KING SAUD UNIVERSITY
DEANSHIP OF COMMON FIRST YEAR
BASIC SCIENCES DEPARTMENT

SYLLABUS AND CONTENTS OF MATH 101 (1438/1439)

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

Credit Hours: 3 hours
Actual Hours: 5 hours

Course Coordinator:	Dr. Amr Abdulaty	**Phone:**	94583
Office:	2483	**E-mail:**	math150.coo@cfy.ksu.edu.sa
Semester:	second Semester 1438-1439		

Instructor Information

Instructor	……	**Office**	……
E-mail	……	**Office Hours**	……

Textbook:
Differential Calculus, Second Edition, 2017

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	30	
Quizzes & Activities	10	(2 Quizzes)
Home works	10	(4 home works)
Final Exam	50	

تعليمات مهمة:

1. الخطة التي بين أيديكم أبنائنا الطلاب هي خطة مختصرة تتضمن الأشياء المهمة في المقرر. الخطة التفصيلية وكل ما يتعلق بالمقرر موجود على موقع التحضيرية على الرابط:

http://cfy.ksu.edu.sa/male/ar/node/703

2. يحتسب الغياب منذ اليوم الأول من الفصل الدراسي إلى أخر يوم قبل الاختبارات النهائية.
3. في حال تأخر الطالب عن المحاضرة عشر دقائق يعتبر غائبا، وفي حالة حضوره خلال العشر دقائق الأولى يسجل متأخرا.
4. يحرم الطالب من المقرر إذا تجاوزت غياباته ٢٥% من ساعات الحضور.

Course Schedule and Contents:

Chapter	Weeks	Section	Examples	Exercises for Students
Chapter One **Functions**	1	**1.1** Set of Numbers and Inequalities	All Examples	1,4,5,7,8,9,10,12,14,17,19,21,23.
		1.2 Functions: Basic Definitions and Examples		1,4,5,8,9,10,11,12,14,15,17,18
	2	**1.3** Properties of functions, and their combination	All Examples	6,11,12,13,16,17,19,24,26,30,31,35,36, 39,42,44,45,50,51,54
		1.4 Inverse Functions		1,3,4,6,9,11,12,16,18,20,23,26,31,33,3 5,37,39
	3	**1.5** Trigonometric Functions	All Examples	1,4,5,8,11,15,17,19,20,21,22,24,27
		1.6 The Inverse Trigonometric Functions		2,4,5,7,10
Chapter Two **Limits and Continuity**	4	**2.1** Definition of Limit	All Examples	3,811,13,14,18,20,29,31,39,45,46
	4+ 5	**2.2** Limits Laws	All Examples	2,4,5,7,8,11,13,14,16,19,21,26,27,29,3 0,31,34,35,37,38,41,43,46,48,49,53,54, 55,57,63,64,66,67,69,71,73,74
	5 +6	**2.3** Limits Involving Infinity	All Examples	1,2,6,7,10,13,15,16,18,20,22,24,25,26, 28,30,32,35,36,37,38,41,44,45,47,50,5 2,54,55,58,60
	6 + 7	**2.4** Continuity of Functions	All Examples	2,3,4,7,8,10,12,13,16,18,19,22,25,27,2 9,30,32,34,36,40,42,43,46,47,52,53,55, 56,58,60
Chapter Three **Differentiation**	7	**3.1** The Derivative and the Tangent Line Problem	All Examples	2,5,6,8,10,13,15,16,17,19,21,22,24,27, 28,30,33,35
	8	**3.2** Differentiation Rules	All Examples	1,4,5,8,12,14,16,17,18,19,23,24,26,28, 30,33,34,35,37,38,39,41,44
	8	**3.3** Derivatives of Trigonometric functions	All Examples	1,3,5,7,10,11,13,16,19,20,21,23,25,27, 28,31,34
	9	**3.4** The Chain rule	All Examples	2,3,5,8,9,12,13,15,16,20,21,26,27,29,3 0,34,38,39,40,42,44,45,47
	9	**3.5** Implicit Differentiation	All Examples	3,5,8,12,13,14,15,17,19,20,22,25,27,30 ,31,34
	10	**3.6** Higher Order Derivatives	All Examples	1,4,6,10,13,14,16,18,19,22,23,26,27,29 ,32,34,35,37,38,42,43
	10 + 11	**3.7** The Derivative of Inverse Functions	All Examples	3,4,7,8,11,12,13,15,17,18,22,24
Chapter Four **Applications of Differentiation**	11+ 12	**4.1** Extrema of Functions	All Examples	1,2,5,8,10,11,14,16,18,19,21,23,24
	12	**4.2** The Mean Value Theorem	All Examples	2,3,5,6,7,11,13,15,17,19,21,23,25,27,2 8,29
	12 + 13	**4.3** Increasing and Decreasing Functions	All Examples	3,4,5,7,11,13,15,17,19,21,22,24,27,28, 29,32,35,36,38
	13 + 14	**4.4** Concavity	All Examples	2,3,5,7,8,10,12,15,17,19,21,22,25,28,3 0,32,33,34,36,37,41,42,44,47,49
	14	**4.5** Curve sketching	All Examples	1,4,5,8,10,11,14,15,18,20,23,24,27,28, 31,32
	15	**4.6** Optimization Problems	All Examples	2,4,7,8,10,11,13

Proof of Theorems