Arab Academy for Science & Technology and Maritime Transport
College of Engineering & Technology
Department of Basic and Applied Science
Smart Village Campus

BA123 Mathematics (1) Fall 2013-2014

Course Outline

Instructor:	Dr. Hossam Shawky
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Office:	
Off. Hrs:	Thursday (8:30-10:10) and also by appointment
GTA:	Dr. Hossam Shawky
E-mail:	hossams@aast.edu
Office:	
Off. Hrs:	Thursday (8:30-10:10) and also by appointment
Prerequisite:	Non
Course Aim	• Introduce students to differentiation, trigonometric, inverse trigonometric, logarithmic, exponential and hyperbolic functions, as well as parametric, implicit and partial differentiation. • Provide students with a general overview of limits, Taylor's and Maclaurin's expansions, curve sketching and conic sections.
Course Objectives	**Upon Completion of this course, students should be able to:** • Apply the basic rules of differentiation. • Find the derivatives of the trigonometric, inverse trigonometric, logarithmic, exponential and hyperbolic functions, as well as parametric, implicit and partial differentiation. • Define indeterminate forms, L'Hopital's rule and Maclaurin's expansions • Understand the basics of curve sketching and conic sections.
Text Book	Calculus, Early Transcendental Functions, Robert T.Smith & Roland B.Minton Fourth Edition-Mc-Graw Hill
Reference	Calculus, Sherman K. Stein & Anthony Barcellos Fifth Edition-Mc-Graw Hill
Course Outcomes	An ability to apply knowledge of mathematics, science, and engineering
Grading Policy	**Assignments and attendance:** 10 Marks **Week 3:** Quiz (5Marks) Tutorial **Week 4:** Quiz (5Marks) Lecture **Week 5:** Quiz (5Marks) Tutorial **Week 7:** Exam (15Marks) Lecture **Week 9:** Quiz (5Marks) Tutorial **Week 10:** Quiz (5Marks) Lecture **Week 12:** Exam (10Marks) Lecture **Week 16:** Final Exam (40Marks)

Week of		E V E N T	
1	Sept.22nd	Lecture	***Rate of change and basic rules of differentiation*** Problems : Ex 2.1 Page 134 #1, 3 Ex 2.2 Page 143 # 1, 11 Ex 2.3 Page 151 # 1 - 21 (odd), 25 Ex 2.4 Page 158 # 1 - 12(odd) Ex 2.5 Page 165 # 1-11 (odd)
		Tutorial	Problems : Ex 2.1 Page 134 #5, 7 Ex 2.2 Page 143 # 3, 5 Ex 2.3 Page 151 # 1 - 21 (even), 26 Ex 2.4 Page 158 # 1 - 12 (even) Ex 2.5 Page 165 # 1-11 (even)
		H.W	Problems : Ex 2.1 Page 134 #2,4,6 Ex 2.2 Page 143 # 2,4,6,8 Ex 2.3 Page 151 # 22-24 Ex 2.4 Page 158 # 13-16 Ex 2.5 Page 165 # 12-16 Sheet (1): All problems
2	Sept.29th	Lecture	***Trigonometric functions and their derivatives*** Problems : Ex 2.6 Page 173 #1 - 18 (odd) +Sheet (2)
		Tutorial	Problems : Ex 2.6 Page 173 #1 - 18 (even) +Sheet (2)
		H.W	Problems : Ex 2.6 Page 173 #19-22+ +Sheet (2)
3	Oct.6th	Lecture	***Inverse trigonometric functions and their derivatives*** Problems : Ex2.8 Page 191 #29,31+Sheet (3)
		Tutorial	Problems : Ex2.8 Page 191 #30,32a, 33+Sheet (3) + **Quiz No.1**
		H.W	Problems : Ex2.8 Page 191 #34+Sheet (3)
4	Oct.20th	Lecture	***Logarithmic functions and their derivatives+*** **Quiz No.2** Problems : Ex 2.7 Page 181 # 13-20 (odd) +Sheet (4)
		Tutorial	Problems : Ex 2.7 Page 181 # 13-20 (even)+Sheet (4)
		H.W	Problems : Ex 2.7 Page 181 # 23+Sheet (4)

5	**Oct.27th**	**Lecture**	***Exponential functions and their derivatives*** Problems : Ex 2.7 Page 181 # 1-12 (odd) +Sheet (5)
		Tutorial	Problems : Ex 2.7 Page 181 # 1-12 (even)+Sheet (5) + **Quiz No.3**
		H.W	Problems : Ex 2.7 Page 181 # 21,22,24)+Sheet (5)
6	**Nov.3rd**	**Lecture**	***Derivatives of hyperbolic and inverse hyperbolic functions*** Problems : Ex 2.9 Page 197 # 5-13 (odd)+Sheet (6)
		Tutorial	Problems : Ex 2.9 Page 197 # 5-13 (even)+Sheet (6)
		H.W	Problems : Ex 2.9 Page 197 # 20,22+Sheet (6)
7	**Nov.10th**	**Lecture**	***Implicit differentiation + 7th week exam*** Problems : Ex2.8 Page 191 #1,2,5-12 (odd)+Sheet (7)
		Tutorial	Problems : Ex2.8 Page 191 #3,5-12 (even)+Sheet (7)
		H.W	Problems : Ex2.8 Page 191 #13-16+Sheet (7)
8	**Nov.17th**	**Lecture**	***Parametric differentiation*** Problems : Sheet (7)
		Tutorial	Problems : Sheet (7)
		H.W	Problems : Sheet (7)
9	**Nov.24th**	**Lecture**	***Partial Differentiation*** Problems : Ex12.3 Page 849#1,3,5,11+Sheet (8)
		Tutorial	Problems : Ex12.3 Page 849#2,4,6,12+Sheet (8)+ **Quiz No.4**
		H.W	Problems : Ex12.3 Page 849#13,14+Sheet (8)
10	**Dec.1st**	**Lecture**	***Indeterminate Forms and L'Hopital's Rule+*** **Quiz No.5** Problems : Ex 3.2 Page 230 # 1 - 33(odd) +Sheet (9)
		Tutorial	Problems : Ex 3.2 Page 230 # 1 - 33(even)+Sheet (9)
		H.W	Problems : Ex 3.2 Page 230 # 36 - 43+Sheet (9)
11	**Dec.8th**	**Lecture**	***Maclaurin's expansion*** Problems : Ex 8.7 Page 605 #1,3,5 +Sheet (10)
		Tutorial	Problems : Ex 8.7 Page 605 #2,4,6+Sheet (10)
		H.W	Problems : Ex 8.7 Page 605 #7,8 +Sheet (10)
12	**Dec.15th**	**Lecture**	***Curve sketching: Critical, maximum, minimum and inflection points + 12th week exam*** Problems : Sheet (11)
		Tutorial	Problems : Sheet (11)
		H.W	Problems : Sheet (11)
13	**Dec.22nd**	**Lecture**	***Curve sketching (rational functions) and physical application (velocity and acceleration)*** Problems : Sheet (11)
		Tutorial	Problems : Sheet (11)
		H.W	Problems : Sheet (11)
14	**Dec.29th**	**Lecture**	***Conic Sections : Parabola*** Problems : Ex 9.6 Page 683 #1,13 +Sheet (12)
		Tutorial	Problems : Ex 9.6 Page 683 #2,14+Sheet (12)
			Problems : Ex 9.6 Page 683 #3,4+Sheet (12)
15	**Jan.5th**	**Lecture**	***Revision***
		Tutorial	***Revision***
16	**Jan.12th**	**Final Exam**	

Good Luck