

Mathematics H190 Au
Mathematics H191 Wi
Mathematics H264 Sp

5 cr.

Elementary Analysis I
Elementary Analysis II
Elementary Analysis III

Prerequisite:

H190 - Permission of department

H191 - A grade of C or better in H190

H264 - A grade of C or better in H191

Catalog Descriptions:

H190: The first of an enriched honors calculus sequence designed to introduce students to the mathematical underpinnings of analysis.

H191: Continuation of H190.

H264: Continuation of H191; a rigorous treatment of multivariable integrals including gradients, multiple integrals, line and surface integrals, Green's theorem, the divergence theorem, and Stokes' theorem.

Purpose of Course:

This three-quarter sequence comprises the most intensive first year honors track in mathematics. It is designed to challenge talented, highly motivated students, regardless of their chosen major area of study. The courses introduce students to the mathematical underpinnings of calculus and stimulate the development of mathematical thinking, in addition to covering the material of the traditional calculus sequence. This sequence will substitute for Math 151, 152, 153, 254, and 551. H190 - H191 fulfill the analysis requirement for a Math major. The sequence is taught by faculty members in small sections with considerable teacher-student interaction.

Follow-up Sequence:

Math H520, H521, H522

Texts vary, for example:

H190, H191: Calculus, Spivak, 3rd edition

H264: Advanced Calculus, Folland (used Sp06, Sp07)

H264: Advanced Calculus of Several Variables, Edwards, Jr. (used Sp05)

H264: Vector Calculus, 4th edition, Marsden/Tromba (used Sp00, Sp03)

H264: Advanced Calculus, 3rd edition, Buck (used Sp02)

Continued.

Course Coordinator
V. Bergelson
2007-2008

Topics:

H190 - H191:

Properties of real numbers
Mathematical induction
Definition of integral
Integrals of polynomials and trigonometric functions.
Applications
Continuity, limits, derivatives and applications
Fundamental Theorem of Calculus and integration techniques
Taylor series
Sequences and series of numbers and functions
Uniform convergence
Power series
If time permits, some differential equations or complex-valued functions.

H264:

Multivariable calculus (vector approach)
Gradients
Multiple integrals
Line and surface integrals
Green's Theorem
Divergence theorem
Stokes' Theorem.

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