

# MATH 148 - Calculus II for Biological Sciences

**TEXTBOOK:** *Calculus for Biology and Medicine*, Fourth Edition, by Claudia Neuhauser and Marcus Roper, Pearson (2017). ISBN-13: 978-0-13-412259-5

**SCHEDULE - Note: This is a spring schedule.**

- **Week 1** -- 7.2, 7.3. Topics covered: integration by parts, partial fractions.
- **Week 2** -- 7.3, 7.4, 7.6. Topics covered: partial fractions, improper integrals, Taylor approximation.
- **Week 3** -- 7.6, 8.1. Topics covered: Taylor approximation, solving differential equations.
- **Week 4** -- 8.2, 8.3. Topics covered: equilibria and their stability, applications.
- **Week 5** -- 9.1, 9.2. Topics covered: linear systems, matrices. **EXAM 1 (7.2-7.4, 7.6, 8.1-8.3)**
- **Week 6** -- 9.3, 9.4. Topics covered: linear maps, eigenvalues, eigenvectors, the Leslie matrix.
- **Week 7** -- 9.5.1, 9.5.2, 10.1, 10.2. Topics covered: analytic geometry, functions of several variables, limits and continuity.
- **Week 8** -- 10.2, 10.3. Topics covered: limits and continuity for functions of several variables, partial derivatives.
- **Week 9** - 10.4. Topics covered: tangent planes, differentiability, linearization. **EXAM 2 (9.1-9.5, 10.1-10.3)**
- **Week 10** - 10.5.1, 10.7.1. Topics covered: chain rule for functions of two variables, maxima and minima.
- **Week 11** - 10.7.1, 10.9. Topics covered: maxima and minima, the Hessian matrix, systems of recurrence equations.
- **Week 12** - 11.1, 11.2. Topics covered: homogeneous linear first-order system of differential equations, applications.
- **Week 13** - 11.3. Topics covered: nonlinear autonomous systems. **EXAM 3 (10.4, 10.5, 10.7, 10.9, 11.1, 11.2)**
- **Week 14** - 11.4. Topics covered: Lotka-Volterra Model for Interspecific Interactions.
- **Week 15** - Review for FINAL.