Introduction to Symplectic Geometry

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Course Outline

This is an introductory course on symplectic geometry. The material that will be covered in the course includes the following:

1. Linear symplectic algebra.

2. Manifolds, Vector fields, Differential forms

3. Symplectic manifolds

4. Normal form theorems

5. Lie groups, Hamiltonian group actions

6. Moment maps, Symplectic reductions

7. Morse-Bott theory, The Atiyah-Guillemin-Sternberg convexity theorem

8. Equivariant cohomology (if time permits)

9. Quasi-hamiltonian group actions (if time permits)

10. Moduli space of flat connections (if time permits)

Evaluation

Assignments: 50%. One oral presentation 50%.

References

1. D. McDuff, D. Salamon, *Introduction to Symplectic Topology.*

2. V. Guillemin, S. Sternberg, *Symplectic Techniques in Physics.*

3. M. Audin, *The Topology of Torus Actions on Symplectic Manifolds.*

4. L. Jeffrey, *Hamiltonian Group Actions and Symplectic Reduction*, IAS/Park City Mathematics Series.

5. E. Meinrenken, *Lecture notes on Symplectic Geometry.*

6. A. Silva, *Lectures on Symplectic Geometry.*