

Math 439 Course Outline

Andrew D. Lewis

06/09/2010

The following is a list of topics to be covered in the course.

1. Differentiable manifolds and configuration space
2. Tangent bundles and velocity
3. Riemannian metrics and kinetic energy
4. Affine connections
5. Geodesics and Euler–Lagrange equations
6. Covector fields and forces
7. Topics selected from the following
 - (a) Motion planning for mechanical systems
 - (b) Dynamics of mechanical systems
 - (c) Nonholonomic mechanics