



Course Specifications

Course Title:	Differential calculus	
Course Code:	Math 101	
Program:	The track of scientific colleges	
Department:	Department of Basic Sciences	
College:	Common First year	
Institution:	KSU	

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A. Course Identification

1. Credit 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: First Year\ First level
4. Pre-requisites for this course (if any):
5. Co-requisites for this course (if any):

6. Mode of Instruction (mark all that apply)

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

7. Actual Learning Hours (based on academic semester)

No	Activity	Learning Hours
Contact Hours		
1	Lecture	30
2	Laboratory/Studio	
3	Tutorial	45
4	Others (specify)	
	Total	75
Other Learning Hours*		
1	Study	
2	Assignments	
3	Library	40
4	Projects/Research Essays/Theses	
5	Others (specify)	
	Total	40

* The length of time that a learner takes to complete learning activities that lead to achievement of course learning outcomes, such as study time, homework assignments, projects, preparing presentations, library times

B. Course Objectives and Learning Outcomes

1. Course Description One of the basic courses taken by students of scientific colleges, which aims to acquire the student the basic concepts of calculus.
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2. Course Main Objective

At the end of this course the student should:

- Define set of numbers
- Apply function properties and function composition
- Find the inverse of functions
- Define trigonometric functions
- Define inverse of trigonometric functions
- Define the limit
- Calculate the limit at infinity
- Study continuity of function
- Solve derivative and problem of slope of curve
- Apply derivatives laws
- Define the chain rule
- Calculate the implicit derivative
- Define the derivative of the higher order
- Find a derivation of inverse functions
- Determine the extrema values of the function
- Apply the of mean value theorem
- Study the increasing and decreasing intervals of function
- Determine the concavity of the function curve
- Draw curve of function
- Solve optimization problem

3. Course Learning Outcomes

CLOs		Aligned PLOs
1	Knowledge:	
1.1	Define set of numbers	
1.2	Define trigonometric functions	
1.3	Define inverse of trigonometric functions	
1.4	Define the limit	
1.5	Define the chain rule	
1.6	Define the derivative of the higher order	
2	Skills :	
2.1	Apply function properties and function composition	
2.2	Find the inverse of functions	
2.3	Calculate the limit at infinity	
2.4	Study continuity of function	
2.5	Solve derivative and problem of slope of curve	
2.6	Apply derivatives laws	
2.7	Calculate the implicit derivative	
2.8	Draw curve of function	
2.9	Determine the extrema values of the function	

CLOs		Aligned PLOs
2.10	Apply the of mean value theorem	
2.11	Study the increasing and decreasing intervals of function	
2.12	Determine the concavity of the function curve	
2.13	Draws the function curve	
2.14	Solve optimization problem	
3	Competence:	
3.1		
3.2		
3.3		
3...		

C. Course Content

No	List of Topics	Contact Hours
1	Revision and Preliminary	5
2	Functions	15
3	Limits and Continuity	20
4	Differentiation	20
5	Applications of Differentiation	15
Total		75

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		
1.1	Define Functions	Lectures. Cooperative learning	Home works and midterm
1.2	Define limits and Continuity		
1.3	Define differentiation		
1.4	Define applications of differentiation		
2.0	Skills		
2.1	Write the function rule	Lectures. Cooperative learning	Home works and midterm
2.2	Determine the domain of the function		
2.3	Calculates complex functions at point		
2.4	Calculates the limit of the function at a point		
2.5	Calculates the limit of the function at infinity		
2.6	Determine the continuous and discontinuous functions		
2.7	Determine the intervals of continuous functions		
2.8	Apply the derivative rules		

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
2.9	Solve derivative applications		
3.0	Competence		
3.1			
3.2			
...			

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Mid Term Exam	10	30%
2	Home works	5 and 9	20%
3	Final Exam	17	50%
4			
5			
6			
7			
8			

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

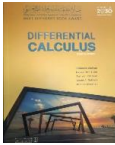
E. Student Academic Counseling and Support

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

(student's advisor's unit)

F. Learning Resources and Facilities

1. Learning Resources

Required Textbooks	<p>1. List Required Textbooks Text Book: DIFFERENTIAL CALCULUS: Fourth Edition. Year: 2019 Authors: Dr. Ibraheem Alolyan, Dr. Nasser Bin Turki, Dr Tahsin Ghazal, Dr. Obaid Al-Gahtani and Dr. Khaled Khashan</p> 
Electronic Materials	<p>http://cfy.ksu.edu.sa https://lms.ksu.edu.sa</p>
Other Learning Materials	Videos, MathXpert program.

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Class room for 22 students for one room
Technology Resources (AV, data show, Smart Board, software, etc.)	Smart classroom.
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	Resources room.

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Strategies for Obtaining Student Feedback on Effectiveness of Teaching	By the instructor and student	Periodic visits and Student questionnaire
Strategies for Evaluation of Teaching .	By the instructor and teachers	Discussion sessions
Course Evaluation	By the instructor and student	Periodic visits and Student questionnaire

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	coordinator: Dr. Amr Abdulaty	Signature:
	Head of Department of Basic Sciences: Dr. Shalan Alkarni	Signature:
Reference No.	4	
Date	21/9/2020	