

Eastern Oregon University Course Syllabus

Number of Course:

MATH 253Z

Name of Course:

Calculus: Sequences and Series*SMI

Catalog Description:

This course explores real-valued sequences and series, including power and Taylor series. Topics include convergence and divergence tests and applications. These topics will be explored graphically, numerically, and symbolically. This course emphasizes abstraction, problem-solving, reasoning, communication, connections with other disciplines, and the appropriate use of technology.

Credit Hours:

4

Instructor:

TBD

Time and place of the course:

TBD

Required Texts or Suggested Materials:

Link to the EOU Bookstore: [Eastern Oregon University Bookstore \(opens in new tab\)](#)

Prerequisites:

MATH 252Z

Learning Outcomes:

At the end of this course, students will be able to:

- Recognize and define sequences in a variety of forms and describe their properties, including the concepts of convergence and divergence, boundedness, and monotonicity.
- Recognize and define series in terms of a sequence of partial sums and describe their properties, including convergence and divergence.
- Recognize series as harmonic, geometric, telescoping, alternating, or p-series, and demonstrate whether they are absolutely convergent, conditionally convergent, or divergent, and find their sum if applicable.
- Choose and apply the divergence, integral, comparison, limit comparison, alternating series, and ratio tests to determine the convergence or divergence of a series.
- Determine the radius and interval of convergence of power series, and use Taylor series to represent, differentiate, and integrate functions.
- Use techniques and properties of Taylor polynomials to approximate functions and analyze error.

Course Requirements:

- Homework;
- Quizzes;
- Exams (two exams during the term and cumulative final)
- Computer Labs.

Grading Policies:

Course grades will be determined using the following proportions

- Homework: 20%
- Quizzes: 20%
- Exams: 50% (15% for each of two mid-term exams and 20% for the final)
- Computer Labs: 10%

Means of Assessment:

- Broadly this course addresses the “content knowledge” and “problem solving” learning outcomes of the Mathematics Program.
- Homework and quizzes will be used to assess all six outcomes.
- In addition, Exam One will assess outcomes #1, #2, and #3 while Exam Two will assess outcomes #4, #5, and #6.
- A comprehensive final exam will assess all six outcomes.

Brief Outline of Course:

- Week One: (Sequences and Limits, Convergence and Divergence)
- Week Two: (Boundedness, Monotonicity, and Comparison)
- Week Three: (Series as Limits of Partial Sums)
- Week Four: (Integral Comparison, Alternating Series, Geometric Series)
- Week Five: (Absolute vs. Conditional Convergence, P-series, Radius of Convergence)
- Week Six: (Taylor Series, Radius of Convergence, and Error Estimates)
- Week Seven: (Taylor Series of Common Functions, Differentiation and Integration of Series)
- Week Eight: (Calculus of Polar Coordinates)
- Week Nine: (Three Dimensional Coordinates, Dot Product and Cross Product)
- Week Ten: (Lines and Planes in Three Dimensions)

General Education Category and Outcomes:

NA

University Writing Requirement Outcomes:

NA

Writing Center Statement:

The EOU Writing Center provides a place — physical or virtual — where every EOU student can find an interested, responsive reader. Writing tutorials are free of charge for EOU undergraduate and graduate students and are available for writing at any course level and for writing resumes, job letters, and graduate applications. For drop-in hours or to schedule in-person, synchronous online, or asynchronous online tutoring, please visit the EOU Writing Center: [Writing Center – Eastern Oregon University \(opens in new tab\)](#).

Classroom Decorum:

NA

Academic Misconduct Policy:

Eastern Oregon University places a high value upon the integrity of its student scholars. Any student found responsible for an act of academic misconduct (including but not limited to cheating, unauthorized collaboration, fabrication, facilitation, plagiarism or tampering) may be subject to having his or her grade reduced in the course in question, being placed on probation or suspended from the University, or a combination of these.

Accommodations/Students with Disabilities Policy:

Any student who feels they may need accommodation for any type of disability must contact the Disability Services Office in Loso Hall, Room 233. Phone: 541-962-3081.

Disclaimer:

This standard syllabus provides only general information on the course. For those enrolled in the course a detailed syllabus will be provided by the Instructor at the beginning of the term. Please keep in mind that not all courses are offered every year.

Syllabus Prepared By:

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Date:

01/06/2025