Course Syllabus Form

1. College: Science	
2. Department: Mathematics	
3. Program: B.Sc.(Engineering and IT students only)	
4. Course code: MATHS 101	
5. Course title: Calculus I	
6. Course credits: Credit Hours 3 Lab Hours 0 Lecture Hours 3	
7. Pre-requisites: None	
8. Course web-page: None	
9. Course coordinators: Dr. M.Shahwan and A.Eid	
10. Academic year: 2015– 2016	

11. Semester:

		First	√	Second		Summer

12. Textbook(s): Thomas Calculus (Early Transcendental), 12th edition (Pearson)

13. Reference: Calculus, by Smith and Minton. 4th edition (McGraw-Hill).

14. Other resources used (e.g. e-Learning, field visits, periodicals, software, etc.):

- Paul's Online Math. Notes : http://tutorial.math.lamar.edu
- Salman Khan Academy:
  http://www.khanacademy.org/math/calculus/differential-calculus/

15. Course description (from the catalog):

Algebra. Functions and graphs. Trigonometry. Conic sections. Limits and continuity. Derivatives and integrals. Applications of derivatives which include mean value theorem, extrema of functions and optimization. Definite integrals and the Fundamental Theorem of Calculus.

16. Course Intended Learning Outcomes (CILOs):
Students who successfully complete this course should be able to:

CILOs	Mapping to PILOs										
	a	b	c	d	e	f	g	h	i	j	k
1. Recall some algebraic and transcendental functions and their properties.											
2. Evaluate limits of functions both geometrically and algebraically.											
3. Examine continuity of various types of functions at a point or on a set.											
4. Find derivatives of functions by using the definition.											
5. Use differentiation rules to find derivatives of explicit and implicit functions.											
6. Find slopes and equations of tangent and normal lines.											
7. Recognize the relation between differentiation and integration.											
8. Use the fundamental theorem of calculus to evaluate definite integrals.											
9. Evaluate integrals by using the substitution method.											
10. Employ differentiation to describe the behavior of functions.											
11. Use differentiation to sketch functions.											

| 12. Apply derivatives to solve real life problems such as optimization and related rates. | | | | | | | | | | | | | |

17. Course assessment:

Assessment Type	Number	Related CILOs	Weight
Quizzes	-	-	-
Tests	2	Test 1: CILOS 1, 2, 3, 4, 5, Test 2: CILOs 5, 6, 7,8	50 %
Laboratory/Practical	-	-	-
Assignments/Homeworks	1	CILOs 1, 2	10 %
	2	CILOs 2,3	
	3	CILOs 1, 2	
	4	CILOs 1, 4,5	
	5	CILOs 1, 5,6	
	6	CILOs 1,5,6	
	7	CILOs 1,5,6	
	8	CILOs 1,5,6	
	9	CILOs 7	
	10	CILOs 7,8	
	11	CILOs 9	
Projects/Case Studies	-	-	-
Final	1	All CILOs	40%
Total	10		100%

18. Assessment Details:

Exam	Weight	Time	Date	Place	Material
Test 1	25%	T.B.A.	T.B.A.	T.B.A.	2.2-3.6
Test 2	25%	T.B.A.	T.B.A.	T.B.A.	3.7-5.4
Online Homework's	10%	--	--	--	--
Final exam	40%	11:30-13:30	11/6/2016	--	All

19.Course Instructors:

Sections	Name	Office
1, 2, 3, 4,5,6	Dr. Mohannad Shahwan	S41-2101
7, 8	Dr. A. Aziz Lahji	S41 -2138
9,12	Prof. Shoukry Hassan	S41-2094
10,11,18,21	Dr. Ishtiaq Khan	S41 - 2046
13	Dr. Abdulla Eid	S41-2096
14,16,17	Prof. Ahmed Ayach	S41-2085
15	Dr. Mohammed Aiyub	S41 -2042
19,20	Mr. Hashim Khalil	S41-2038

20. Attendance Policy:

Extracts from the University Bulletin regarding withdrawal and enforced withdrawal:

A student's absence from lectures or classes in excess of 25% of the total assigned session will result in an automatics withdrawal of the student from the course, regardless of the causes for his/her absence.

a) *A grade of (W) is given to a student who misses 25% or more of the total sessions assigned to the course if he/she presents a valid excuse for his/her absence.*

b) *A grade of (WF) is given to a student who misses 25% or more, but with no valid excuse.*

