

# 2008 Course Descriptions

## Beginning Lecture Course

**Lecturers:** Genevieve Walsh, Tufts University

Maggy Tomova, Rice University

**Teaching Assistants:** Yvonne Lai, Ellen Goldstein

**Titles for the Beginning Lectures Series:** Surfaces, orbifolds and knots

**Week one** is devoted to surfaces and orbifolds. We will start off with the geometry of the hyperbolic plane and basic properties of surfaces.

Isometries acting on the hyperbolic plane will lead us to hyperbolic surfaces and orbifolds. Topics include: different hyperbolic structures on a surface, the minimal area hyperbolic orbifold, orbifold Euler characteristic, and the classification of Euclidean 2-orbifolds.

Week two is on knots and their complements in the three-sphere. We will study various classes of knots as well as some knot invariants. We will also discuss the important surfaces that can be found in knot complements.

Preparation: a class in topology is helpful but not required.

## Advanced Lecture Course

**Lecturers:** Rachel Roberts, Washington University, St. Louis

Jennifer Schultens, University of California, Davis

**Teaching Assistants: Week 1** - Joan Licata, Szego Assistant Professor at Stanford

**Week 2** - Alice Stevens, UC Davis

**Titles for the Graduate Lectures Series:**

**Week 1: Foliations and Laminations - Rachel Roberts**

In the first week we will discuss the theory of laminations and foliations. More specifically, we will introduce the Thurston-Nielsen theory of automorphisms of surfaces with an emphasis on the role of geodesic laminations. We will then move up a dimension and discuss codimension one foliations and laminations of 3-manifolds and how these objects allow one to "see" and work with given 3-manifolds.

## Week 2: Surfaces in 3-manifolds - Jennifer Schultens

Recommended background for week 1: Basic Algebraic and Differential Topology

### Reading list for Foliations and Laminations:

