

Planning and Quality Assurance Affairs

Form (A)

Course Specifications

General Information

Course name	Calculus(1)
Course number	MATH1401
Faculty	
Department	
Course type	Major Needs
Course level	1
Credit hours (theoretical)	4
Credit hours (practical)	0
Course Prerequisites	

Course Objectives

- 1 - Studying Continuous Functions
- 2 - Have the Knowledge of Algebra, Functions and Trigonometry
- 3 - Studying the Limits and Techniques for Finding Limits
- 4 - Have the Knowledge of Tangent Lines, Definition of Derivative and Techniques of Differentiation
- 5 - Studying Derivatives of the Trigonometric Functions
- 6 - Studying Increments and Differentials, the Chain Rule and Implicit Differentiation
- 7 - Studying Extrema of Functions and the Mean Value Theorem
- 8 - Studying the First Derivative Test, Concavity and the Second Derivative Test
- 9 - Studying Summary of Graphical Methods
- 10 - Have the Knowledge of Antiderivatives and Indefinite Integrals, Change of Variables in Indefinite Integrals
- 11 - Studying Definite Integral, Properties of the Definite Integral and The Fundamental Theorem of Calculus
- 12 - Studying Area and Solids of Revolution
- 13 - Studying Volumes by Cylindrical Shells
- 14 - Have the Knowledge of Arc Length and Surfaces of Revolution

Intended Learning Outcomes

Knowledge and Understanding	<ul style="list-style-type: none"> * Understand the completeness of the real line * Understand the concept and theory of limit * Understand the concept and theory of continuity * Understand the concept and theory of differentiation * Apply the basic techniques of integration
Intellectual Skills	<ul style="list-style-type: none"> * Upon successful completion of this course, students are able to recite definitions and demonstrate intuitive understanding of limits, derivatives, and definite integrals; state and prove major theorems of calculus

Course Contents

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| 1 - Precalculus Review |
| 2 - Limits of Functions |
| 3 - The Derivative |
| 4 - Applications of the Derivative |
| 5 - Integrals |
| 6 - Applications of the Definite Integral |

Teaching and Learning Methods

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| 1 - Lectures |
| 2 - Discussions |
| 3 - Assignments |
| 4 - Additional Readings |

Students Assessment

<u>Assessment Method</u>	<u>TIME</u>	<u>MARKS</u>
First Hour Exam	Fifth Week	20
Second Hour Exam	Ninth Week	20
Attendance and Discussion		5
Homework		5
Final Exam		50

Books and References

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|-------------------|---------------------------------------------|
| Essential books | Earl W. Swokowski, Calculus, Fifth Edition. |
| Recommended books | All Calculus and Analytic Geometry Books. |