

National Commission for Academic Accreditation & Assessment

Course Specification

Institution : Taibah University
College/Department: Faculty of Sciences/ Mathematics

A Course Identification and General Information

١. Course title and code: MATH ١٠١ (CALCULUS I)
٢. Credit hours: ٣ Hours (in form of ٢CP Theory and ١CP Tutorials)
٣. Program(s) in which the course is offered. (If general elective available in many programs indicate this rather than list programs) Bachelor of Mathematics
٤. Name of faculty member responsible for the course Mathematics Departments
٥. Level/year at which this course is offered: First level/ First Year First Level/First Semester
٦. Pre-requisites for this course (if any)
٧. Co-requisites for this course (if any)
٨. Location if not on main campus University Building



B Objectives

١. Summary of the main learning outcomes for students enrolled in the course.

The main contents of this course:

١. Numbers.
٢. Polynomials.
٣. Equations, inequalities and introduction to ٣D geometry.
٤. Operation on complex numbers.
٥. Functions
٦. Example of functions: Polynomials, rational functions, Logarithm and exponential functions
٧. Solving Linear Systems.
٨. The notion of the limit and techniques for finding limits.
٩. Continuous functions.
١٠. The derivative and techniques of differentiation and the and applications of derivatives.
١١. Anti-derivative and integrals.
١٢. Basic sequences and finite series.

٢. Briefly describe any plans for developing and improving the course that are being implemented. (eg increased use of IT or web based reference material, changes in content as a result of new research in the field)

- a. Using graphic calculator to solve mathematical problems.
- b. Using the E-Learning management system.
- c. Updating the objectives of the course and changing in content as a result of new research in the field.



C. Course Description (Note: General description in the form to be used for the Bulletin or Handbook should be attached)

Topics to be Covered		
List of Topics	No of Weeks	Contact hours
Numbers: Natural, Whole, integers, rational, irrational, real and complex numbers. Basic operations, Rational expressions and rational exponents.	١	٥
Exponents and polynomials, evaluation of polynomials, degree of polynomials Solving Linear equations and linear inequalities in one variable. Absolute value equations and inequalities. Line and plane equation. Parametric representation of lines and planes.	٢	١٠
Operation on Complex numbers: conjugate of a complex number, Multiplication, division	١	٥
Functions: Domain of Definition, Range, even and odd function, Piecewise-defined and Composite functions, Graph of a function. Inverse functions, One to one functions.	١	٥
Polynomials and rational functions, zeros and poles, asymptotic behaviour, Tangent lines, Logarithm and exponential functions, definition of such function, geometrical illustrations, properties of log and exp functions	٢	١٠
Solving Linear Systems: treatment of the cases systems with a unique solution, no solution, infinitely set of solutions	١	٥
The notion of the limit and techniques for finding limits. Limit at a discontinuity point. Limits at the infinity. Asymptote	١	٥
Continuous functions. The concept of continuity and discontinuity	١	٥
The derivative and techniques of differentiation. Applications of derivatives. L'Hospital rule.	٢	١٠
Anti-derivative, definite and indefinite integrals, basic application of definite integrals	١	٥
Sequences and series, basic definitions, arithmetic and geometric sequences. Sum and partial sum of series.	١	٥
	١٤	٨٠

