

## 1. Course Number and Name: 001 MATH – Mathematics 1

### 2. Credits and Contact Hours: 3 Credit

- a. Lecture – 3 day per week at 50 minutes for 16 weeks
- b. Laboratory – Nil

### 3. Course Coordinator or Instructor:

Mohammad Hazzazi (coordinator)

### 4. Text Book:

- Calculus - Introduction to calculus - Part I - Mohammed Adel Sudan, Salman
- Calculus fifth edition by Earl William Swokowski

### 5. Specific Course Information:

- a. **Catalog Description:** This course begins with the study of functions, the basic tools of calculus, their algebra and families of functions, the basic concept, and the limit of a function, the continuity and the derivative of a function.
- b. **Prerequisites:** Nil
- c. **Status:** Required

**6. Specific Goals for the Course:** See the Mapping in First Page of College Requirement Courses

### 7. List of Topics:

- Review on roots, fractions, analysis and numbers, Intervals on  $\mathbb{R}$ . Definition of the absolute value and its properties.
- Domain and range and function operations, Inverse function, Composite function.
- Even and odd Functions, Periodic functions, Basic functions and how to sketch them, Trigonometric functions.
- Definition of limit of a function, Right and left limit, Properties of limits.
- Limit of trigonometric functions, Limits containing infinity.
- Continuity of function at point, Properties of the continuity, Discontinuity. Right and left side continuity.
- Definition of Derivative, Properties of derivative, Chain Rule.
- Tangent line equation, Implicit Differentiation, Derivatives of trigonometric functions, Higher order derivatives.
- Increasing and decreasing functions and the definition of the maximum and minimum values of functions, Roll Theorem and The Mean Value Theorem, L'Hospital's Rule.
- First derivative test, critical points and local extreme, Second derivative test, concavity and points of inflection.
- Asymptotes, Sketching the graph of a function