SYLLABUS
MASTER'S/PHD QUALIFYING EXAM
ORDINARY DIFFERENTIAL EQUATIONS

Topics:

1. Elementary solution techniques (e.g. Math 316).
2. Existence, uniqueness, and continuation of solutions and continuity with respect to parameters.
3. Linear systems with constant and periodic coefficients.
4. Basic ideas of stability theory including the theory of almost linear systems and the theory of Liapunov functions.
5. Two-dimensional system. Phase plane portraits. Energy method; Poincare-Bendixon theory.
6. Regular perturbation theory and 1st order averaging theory.

References:

1. V. Arnold, *Ordinary Differential Equations.*

Please refer questions concerning this syllabus to ellison@math
Topics:


2. First order quasilinear and nonlinear P.D.E.'s. The method of characteristics.


References: