FALL 2015

MATH 595

Symplectic and Poisson Geometry

Section SPG, CRN 64474

11-12:20 PM TR, 441 Altgeld Hall

Rui Fernandes

Course Description: This course is an introduction to Symplectic geometry and Poisson geometry. Poisson geometry is the study of a manifold equipped with a Poisson bracket. In symplectic geometry one imposes a non-degeneracy condition on the Poisson bracket. The roots of these geometries lie in Classical Mechanics, but they became an independent field of study in the 70's and in the 80's. Nowadays, there is an impressive body of results with beautiful connections with many other areas of mathematics.

The first part of this course covers foundational material in Symplectic and Poisson Geometry. Then it proceeds to discuss more advanced topics, such as Delzant's classification of symplectic toric manifolds, Gromov's Nonsqueezing Theorem or the integrability of Poisson manifolds into symplectic groupoids.

Grading: Grades will be based on class participation and a survey paper to be written on a topic of particular interest to the student.

Recommended Text: Ana Cannas da Silva, Lectures on Symplectic Geometry, Lecture Notes in Mathematics 1764, Springer-Verlag, 2008 (corrected printing)