MTH 311: Advanced Calculus

Catalog Description: Rigorous development of calculus, axiomatic properties of R, topology of the real line, convergence of sequences and series of real numbers, functions, limits of functions, basic properties of continuity and derivatives. Brief treatment of Riemann integration, improper integrals, sequences of functions, pointwise and uniform convergence, introductory aspects of multivariable calculus.

Credits: 4
Terms offered: F, W
Prerequisites: MTH 251 through 255 and MTH 355 required.
Courses for which this is a prerequisite: MTH 312, MTH 437
Meets: Four 50 minute lectures weekly.

Course Content: The content of this course includes the following.

- Introduction to the tools of mathematical analysis.
- Convergence of sequences of real numbers.
- Continuous functions.
- Differentiation of functions.
- Riemann integration.


Learning Outcomes: Upon completing MTH 311 a successful student is expected to be able to do the following.

1. Construct and present simple proofs using rigorous mathematical arguments.
2. Critically distinguish correct and incorrect mathematical arguments in the setting of real analysis.
3. Formulate and verify convergence results in settings relevant to real analysis.
Evaluation of Student Learning:  (Approximate percentages given.)

- Homework problems 30%
- In class participation: 10%
- Quizzes: 10%
- Midterm 20%
- Final Exam: 30%

Students with Disabilities: Accommodations are collaborative efforts between students, faculty and Disability Access Services (DAS). Students with accommodations approved through DAS are responsible for contacting the faculty member in charge of the course prior to or during the first week of the term to discuss accommodations. Students who believe they are eligible for accommodations but who have not yet obtained approval through DAS should contact DAS immediately at 737-4098.

Student Conduct: All students are expected to obey to OSU’s student conduct regulations. Here is the link to OSU’s Statement of Expectations for Student Conduct: http://oregonstate.edu/admin/stucon/achon.htm

Course revised Spring 2013, syllabus submitted July 3, 2013