



Course Descriptor
< Math101-Calculus I >

Proposed Academic Year	2021-2022	Last Reviewed Academic Year	2020-2021
Course Code	Math101	Course Title	Calculus I
Credit hours	3	Level of study	Year1
College / Centre	Applied and Health Science	Department	Basic Science
Co-requisites	Nil	Pre-requisites	FPPM002 GFP Pure Mathematics

1. COURSE OUTLINE

Students of Calculus1 will develop the quantitative skills needed to be successful in subsequent courses in engineering and applied and human sciences. These skills will enhance their ability to analyze, solve and communicate their solutions to fellow professionals using the language of mathematics. Students will continue to use the web-based course supplement to access course material and communicate with classmates and the instructor. They will enhance teamwork and leadership skills by working in groups to achieve the solutions to designate exercises. The course will introduce students to the concepts of Limits, Continuity, Derivatives and Integration

2. AIMS

The aim of this course is to lay a firm foundation for students in calculus. The course will introduce students to the concepts of Limits, continuity, derivatives, applications of derivatives, asymptotes, optimization and related rate problems, anti-derivative, Integration by substitution. It will develop mathematical critical thinking and problem-solving skills

3. LEARNING OUTCOMES, TEACHING, LEARNING and ASSESSMENT METHODS

Learning Outcomes (Definitive)	Teaching and Learning methods (Indicative)	Assessment (Indicative)
Upon successful completion of this course, students will be able to:		
1. Use algebra of limits and continuity, including L'Hôpital's rule to find limits of simple expressions and discuss the continuity of functions	Lectures and solving Problems	Quizzes, Midterm, Assignment
2. Apply the definition and methods of differentiation accurately to find the derivative of functions	Lectures and solving Problems	Quizzes, Midterm, Assignment



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3. Apply the procedures of differentiation accurately to solve related rates and optimization problems	Lectures and solving Problems	Quizzes, Midterm, Assignment
4. Find the integral of functions by using anti-derivative and substitution method	Lectures and solving Problems	Quizzes, Midterm, Assignment

4. ASSESSMENT WEIGHTING

Assessment	Percentage of final mark (%)
Quiz 1	10%
Quiz 2	10%
Midterm Exam	20%
Assignment	10%
Participation	10%
Final exam	40%
TOTAL	100%

5. ACHIEVING A PASS

Students will achieve 3 credit hours for this course by achieving a minimum overall score of 50% and attending at least 80% of class lectures.

6. COURSE CONTENT (Indicative)

The Tangents and Velocity Problems.
The limit of a function.
Calculating limits using the limit laws.
Continuity.
Derivative and Rate of Changes.
Techniques of differentiation (Polynomials, Exponential and Logarithmic Function).
The product and quotient rules
Derivatives of trigonometric functions
Chain rule and Implicit Differentiation
Higher Derivative, L'Hospital's rule.
Related rates.
Extreme values (Minima and Maxima)
Applications of derivatives, and Curve sketching.
The Concept of Integration.
The Definite Integral.
Indefinite Integral and substitution Rule.



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TOTAL HOURS	45
Plus RECOMMENDED INDEPENDENT STUDY HOURS	0
TOTAL COURSE HOURS	45

7. RECOMMENDED REFERENCES

Calculus, Early Transcendental, by James Stewart, 7th edition.2012

Library + online resources:

<http://tutorial.math.lamar.edu>



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