

# MAT 4310, Sp '13

## Topics List

1. §1.1 — Significant digits, error
2. Python — Introduction to the Python programming language, the IDLE environment, data types, control statements, importing the math module, defining functions, lists: defining, slicing, & list methods  
*Portable Python* (for PCs)
3. §1.2, p 24–26 — Taylor's theorem, Mean Value Theorem, Taylor's Theorem for  $f(x + h)$   
remainders: Lagrange, Cauchy, and uniform
4. §3.2, p 93 — Convergence analysis of Newton's method
5. §3.3, p 114 — Convergence analysis of the secant method
6. §5.3 — Romberg integration
7. §6.1 — Adaptive Composite Simson's Rule
8. Chapter 7 — Systems of Linear Equation
9. Chapter 8 — Additional Topics on Linear Systems (*choose some, if time is good*)
10. Chapter 10 — Ordinary differential equations
11. Chapter 11 — Systems of ordinary differential equations
12. §15.1 — Partial differential equations (*if time*)