

## MAT 305 Calculus IV : Final Exam Information

The following topics are going to be covered.

1. **First order ODE-s.** Exact equations and integrating factors: §2.6, 25–32
2. **Second order ODE-s.** Real distinct, repeated, complex roots; reduction of order: §3.5, 1–10, 23–30; §3.6, 1–18
3. **Second order ODE-s.** Variation of parameters: §3.7, 1–20
4. **Series solutions.** Around an ordinary point, radius of convergence: §5.2, 1–14
5. **Series solutions.** Regular singular points, Euler's equation: §5.4, 1–18, §5.5, 1–22
6. **Laplace transform.** §6.4, 1–13, §6.5, 1–12
7. **Fourier series.** Sine and Cosine series, odd and even functions: §10.4, 15–30, 35–37
8. **Separation of variables.** Heat equation: §10.5, 9–12