KING SAUD UNIVERSITY
DEANSHIP of common first year
BASIC SCIENCEs DEPARTMENT

SYLLABUS AND CONTENTS OF MATH 101 (1446 H)

Course Name: Differential Calculus
Course Number: Math 101
Prerequisite: ---

Credit Hours: 3 hours
Actual Hours: 5 hours

Semester:	Second Semester		
Head of the Department	Dr. Abdulrahman Alzahrani	**Phone:**	94509
Office:	2562	**E-mail**:	chair-math@cfy.ksu.edu.sa
Course Coordinator:	Dr. Amr Abdulaty	**Phone:**	94583
Office:	2483	**E-mail**:	math150.coo@cfy.ksu.edu.sa

Office hours: **(8:00AM-4:00PM)- (from Sunday to Thursday)**

Office: **2443 "Learning Resources Centre"**

Textbook:
Differential Calculus, Fourth Edition, 2019

Authors:
Ibraheem Alolyan, Nasser Bin Turki, Tahsin Ghazal, Obaid Al-Gahtani and Khaled Khashan

References:

- Swokowski, E, W; Olinick, M; Penece, D. Calculus, Sixth Edition, PWS Publishing Company, 1994.
- Larson, R & Edwards, R. **Calculus**, Tenth Edition, Cengage Learning, 2014.
- Anton, H; Bivens, I & Davis, S. **Calculus Early Transcendentals**, Ninth Edition, Wily & Sons, 2009.

Evaluation:

The evaluation of the students will be continuous during the course and depends on the following:

Mid Term Exam	25
Activities	10
Two Home works(Paper)	4+4
Online Home works	7
Final Exam	50

تعليمات مهمة:

١. الخطة التي بين أيديكم أبنائنا الطلاب هي خطة مختصرة تتضمن الأشياء المهمة في المقرر. الخطة التفصيلية وكل ما يتعلق بالمقرر موجود على موقع السنة الأولى المشتركة على الرابط:
https://cfy.ksu.edu.sa/ar/node/1196

٢. يحتسب الغياب منذ اليوم الأول من الفصل الدراسي إلى أخر يوم قبل الاختبارات النهائية.

٣. في حالة تأخر الطالب عن ٥ دقائق، يسجل متأخرا.

٤. يتم احتساب كل مرتين تأخير، بمرة واحدة غياب.

٥. يحرم الطالب من المقرر إذا تجاوزت غياباته ٢٥% من ساعات الحضور.

Course Schedule and Contents:

Chapter	Weeks	Section	Lecture "Teacher"	Lecture "Students"	For Students
	1	**أسبوع تعريفي**			
Chapter One	2-5	**1.1** Sets of Numbers and Inequalities	Example: 1.1.2, 1.1.4 (except d) Related Problem: 1 Exercise: (18)	Related Problem: 3 (except c)) Exercise: (7)	1,3,5,6,8,16,19,21,23
		1.2 Functions	Example: 1.2.3, 1.2.5, 1.2.8 Exercise: (60,66)	Related Problem: (2) Exercise: (59,64)	9,10,12,14,17,19,20,23,31,32,48,54,57,58,63,67
		1.3 Inverse Functions	Example: 1.3.1, 1.3.2 {a, b}, 1.3.4 Related Problem: (2 {b}, 3) Exercise: (30) **Remark page 31**	Related Problem: (2 {a, c}, 5) Exercise: (1,2,3,4,5)	8,9,11,13,15,16,29,33,38,41,42

