SECTION C - Conditions on Enrollment

Open Entrn   E

Online Delivery Methods

DE Modalities	Permanent or Emergency Only?
Entirely Online	Permanent
Hybrid	Permanent
Online with Proctored Exams	Permanent

SECTION E - Course Content

Student Learning Outcomes

	Upon satisfactory completion of the course, students will be able to:
1.	Evaluate integrals using a variety of methods.
2.	Solve applications involving integrals.
3.	Apply convergence tests and represent functions as power series.
4.	Write mathematical proofs.

Course Objectives

	Upon satisfactory completion of the course, students will be able to:
1.	Evaluate definite and indefinite integrals using a variety of integration formulas and techniques;
2.	Apply integration to areas and volumes, and other applications such as work or length of a curve;
3.	Evaluate improper integrals;
4.	Apply convergence tests to sequences and series;
5.	Represent functions as power series;
6.	Graph, differentiate and integrate functions in polar and parametric form.

Course Content

1) Areas between curves;

2) Volume, volume of a solid of revolution;

3) Additional techniques of integration including integration by parts and trigonometric substitution;

4) Numerical integration; trapezoidal and Simpson's rule;

5) Improper integrals;

6) Applications of integration to areas and volumes;

7) Additional applications such as work, arc length, area of a surface of revolution, moments and centers of mass, separable differential equations, growth and decay;

8) Introduction to sequences and series;

9) Multiple tests for convergence of sequences and series;

10) Power series, radius of convergence, interval of convergence;

11) Differentiation and integration of power series;

12) Taylor series expansion of functions;

13) Parametric equations and calculus with parametric curves; and

14) Polar curves and calculus in polar coordinates;

Methods of Instruction

Methods of Instruction

Types	Examples of learning activities
Lecture	In class lecture
Discussion	Discussion of class topics
Other	Practice problems

Instructor-Initiated Online Contact Types
Announcements/Bulletin Boards
Discussion Boards
E-mail Communication

Video or Teleconferencing

Student-Initiated Online Contact Types
Discussions
Group Work

Course design is accessible
Yes

Methods of Evaluation

Methods of Evaluation

Types	Examples of classroom assessments
Exams/Tests	Traditional exams including a final exam. Exams could include methods of integration (integration by parts, trigonometric integrals, trigonometric substitution, partial fraction decomposition). Exams could include determining convergence of infinite series (geometric, divergence, p-series, integral, comparison, limit comparison, ratio, root, alternating series).
Quizzes	Quizzes on class material
Projects	Individual or group projects
Homework	Homework problems from book
Other	Additional assessment information: The Mathematics Department maintains a commitment to diverse teaching methods in courses emphasizing vital quantitative skills and qualitative reasoning ability. To that end, it is expected that sufficient formative assessments will be given to students that in frequency, length and rigor adequately assess both quantitative skills and qualitative reasoning.

Assignments

Reading Assignments
Read sections from the textbook, for example: 1. Read section on arc length 2. Read section on improper integrals

Writing Assignments
Daily homework exercises from the text, for example:
1. Find the work required to pump all the water out of a cylindrical tank with height = 5 feet, radius = 2 feet.
2. Find the Maclaurin series for $f(x) = \sin(2x)$

Other Assignments
Other assignments such as research into applications or group projects assigned at instructors' discretion.

SECTION F - Textbooks and Instructional Materials
Material Type
Textbook

Author
Stewart

Title
Calculus: Early Transcendentals

Edition/Version
9th

Publisher
Cengage

Year
2021
ISBN #
9780357537299

Proposed General Education/Transfer Agreement

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