Math 603: Topics in Topology

Riemann surfaces and mapping class groups.

Instructor: Dale Rolfsen, (rolfsen[at]math.ubc.ca)

Office: ESB 4122 (PIMS), phone 604-822-2159. Office hours 11:00 - 12:00 Thursdays or by appointment.

This will be a seminar-style course based on the following book (and other sources):

Textbook: Benson Farb and Dan Margalit, *A Primer on Mapping Class Groups,* Princeton University Press, 2012.

The course will be a detailed study of $Mod(S)$, the mapping class group of the Riemann surface S. The theory is a beautiful interaction between topology and algebra, with applications to many other areas of mathematics. Topics will include hyperbolic geometry, symplectic representation and congruence subgroups, Serre's proof that $Mod(S)$ is virtually torsion-free, the Dehn-Nielsen-Baer theorem relating $Mod(S)$ to outer automorphisms of the fundamental group of S, and braid groups. If time permits, we will also study Teichmüller theory, pseudo-Anosov theory and the Nielsen-Thurston classification theorem

Prerequisites: Basic background in group theory and topology will be assumed. Graduate students and advanced undergraduates are welcome, as well as postdocs and interested auditors.

Meeting times: Wednesday 4:00 - 5:30 and Thursday 12:30 - 2:00 in room MATX1118.