MUTAH UNIVERSITY
College of Science
Department of Mathematics
Course Syllabus

Course Code	Course Name	Credits	Contact Hours
0301101	Calculus (1)	3	3T

INSTRUCTOR/COORDINATOR

Name	Dr. Faisal Alkassasbeh
Email/Office	Kassasbe@mutah.edu.jo
Office Hours	11:00-12:00 Sun, Tue, Thu
Classroom/Time	2:00-3:30

TEXTBOOK

Title	Calculus
Author/Year/Edition	Howard Anton, 2010, 9th edition
Other Supplemental Materials	
Title	Calculus with analytic geometry
Author/Year/Edition	Robert Ellis, Denny Gulick, 2002,5th edition

SPECIFIC COURSE INFORMATION

A. Brief Description of the Content of the Course (Catalog Description)

Limit s. Continuity. The derivative. Rules of differentiation. Derivatives of higher order. The chain rule. Implicit differentiation. Increasing and decreasing functions. Relative extreme values. The first derivative test. The second derivative test. Absolute extreme values. Concavity. Points of inflection. Graphing. Mean-Value theorem. Rolle's. Indefinite and definite integrals. The fundamental theorem of Calculus. Properties. Integration by substitution Exponential functions. Inverse functions and logarithms. Inverse trigonometric functions. Hyperbolic functions and their inverses. Theorem L'Hospital's Rule.

B. Pre-requisites (P) or Co-requisites (C)

None

C. Course Type (Required or Elective)

Required

SPECIFIC GOALS

A. Course Learning Objectives (CLOs)						
CLO1: Introduce limits and continuity, and develop skills for their determination [1]. **CLO2: Introduce the derivative, and develop skills for using rules of differentiation [1].** **CLO3: Provide skills related to applications of the derivative [1].** **CLO4: Introduce the definite and indefinite integrals, and develop skills for their evaluation [1].**						
B. Student Learning Outcomes (SOs) Addressed by the Course						
1	**2**	**3**	**4**	**5**	**6**	**7**
√						

BRIEF LIST OF TOPICS TO BE COVERED

List of Topics	No. of Weeks	Contact Hours
Functions: The Real Numbers, Points and Lines in the Plane, Functions, Graphs, Aids to Graphing, Combining Functions, Trigonometric Functions.	4	12
Limits and Continuity: Limit Rules and Examples, one-Sided and Infinite Limits, Limits at Infinity, Continuity, the Intermediate Value Theorem.	2	6
Derivatives: The Derivative, differentiable Functions, derivatives of Combinations of Functions, the Chain Rule, Higher Derivatives Implicit Differentiation, The Mean Value Theorem, The First and Second derivative Tests, Extreme Values, Concavity and Inflection Points, Graphing.	3	9
The Integral: The Definite Integral with some properties, The first and second Fundamental Theorems of Calculus, Indefinite Integrals and with Rules, Integration by Substitution, Area.	2	6
Inverse Functions, Logarithmic and General Exponential Functions, Natural Logarithmic and Exponential Function.	2	6
The Inverse Trigonometric Functions, Hyperbolic Functions, The inverse of Hyperbolic Functions, L'Hopital's Rule.	1	3
Total	*14*	*42*

EVALUATION

Assessment Tool	Due Date	Weight (%)
Mid Exam	According to the university calendar	30
Course Work (Homework's, Quizzes, Projects, …etc.)	One week after being assigned	20

Final Exam	According to the university calendar	50

ABET's Students Learning Outcomes (Criterion # 3)		
Relationship to program outcomes		
ABET 1-7		**Electrical Engineering Student Outcomes**
1.	√	an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
2.		an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic
3.		ability to communicate effectively with a range of audiences
4.		an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts
5.		an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.
6.		an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions
7.		an ability to acquire and apply new knowledge as needed, using appropriate learning strategies