SYLLABUS FOR SPRING 2020 MAT GR6308: ALGEBRAIC TOPOLOGY II

FRANCESCO LIN

Schedule. Monday and Wednesday, 11:40AM-12:55PM.

Teaching Assistant. Juan Muñoz Echániz.

Contents. This class will cover the following topics:
• Basics of homotopy theory
• Obstruction theory and characteristic classes
• The Serre spectral sequence and its applications
• Steenrod squares
• Applications to homotopy groups of spheres
• K-theory and relations with the index theorem

References. We will mostly follow:
• Fuchs, Fomenko - Homotopical topology.
• Hatcher - Algebraic topology, Spectral sequences in algebraic topology

Other useful references are the following:
• Atiyah - K-theory
• Davis, Kirk - Lecture notes in algebraic topology
• Shanahan - The Atiyah-Singer index theorem.

Grading. There will be 6 biweekly homework assignments. You are welcome to collaborate with your peers when working on the problems, but you should write up solutions yourself.

Office hours. Monday and Wednesday, 10:30AM-11:30AM.