



Department of Mathematics
Johns Hopkins University

110.107 Calculus II (Bio. & Soc. Sci.) Course Syllabus

The following list of topics is considered the core content for the course 110.107 Calculus II (Biology and Social Sciences). The current text for the course is:

Text: [Calculus for Biology and Medicine](#), 3rd Edition, Claudia Neuhauser, New Jersey: Prentice Hall, January 2010, ISBN-10: **0321644689**, ISBN-13: **978-0321644688**.

Course Topics

- **Preview and Review (1 week)**
 - Quick review of Syllabus from 110.106 Calculus I
 - 7.4 Improper Integrals
- **Differential Equations (1+ week)**
 - 8.1 Solving Differential Equations
 - 8.2 Equilibria and their Stability
- **Linear Algebra and Geometry (3- weeks)**
 - 9.1 Linear Systems
 - 9.2 Matrices
 - 9.3 Linear Maps, Eigenvectors and Eigenvalues
 - 9.4 Analytic Geometry
- **Multivariable Calculus (4- weeks)**
 - 10.1 Functions of Two or More Independent Variables
 - 10.2 Limits and Continuity
 - 10.3 Partial Derivatives
 - 10.4 Tangent Planes, Differentiability, and Linearization
 - 10.5 More about Derivatives
 - 10.6 Applications
- **Systems of Differential Equations (1 week)**
 - 11.1 Linear Systems Theory
 - 11.2 Linear Systems: Applications
- **Probability and Statistics (2+ weeks)**
 - 12.1 Counting
 - 12.2 What is Probability?
 - 12.3 Conditional Probability and Independence
 - 12.4 Discrete Random Variables and Discrete Distributions
 - 12.5 Continuous Distributions
 - 12.6 Limit Theorems
 - 12.7 (if time) Statistical Tools

