



Course Specifications

Course Title:	Calculus (1)
Course Code:	MATH10001
Program:	Mathematics
Department:	Mathematics
College:	Faculty of Sciences and Arts in Almandaq
Institution:	Albaha University

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A. Course Identification

1. Credit hours:	4 Hours
2. Course type	
a.	University <input type="checkbox"/> College <input checked="" type="checkbox"/> Department <input type="checkbox"/> Others <input type="checkbox"/>
b.	Required <input checked="" type="checkbox"/> Elective <input type="checkbox"/>
3. Level/year at which this course is offered:	Level 1 / First Year
4. Pre-requisites for this course (if any):	N/A
5. Co-requisites for this course (if any):	N/A

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	60	100%
2	Blended	0	0%
3	E-learning	0	0%
4	Distance learning	0	0%
5	Other	0	0%

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	Lecture	30 Hours
2	Laboratory/Studio	
3	Tutorial	30 Hours
4	Others (specify)	
	Total	60 Hours

B. Course Objectives and Learning Outcomes

<p>1. Course Description: This course deals mainly with calculus. We cover functions, domain, range, limits, continuity, derivatives, differentiations rules, application of differentiations.</p>
<p>2. Course Main Objective Students should be able to:</p> <ul style="list-style-type: none"> • Demonstrate knowledge of basic precalculus concepts and skills • Understand the nature of the function (including the inverse trigonometric function and the limit of the indefinite form) and can reliably calculate the derivative of the basic function • Understand the continuity and differentiability of functions and apply to specific functions. • Find the maximum and the minimum values and understand the relation between derivative and shape of graph of a function.

3. Course Learning Outcomes

CLOs		Aligned PLOs
1	Knowledge and Understanding	
1.1	Student should be able to identify types of functions (Linear, Polynomial, Power, Algebraic, Rational, Trigonometric, Exponential and Logarithmic Functions...)	K1
1.2	Student should be able to recognize odd, even, one to one, onto, bijective, increasing and decreasing functions.	K2
1.3	Student should be able to state applications of derivatives.	K3
2	Skills :	
2.1	Student should be able to solve algebraic equations and inequalities.	S3
2.2	Student should be able to determine the range, domain, codomain, inverse of functions.	S4
2.3	Student should be able to sketch graph of functions.	S4
2.4	Student should be able to find limits.	S3
2.5	Student should be able to prove the continuity of functions	S2
2.6	Should be able to calculate derivatives of functions	S1
3	Values:	
3.1	Student should be able to develop their self-learning skills.	V1
3.2	Student should be able to take responsibility for their own learning.	V2

C. Course Content

No	List of Topics	Contact Hours
1	Elementary Algebra (Sets, Equations and Inequalities, Lines)	8
2	Functions (Functions and their Graphs, Mathematical Models, Odd and Even Functions, One to One and Onto Functions, Combining Functions, Trigonometric Functions, Exponential Functions, Inverse Functions, Logarithms Functions, Inverse of Trigonometric Functions)	14
3	Limits and Continuity (Limits of Function Values, Limits Laws, One-Side Limits and limits at infinity, Infinite limits and Vertical Asymptotes, Continuity, The Rigorous Definition of Limits)	16
4	Differentiations (The Derivative as a Function, Differentiation Rules, Derivative of Trigonometric Functions, The Chain Rule, Derivative of Logarithmic Functions, ...)	16
5	Application of Derivatives (Extreme Values, Rolle's Theorem, The Mean Value Theorem, L'Hôpital's rule...)	6
Total		60

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	Knowledge and Understanding		
1.1	Student should be able to identify types of functions (Linear, Polynomial, Power, Algebraic,		

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
	Rational, Trigonometric, Exponential and Logarithmic Functions...)	-Lectures -Presentations	-First Periodic Test
1.2	Student should be able to recognize odd, even, one to one, onto, bijective, increasing and decreasing functions.	-Interactive Learning -Co-operative Learning	-Second Periodic Test -Mid-term Exam
1.3	Student should be able to state applications of derivatives.	-Brain Storming	-Final Exam
2.0	Skills		
2.1	Student should be able to solve algebraic equations and inequalities.	-Problem Based Learning	--First Periodic Test -Second Periodic Test -Mid-term Exam -Final Exam
2.2	Student should be able to determine the range, domain, codomain, inverse of functions.	-Simulation -Interactive Learning -Co-operative Learning	
2.3	Student should be able to sketch graph of functions.	-Demonstration	
2.4	Student should be able to find limits.	-Tutorials	
2.5	Student should be able to prove the continuity of functions	-Team Based Learning	
2.6	Student should be able to calculate derivatives of functions	-Projects -Assignments	
3.0	Values		
3.1	Student should be able to develop their self-learning skills.	-Projects -Presentations	-Homework, Assignments
3.2	Student should be able to take responsibility for their own learning.	-Workshop -Assignments	

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Homework and Assignments	During the term	10%
2	The First Periodic Test	The 5 th Week	10%
3	The Mid-Term Exam	The 9 th Week	20%
4	The Second Periodic Test	The 13 th Week	10%
5	The Final Exam	The 16 th Week	50%

*Assessment task (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice:

There are two ways to reach the faculty members:

- Office hours.
- Email for Faculty Members

In addition, each faculty member is assigned to a group of students as an academic advisor.

F. Learning Resources and Facilities

1. Learning Resources

Required Textbooks	Course Notes
Essential References Materials	[1] James Stewart. Calculus Early Transcendentals, 8th edition., 2016. ISBN: 978-1-305-27182-1
Electronic Materials	- Saudi Digital Library (SDL) - The BU's Learning Management System (Rafid).
Other Learning Materials	

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Classrooms
Technology Resources (AV, data show, Smart Board, software, etc.)	Smart Board
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	-----

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching and assessment	-Students -Department Head	Indirect
Extent of achievement of course learning outcomes	-Faculty -Department Head	Direct
Quality of learning resources	-Students -Department Head	Indirect

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)

Evaluators (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify))

Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Council / Committee	1. Dr. Mohamed Meslameni 2. Dr. Hela Kamal Louati
Reference No.	
Date	