes the material for the examination. In addition to the references from the official text (Bredon, ***Topology and Geometry***), there are also alternate, more detailed references (often with numerous exercises) that are strongly recommended, especially for the third course in the sequence. Syllabi for the first and third courses are given in the following online files:

http://math.ucr.edu/~wlgan/math205A.html **http://math.ucr.edu/~res/math205C-2011/outline205C.pdf**

Mathematics 205A

Coverage in Bredon: Chapter I except for Section 6.

Alternate references: Munkres, ***Topology*** (2000 Edition) — Chapters 2, 3 (except the supplementary exercises), 4 (except Section 36), 5, 6, 8 9 (only Sections 51 and 59).

Hatcher, ***Algebraic Topology*** — Chapter 0 (except for the subsections on cell complexes and the Homotopy Extension Property).

Several files in the online directory **http://math.ucr.edu/~res/math205A/** may also be useful. The same applies to the discussion of Munkres, Section 51, in the following online file:

http://math.ucr.edu/~res/math205B/math205Bcommentaries.pdf

Mathematics 205B

Coverage in Bredon: Chapter II, Sections 1 – 11; Chapter III, Sections 1 – 4.

Alternate references: Munkres, ***Topology*** (2000 Edition) — Chapter 9, Sections 51 – 54; Chapter 13, Section 79.

Hatcher, ***Algebraic Topology*** — Chapter 0 (except for the subsections on cell complexes and the Homotopy Extension Property); Chapter 1, Sections 1.1 – 1.3.

Lee, ***Introduction to Smooth Manifolds*** — Chapters 1 – 4, 7, 8 and 10.

Boothby, ***An Introduction to Differentiable Manifolds and Riemannian Geometry*** (close to the preceding reference in many respects, but probably less comprehensive) — Chapters I and II; Chapter III, Sections III.1 – III.5; Chapter IV, Sections IV.1 – IV.5.

Milnor, ***Topology from the Differentiable Viewpoint*** (covers some material not in either of the preceding two references) — Sections 1 – 3.

Mathematics 205C

Coverage in Bredon: Chapter III, Sections 5 – 9; Chapter IV, Sections 1 – 10, 13, 15, 17 – 19 and 21.

Alternate references: Munkres, ***Topology*** (2000 Edition) **—** Chapter 9, Sections 58 – 59; Chapter 10, Sections 53 – 54 (only for the results on planar and nonplanar graphs; somewhat different proofs for these results were given in the course); Chapter 11, Sections 63 – 64; Chapter 13, Sections 79 – 81; Chapter 14, Sections 84 - 85.

Hatcher, ***Algebraic Topology*** **—** Chapter 0; Chapter 1, Sections 1.2 – 1.3; Chapter 2, Sections 2.1 – 2.3, 2.A – 2.B (except for the explicit construction of singular homology in Section 2.1).

The following directory contains notes from the course as it was taught in the Spring 2011 Quarter along with various related files. **Studying the files in this directory is very strongly recommended** (however, the material in the files **computingHq.pdf** and **cell-euler.pdf** was not covered in the course and will not be covered in the examination).

http://math.ucr.edu/~res/math205C-2011

Note that this is **NOT** the same as **http://math.ucr.edu/~res/math205C**, which contains material similar to that of 205B as it was taught during the Winter 2011 Quarter but is not on the recommended list.

Several files in the online directory **http://math.ucr.edu/~res/math205B/** may also be useful. In particular, the file

http://math.ucr.edu/~res/math205B/math205Bcommentaries.pdf

contains additional discussions of certain sections in Munkres, and the portions dealing with Sections 51 – 54, 59, 63 – 64 (to the bottom of page 30), 67 – 71, and 79 – 85 (up to the end of the proof in the middle of page 54) are recommended; there are also three supplementary commentary files with additional material. Other files from that directory which may be useful include the files with exercises and solutions as well as the following:

http://math.ucr.edu/~res/math205B/categories.pdf (background on category theory)

http://math.ucr.edu/~res/math205B/lifting.pdf

http://math.ucr.edu/~res/math205B/examples.pdf

http://math.ucr.edu/~res/math205B/ahlfors.pdf (up to the eighth line from the bottom)