

SYLLABUS AND CONTENTS OF MATH 101 (1439/1440)

Course Name: Differential Calculus

Credit Hours: 3 hours

Course Number: Math 101

Actual Hours: 5 hours

Prerequisite: ---

Course Coordinator: Dr. Amr Abdulaty

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Semester: Second Semester 1439-1440

Instructor Information

Instructor

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E-mail

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Textbook:

Differential Calculus, Third Edition, 2017

Authors:

Ibraheem Aloyan, 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

1 st	25
2 nd	25

Home works 10 (2 home works)

Final Exam 40

تعليمات مهمة:

- 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>

- يحتسب الغياب منذ اليوم الأول من الفصل الدراسي إلى آخر يوم قبل الاختبارات النهائية.
- في حال تأخر الطالب عن المحاضرة عشر دقائق يعتبر غائبا، وفي حالة حضوره خلال العشر دقائق الأولى يسجل متأخرا.
- 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	1,4,5,7,8,10,11,12,14,17,19,21,23.
	2	1.2 Functions: Basic Definitions and Examples	All Examples	1,4,8,9,10,11,12,14,15,17,18
		1.3 Properties of functions, and their combination	All Examples	6,11,12,13,16,17,21,24,25,26,30,31,32,35,38,39,42,44,45,50,51,54
	3	1.4 Inverse Functions	All Examples	1,3,6,9,11,12,16,18,20,23,25,31,33,35,37,39
	3+4	1.5 Trigonometric Functions	All Examples	1,4,5,8,11,15,17,19,20,21,22,24,25
	4	1.6 The Inverse Trigonometric Functions	All Examples	2,4,5,7,10
Chapter Two Limits and Continuity	5	2.1 Definition of Limit	All Examples	3,8,11,13,14,18,20,29,38,45,46
	5+6	2.2 Limits Laws	All Examples	2,4,5,7,8,11,13,14,16,19,21,26,27,29,30,31,34,35,37,38,41,43,46,48,49,53,54,55,57,63,64,66,67,69,71,73,74
	6+7	2.3 Limits Involving Infinity	All Examples+ Ex.21	1,2,6,7,10,13,15,16,18,20,22,24,25,26,28,30,32,35,36,37,38,41,44,45,47,50,52,54,55,58,60,61
	7	2.4 Continuity of Functions	All Examples+ Ex.57	2,3,4,7,8,10,12,13,16,18,19,22,25,27,29,30,32,34,36,40,42,43,45,46,47,52,53,55,58,60
Chapter Three Differentiation	8	3.1 The Derivative and the Tangent Line Problem	All Examples	2,6,8,10,13,15,16,17,19,21,22,24,27,28,30,33,35
	8+9	3.2 Differentiation Rules	All Examples	1,4,5,8,12,14,16,17,18,19,23,24,26,28,30,33,34,35,37,38,39,40,41,44
	9	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
	10	3.4 The Chain rule	All Examples	2,5,6,8,9,12,13,15,16,20,21,26,27,29,30,34,38,39,40,42,44,45,47
		3.5 Implicit Differentiation	All Examples	3,5,8,12,13,14,15,17,19,20,22,25,27,30,31,34
	11	3.6 Higher Order Derivatives	All Examples	1,4,6,7,10,12,13,14,16,18,19,22,23,26,27,29,32,34,35,37,38,40,42,43,44
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	12	4.1 Extrema of Functions	All Examples	1,2,5,6,8,10,14,16,18,19,20,21,23,24
		4.2 The Mean Value Theorem	All Examples	2,3,5,6,7,11,13,15,17,19,21,23,25,27,28,29
	13	4.3 Increasing and Decreasing Functions	All Examples	3,4,5,7,11,13,15,17,19,21,22,24,27,28,29,32,35,36,37,38
		4.4 Concavity	All Examples	2,3,5,6,7,8,9,10,11,12,15,19,22,25,28,30,32,33,34,36,37,41,42,44,47,49
	14	4.5 Curve sketching	All Examples	1,5,8,10,11,14,15,18,20,23,24,27,28,31,32
		4.6 Optimization Problems	All Examples	2,4,7,8,10,11,13

Proof of Theorems

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1	Theorem 2.2.1	86
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5	Theorem 3.7.2 (Derivative of Inverse Trigonometric Functions)	219