

## ABOUT THE MIDTERM EXAM

The midterm exam will be held on **Monday, March 13**, during the normal class hours (**12:30 p.m. - 1:50 p.m.**), and in **141 CSL**. You are allowed to bring in your class notes and what was posted on the course website. The scope of the exam is the range of topics covered in class (through today), in the posted material, and the four homework assignments. The topics covered include the following:

1. Weak and strong neighborhoods; weak and strong minima.
2. The Euler-Lagrange equation, and various boundary conditions.
3. Second-order conditions: Legendre, Jacobi, conjugate point.
4. Path and differential constraints.
5. Broken extremals: Weierstrass-Erdman corner conditions.
6. Pontryagin's minimum (maximum) principle.
7. Time-optimal control problems; bang-bang control, switching curves and surfaces.
8. Second-order conditions in optimal control: the accessory problem, Jacobi equation, conjugate-point conditions, the Riccati equation.
9. Generalized linear-quadratic control.
10. Singular control: singular arcs, higher-order necessary conditions.

GOOD LUCK IN THE MIDTERM EXAM!