22. Course Weekly Breakdown:

Week	Date	Topics covered	CILOs	Teaching Method	Assessment
1	17/2/16	Limit of a Function & Limit Laws	1, 2	Lecture & Problem solving	HW 1, Test 1 & Final Exam
2	21/2/16	One-Sided Limits	1, 2	Lecture & Problem solving	HW 2, Test 1 & Final Exam HW 1 due
3	28/2/16	Continuity	3	Lecture & Problem solving	HW 2, Test 1 & Final Exam HW 2 due
4	6/3/16	Limits Involving Infinity; Asymptotes of Graphs	1, 2	Lecture & Problem solving	HW 3, Test 1 & Final Exam HW 3 due
5	13/3/16	The Derivatives as a Function Differentiation Rules	4, 6 5, 6	Lecture & Problem solving	HW 4, Test 1 & Final Exam
6	20/3/16	Derivatives of Trigonometric Functions The Chain Rule	5, 6 5,6	Lecture & Problem solving	HW4, HW5, Test 1 & Final Exam HW 4 due
7	27/3/16	Implicit Differentiation	5, 6	Lecture & Problem solving	HW 6 Test 2 & Final Exam HW 5 due
8	3/4/16	Derivatives of Inverse Functions and Logarithms Inverse Trigonometric Functions	5,6 1	Lecture & Problem solving	HW 6, HW 7 Test 2 & Final Exam HW 6 due
9	10/4/16	Related Rates Linearization and Differentials		Lecture & Problem solving	HW 8, Test 2 & Final Exam, HW 7 due
10	17/4/16	Mid-Semester Break			
11	24/4/16	Anti-derivatives	7	Lecture & Problem solving	HW 9, Test 2 & Final Exam, HW 8, HW 9 due
12	1/5/16	The Definite Integral The Fundamental Theorem of Calculus	8 8	Lecture & Problem solving	HW 10, Test 2 & Final Exam
13	8/5/16	Indefinite Integrals & the Substitution Method	9	Lecture & Problem solving	HW 11, Final Exam
14	15/5/16	Substitution and Area Between Curves Extreme Values of Functions	8,9 10	Lecture & Problem solving	Final Exam, HW 10 due
15	22/5/16	Monotonic Functions & 1st Derivative Test Concavity & Curve Sketching	10 10,11	Lecture & Problem solving	Final Exam HW 11 due
16	29/5/16	Applied Optimization	12	Lecture & Problem solving	Final Exam
17	5/6/16	*Revision* *Last day of classes(7/6/16)* *Final Examination Period(11-21/6/16)* *Final exam date :11/6/16 11:30-13:30*	12	Lecture & Problem solving	Final Exam

Course Weekly Examples and Problems

Week	Date	Section	Topics covered	Examples	Problems
1	17/2/16	2.2	Limit of a Function & Limit Laws	5 , 6 , 7, 9,10	11-42, 63
2	21/2/16	2.2 2.4	Limit of a Function & Limit Laws One-Sided Limits	5 , 6 , 7, 9,10 2	11-42, 63 1-4, 11-18
3	28/2/16	2.5	Continuity		13-16, 25-28, 43-48
4	6/3/16	2.6	Limits Involving Infinity; Asymptotes of Graphs	2,3, 9	13-48
5	13/3/16	3.2 3.3	The Derivative as a Function Differentiation Rules	1,2 1,3	1-12 1-54
6	20/3/16	3.5 3.6	Derivatives of Trigonometric Functions The Chain Rule	1-6 1-6	1-34,55,56 1-90
7	27/3/16	3.7	Implicit Differentiation	1-5	1-40
8	3/4/16	3.8 3.9	Derivatives of Inverse Functions and Logarithms Inverse Trigonometric Functions	3, 5, 6, 7 2,3	21-42
9	10/4/16	3.10 3.11	Related Rates Linearization and Differentials	 1-3	3-12, 20,21 1-6
10	17/4/16		Mid-Semester Break		
11	24/4/16	4.8 5.3	Anti-derivatives The Definite Integral	1, 2, 3, 6 2	25-70, 91-113 9-14
12	1/5/16	5.3 5.4	The Definite Integral The Fundamental Theorem of Calculus May 1 , Labour day holiday	2 2,3	9-14 1-34, 39-56
13	8/5/16	5.5	Indefinite Integrals & the Substitution Method	1-9	1-37, 43-66
14	15/5/16	5.6 4.1	Substitution and Area Between Curves Extreme Values of Functions	1,2 2,3	1-46 21-28, 45-52
15	22/5/16	4.3 4.4	Monotonic Functions & 1st Derivative Test Concavity & Curve Sketching	1 7	19-24 9-22
16	29/5/16	4.6	Applied Optimization	1, 2	1,2,4-8, 11, 12, 29, 30, 33-36
17	5/6/16		*Revision* *Last day of classes(7/6/16)*		