Math 538-003 Topics in Geometry and Topology Symplectic Geometry and Integrable Systems MWF 12:00-12:50 Spring 2020

- Instructor: Anton Izosimov
- Email: izosimov@math.arizona.edu
- Class times and location: MWF 12:00-12:50, in zoom room https://arizona.zoom.us/ j/4877397457
- Office Hours: Monday 1 pm and 3 pm, Thursday 4 pm, and by appointment, in zoom
- Course homepage: http://math.arizona.edu/~izosimov/math538
- Prerequisites: Math 534 (Geometry and topology)
- Topics:
 - Billiards, integrability of the billiard in an ellipse (1-2 weeks).
 - Symplectic manifolds, Hamiltonian dynamics, Arnold-Liouville theorem (2 weeks).
 - Spherical pendulum, integrable geodesic flows (1 week).
 - Poisson manifolds, Lie groups and Lie algebras (2 weeks).
 - The free rigid body and the spinning top (2 weeks).
 - Toda lattice, Lax representation, *r*-matrix (2 weeks).
 - Bi-Hamiltonian systems, multidimensional rigid body (1 week).
 - Infinite-dimensional integrable systems, the KdV equation (1-2 weeks).
- Text: Lecture notes available at https://www.math.arizona.edu/~izosimov/math538/ notes.pdf
- Assignments: Every student will give a presentation related to one of topics covered in the course.
- Grading: The grade will be based on the presentation as well as on class participation.