



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

BA123

Mathematics (1)
Course Outline

Fall 2013-2014

Instructor:	Dr. Hossam Shawky
E-mail:	hossams@aast.edu
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	<ul style="list-style-type: none"> • 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	<p>Upon Completion of this course, students should be able to:</p> <ul style="list-style-type: none"> • 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 expansion • 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	<p>Assignments and attendance: 10 Marks</p> <p>Week 3: Quiz (5Marks) Tutorial</p> <p>Week 4: Quiz (5Marks) Lecture</p> <p>Week 5: Quiz (5Marks) Tutorial</p> <p>Week 7: Exam (15Marks) Lecture</p> <p>Week 9: Quiz (5Marks) Tutorial</p> <p>Week 10: Quiz (5Marks) Lecture</p> <p>Week 12: Exam (10Marks) Lecture</p> <p>Week 16: Final Exam (40Marks)</p>

Week of		E V E N T	
1	Sept.22 nd	Lecture	<i>Rate of change and basic rules of differentiation</i> 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.29 th	Lecture	<i>Trigonometric functions and their derivatives</i> 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.6 th	Lecture	<i>Inverse trigonometric functions and their derivatives</i> 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.20 th	Lecture	<i>Logarithmic functions and their derivatives</i> + 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.27 th	Lecture	<i>Exponential functions and their derivatives</i> 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.3 rd	Lecture	<i>Derivatives of hyperbolic and inverse hyperbolic functions</i> 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.10 th	Lecture	<i>Implicit differentiation + 7th week exam</i> 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.17 th	Lecture	<i>Parametric differentiation</i> Problems : Sheet (7)
		Tutorial	Problems : Sheet (7)
		H.W	Problems : Sheet (7)
9	Nov.24 th	Lecture	<i>Partial Differentiation</i> 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.1 st	Lecture	<i>Indeterminate Forms and L'Hopital's Rule+ Quiz No.5</i> 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.8 th	Lecture	<i>Maclaurin's expansion</i> 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.15 th	Lecture	<i>Curve sketching: Critical, maximum, minimum and inflection points + 12th week exam</i> Problems : Sheet (11)
		Tutorial	Problems : Sheet (11)
		H.W	Problems : Sheet (11)
13	Dec.22 nd	Lecture	<i>Curve sketching (rational functions) and physical application (velocity and acceleration)</i> Problems : Sheet (11)
		Tutorial	Problems : Sheet (11)
		H.W	Problems : Sheet (11)
14	Dec.29 th	Lecture	<i>Conic Sections : Parabola</i> 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.5 th	Lecture	<i>Revision</i>
		Tutorial	<i>Revision</i>
16	Jan.12 th	Final Exam	

Good Luck