MATH G099N: SUPPORT FOR CALCULUS 2

Item	Value
Curriculum Committee Approval Date	11/07/2023
Top Code	170100 - Mathematics, General
Units	0 Total Units
Hours	36 Total Hours (Lecture Hours 36)
Total Outside of Class Hours	0
Course Credit Status	Noncredit: Support Course (U)
Material Fee	No
Basic Skills	Not Basic Skills (N)
Repeatable	Yes; Repeat Limit 99
Grading Policy	P/NP/SP Non-Credit (D), • Letter Non-Credit (L)

Course Description

This noncredit course provides students with the necessary support to succeed in Math G185: Calculus 2. Topics include study and test-taking skills, continual improvement of algebraic skills, library of functions, solving applicational problems, differentiation of functions, and introductory integration. Students taking this course will gain the necessary skills, improving their foundational mathematical competence, to succeed in MATH G185: Calculus 2 and the remainder of the calculus series. COREQUISITE: MATH G185. NOT DEGREE APPLICABLE. Not Transferable.

Course Level Student Learning Outcome(s)

1. Course Outcomes
2. Differentiate a function.
3. Integrate a function using substitution.
4. Use summation identities to evaluate a finite series.

Course Objectives

- 1. Solve applicational word problems.
- 2. Evaluate limits of function at a real number.
- 3. Compute derivatives using differentiation formulas.
- 4. Evaluate definite integrals as a limit.
- 5. Evaluate integrals using the Fundamental Theorem of Calculus.
- 6. Evaluate integrals using substitution.
- 7. Apply integration to compute area.

Lecture Content

Study Skills Test-Taking Skills Operations of Real Numbers Arithmetic Summation notation Library of Functions Polynomial functions Rational functions Algebraic functions Exponential functions Logarithmic functions Trigonometric functions Hyperbolic functions Inverse functions Domain and range Limits Notation Limit laws Continuity Indeterminate limits Limits to infinity LHôpitals Rule Differentiation Notation Differentials Derivatives of the library of functions Differentiation properties Chain rule Implicit differentiation Mean Value Theorem Integration Riemann Sums Notation Indefinite integrals Definite integrals Fundamental Theorem of Calculus Net change Substitution Area Parametric Equations Definition and concept Parametric curves Conversions to rectangular equations Polar Coordinates Definition and concept Conversions to rectangular coordinates Conversions to rectangular equations Polar coordinates Polar curves Graphing Symmetries Sequences and Series General term Summation properties Summation identities Geometric series Solving Word Problems Identifying questions Identifying formula/equation Interpreting result

Method(s) of Instruction

- Enhanced NC Lect (NC1)
- Online Enhanced NC Lect (NC5)
- Live Online Enhanced NC Lect (NC9)

Reading Assignments

Course textbook which provides explanations, worked examples, and problems to be solved.

Writing Assignments

Homework and assessments covering topics presented in the course.

Out-of-class Assignments

Homework and activities.

Demonstration of Critical Thinking

Students will demonstrate critical thinking and problem-solving skills by using logic, in conjunction with past mathematical solving techniques, to solve and interpret the evaluation of limits, derivatives, integrals, and various applications associated with each core topic. Demonstrations will be shown by completing assignments, participating in discussions, and completing required assessments.

Required Writing, Problem Solving, Skills Demonstration

Assessments, homework, or projects where students demonstrate their mastery of the learning objectives and their ability to devise, organize, and present complete solutions to problems.

Eligible Disciplines

Mathematics: Masters degree in mathematics or applied mathematics OR bachelors degree in either of the above AND masters degree in statistics, physics, or mathematics education OR the equivalent. Masters degree required.

Textbooks Resources

1. Required Stewart, James. Calculus, 9 ed. Cengage, 2020 2. Required Strang, Gilbert Herman, Edwin. Calculus Volume 1, 1 ed. OpenStax (OER) (latest), 2016 Rationale: .