Exam Date/Time: Thursday, February 26, 6:30 to 7:45 pm  
Format: 100 points in 14 questions (9 x multiple-choice, and 5 x partial-credit / short-answer)  
Location: 010 Sparks (sections 1, 7, 8); 121 Sparks (sections 3, 4, 15); 108 Forum (sections 2, 13, 16); 111 Forum (sections 5, 10, 11, 12); 105 Forum (sections 6, 9, 14)  
A penalty of five (5) points will assessed to your exam score if you take the exam in a room other than the one you are assigned to.  

Topics to study  
1. Classifications of differential equations  
2. Direction fields  
3. First order linear equations  
4. Separable equations  
5. Existence and Uniqueness Theorems (of 1st and 2nd order linear equations only)  
6. Solution-mixing and air-resistance problems  
7. Autonomous equations: equilibrium solutions, stability classification (including semistable equilibrium solutions)  
8. Exact equations: verification of; and solving them  
9. Second order homogeneous linear equations with constant coefficients  
10. Linear independence, Fundamental solutions, Wronskian, Abel’s Theorem, structure of the general solution of a second order linear equation, and the superposition principle  
11. Reduction of order  
12. Second order nonhomogeneous linear equations: Method of Undetermined Coefficients  
14. Higher order homogeneous linear equations with constant coefficients  

Comments: Students should know basic integration techniques; partial differentiation and integration; the three types of equilibrium solutions; solving constant-coefficient linear homogeneous equations using the characteristic equation; over-, under-, and critical damping; and the general long-term behavior of different types of functions and solutions.