		1.4 Trigonometric Functions and Their Inverses	Example: (1.4.4, 1.4.5, 1.4.7, 1.4.8, 1.4.9, and 1.4.10) Related Problem: (1,2,3,9 {b}) Exercise: (41)	Related Problem: (4,5,7) Exercise: (38, 53 {b})	2,4,5,8,9,12,14,16,17,18,20,21,28,29,37,40,42,44,48,49,50,52
Chapter Two **Limits and Continuity**	6-9	**2.1** Definition of Limit	Example: (2.1.1, 2.1.2) Exercise (from 12 to 17)	Exercise (9 from 18 to 26)	2,3,7,8,10
		2.2 Limits Laws	Example: (2.2.3, 2.2.4, 2.2.5, 2.2.6" except {d}", 2.2.7 {a}, 2.2.9, 2.2.11, 2.2.12) Related Problem: (6 {d, e, f}) Exercise (73) **Remark page 90**	Related Problem (2 {a, c}, 4 (any two points), 6 {c}).	1,2,3,7,11,13,19,21,26,29,30,31,35,40,41,49,51,53,55,63,64,66,71,74
		2.3 Limits Involving Infinity	Example: (2.3.1, 2.3.5, 2.3.8, 2.3.9) Related Problem: (3(g)) Exercise (from 1 to 9, 22 and 28)	Related Problem: (4 (any two points), 3 {a}) Exercise (from 10 to 18)	19,20,21,24,25,32,35,36,37,38,44,45,47,49
		2.4 Continuity of Functions	Example: (2.4.1, 2.4.2, 2.4.4, 2.4.6, 2.4.8, 2.4.11) Exercise (28)	Related Problem: (3 {b, c}) Exercise (2,4,9,27,59)	1,3,5,7,8,12,13,18,29,30,32,34,40,58,60
Chapter Three Differentiation	10-13	**3.1** The Derivative and the Tangent Line Problem	Example: (3.1.3, 3.1.7, 3.1.9) Exercise: (8,30) Related Problem: (1,8)	Related Problem: (9) Exercise: (2, 31)	Ex.3.1.6, RP6 6,10,13,15,21
		3.2 Differentiation Rules	**Use the Remark page 166 (give an example)** Example: (3.2.1 {a, b, c}, 3.2.2 {b, c}, 3.2.3 {b}, 3.2.5) Related Problem: (6) Exercise: (44)	Related Problem: (2 {b}, 3 {b}, 5) Exercise: (25)	1,4,5,8,12,14,16,17,18,19,23,24,26,28,37,38,40

		3.3 Derivatives of Trigonometric functions	Example: (3.3.1, 3.3.2, 3.3.5) Related Problem: (3)	Related Problem: (2, 5) Exercise: (14)	1,3,5,7,10,11,13,16,19,20,21,23,27
		3.4 The Chain rule	Example: (3.4.2, 3.4.3, 3.4.6) Exercise: (25) Related Problem: (8)	Related Problem: (2 {a}, 3 {b}) Exercise: (13, 33)	2,5,6,8,9,11,12,15,16,20,21,26,27,29,30,34,38,39,40,47
		3.5 Implicit Differentiation	Example: (3.5.1) Related Problem: (2)	Related Problem (1 {b}) Exercise: (15)	1,2,3,4,5,8,12,13,14,17,19,20,23,26
		3.6 Higher Order Derivatives	Example: (3.6.1, 3.6.7) Related Problem: (2,3)	Exercise: (39)	1,4,6,7,10,12,13,14,16,18,19,22,23,26,27,29,32,34,35,37,38,43
		3.7 The Derivative of Inverse Functions	Related Problem (2) Exercise: (5)	Exercise: (3,7,13)	6,8,11,14,15,16,17,23
Chapter Four Applications of Differentiation	13-15	**4.1** Extrema of Functions	Example: (4.1.4 except {g}, 4.1.5) Related Problem: (1) Exercise: (24)	Related Problem: (2 {b}) Exercise: (15)	5,6,8,10,16,19,23
		4.2 The Mean Value Theorem	Example: (4.2.1, 4.2.4) Exercise: (1,2)	Related Problem: (1, 2) Exercise: (14)	6,7,11,18,21,24,26
		4.3 Increasing and Decreasing Functions	Example: (4.3.3, 4.3.4) Exercise: (1,3)	Related Problem: (2, 3 {a}) Exercise: (2,4)	7,11,13,15,26,37,38
		4.4 Concavity	Example: (4.4.1, 4.4.5, 4.4.6) Exercise: (from 5 to 9, 47)	Related Problem: (1 {a}, 2 {b}) Exercise: (10,11)	12,25,28,36,48
		4.5 Curve sketching	Exercise: (3,9)	Exercise: (4, 7)	1,2,8