

Mathematics 151L
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5 credits

Calculus for Biology and Medicine

Prerequisite:

Mathematics 150 (with grade C- or above) or Course Code L on Math Placement Test.

Catalog Description:

Limits, continuity, derivatives, Mean Value Theorem, extrema, curve sketching, related rates, differentiation of the trig, log, and exponential functions.

Purpose of Course:

To provide students with a solid foundation in one-variable calculus, to model and analyze phenomena in the life sciences

Follow-up Course:

Math 152L

Text:

Calculus for Biology and Medicine, 2nd Edition, by Claudia Neuhauser, Prentice-Hall, ISBN 0130455164

Topics List & Sample Syllabus:

Chapter 1 (1-2 lectures)

1.2: Elementary functions

1.3: Graphing

Chapter 2: (1-2 lectures)

2.1.1: Exponential growth and decay

2.2.2: Sequences

Chapter 3: (4-5 lectures)

3.1: Limits

3.2: Continuity

3.3: Limits at infinity

3.4: The Sandwich Theorem and some trigonometric limits

3.5: Properties of continuous functions

Continued.

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Chapter 4 (7-8 lectures)

- 4.1: Formal definition of the derivatives
- 4.2: The power rule, basic rules of differentiation, and derivatives of polynomials
- 4.3: The product and quotient rules, derivatives of rational and power functions
- 4.4: The chain rule, related rates, and higher derivatives
- 4.5: Derivatives of trigonometric functions
- 4.6: Derivatives of exponential functions
- 4.7: Derivatives of inverse and logarithmic functions
- 4.8: Approximation and local linearity

Chapter 5 (8-9 lectures, team projects will be assigned during this period)

- 5.1: Extrema and the Mean Value Theorem
- 5.2: Monotonicity and concavity
- 5.3: Extrema, inflection points, and graphing
- 5.4: Optimization
- 5.8: Anti-derivatives (optional)