Course Syllabus Form	
1. College	Science
2. Department	Mathematics
3. Program	B.Sc. for Engineering and IT students only
4. Course Code	MATHS 101
5. Course Title	Calculus 1
6. Course Credits	3
7. Pre–requisites	None
8. Course webpage	`http://www.abdullaeid.net/MATHS101`
9. Course Coordinator	Dr. Abdulla Eid
10. Academic Year	2018/2019
11. Semester	First

12. Course Description: 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

13. Textbook:

- George Thomas Jr, Maurice Weir, and Joel Hass, *Thomas' Calculus Early Transcendentals*, 2008, 12th Edition, Pearson, ISBN-13: 978-1292021232

14. References:

1. James Stewart, *Calculus, Early Transcendentals*, 2012, 7th Edition, Brooks/Cole Cengage Learning, ISBN-13: 978-0538498876.

2. Robert Smith and Ronald Monton, *Calculus, Early Transcendentals*, 2011, 4th Edition, McGraw-Hill Education, ISBN-13: 978-0073532325.

3. Bill Briggs, Lyle Cochran, and Bernard Gillett, *Calculus: Early Transcendentals*, 2014, 2nd Edition, Pearson, ISBN-13: 978-0321947345

4. Michael Spivak, *Calculus*, 2008, 4th Edition, Publish, ISBN–13: 978-0914098911. **For "A+" students**

15. Other Resources:

- Khan Academy: `http://www.khanacademy.org/math/calculus/differential-calculus/`

- Calucluls resources: `http://www.calculus.org`

- A humorous approach to learning calculus (for those with a sense of humor only): Colin Adams, Abigail Thompson, Joel Hass *How to Ace Calculus: The Streetwise Guide*, 1998, 1st Edition, Times Books, ISBN–13: 978–0716731603

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	CILOs	Weight
Tests	2	Test 1: CILOs 1,2,3, Test 2: CILOS 4,5,6,7	50%
Online Homework	1 2 3 4 5 6 7 8 9 10 11	CILOs 1,2 CILOs 2,3 CILOs 1,2 CILOs 1,4,5 CILOs 1,5,6 CILOs 1,5,6 CILOs 1,5,6 CILOs 1,5,6 CILOs 7 CILOs 7,8 CILOs 9	10%
Final Exam	1	All CILOs	40%

18. Assessments Details:

No	Assessment	Weight	Time	Date	Place	Material
1	Test 1	25%	TBA	TBA	TBA	TBA
2	Test 2	25%	TBA	TBA	TBA	TBA
3	Online Homework	10%	See the homework rules	See the homework rules	See the home-work rules	Sections 2.2–5.5
4	Final Exam	40%	11:30 AM – 1:30 PM	5.1.2019	TBA	All sections

19. Course Instructor:

Section(s)	Instructor	Office	Online HW Course ID
24	Dr. Abdulla Eid	S41–2098	XL34-B1HO-101Y-5UI2

20. Attendance Policy:

Extracts from the University Bulletin regarding withdrawal and enforced withdrawal (Article 31):

A students 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.

The classroom environment should be conductive to learning by all. This means, among other things, coming to class on time and prepared. Please no chit-chat talks during the class. Cell phones, graphical calculators and all electronic devices should be turned off and put away during the class and in the exams.

21. Academic Plagiarism:

All students are expected to follow the specific rules of academic honesty and plagiarism as per the regulation of professional conduct violations for University of Bahrain students, decision number 4/2006. Please refer the UoB website-Deanship of Students Affairs-Guidance Office.

Cheating is strictly prohibited and will result in serious consequences. In particular, cheating may result in an "F" for the course and be reported to deanship of students affairs. Using of any outside materials, looking at another student's exam or using cell phones might be consider as a cheating (whether or not you get benefit from it). For more information, refer to the student handbook (Article 75).

22. Important Dates:

- Sept 16, 2018: First day of the semester (Instruction begins).

- Sept 27, 2018: Last day to drop courses without a 'W' grade.

- Nov 4 – Nov 8, 2018: Mid semester break.

- Dec 6, 2018: Last day to withdraw with a 'W' grade.

- Jan 3, 2019: Last day of instruction.

- Jan 5, 2019: Final exam.

23. Weekly Breakdown:					
Week	Date	Topics Covered	CILOs	Teaching Method	Assessment
1	16.09.2018	Limit of a function and limit laws.	1,2	Lecture and problem-solving	HW 1, Test 1, Final Exam
2	23.09.2018	One sided limits.	1,2	Lecture and problem-solving	HW 2, Test 1, Final Exam
3	30.09.2018	Continuity.	3	Lecture and problem-solving	HW 2, Test 1, Final Exam
4	07.10.2018	Limits involving infinity; asymptotes of graphs.	1,2	Lecture and problem-solving	HW 3, Test 1, Final Exam
5	14.10.2018	The derivative as a function. Differentiation rules.	4,6 5,6	Lecture and problem-solving	HW 4, Test 1, Final Exam
6	21.10.2018	Derivatives of trigonometric functions. The chain rule	5,6	Lecture and problem-solving	HW 4, HW5, Test 1, Final Exam
7	28.10.2018	Implicit Differentiation.	5,6	Lecture and problem-solving	HW 6, Test 2, Final Exam
	04.11.2018	**Mid semester break**			
8	11.11.2018	Derivatives of inverse functions and logarithms. Inverse trigonometric functions.	1,5,6	Lecture and problem-solving	HW 6, HW 7, Test 2, Final Exam
9	18.11.2018	Related Rates. Linearization and differentiatials.	12	Lecture and problem-solving	HW 8, Test 2, Final Exam
10	25.11.2018	Anti–derivatives.	7	Lecture and problem-solving	HW 9, Test 2, Final Exam
11	02.12.2018	Definite Integrals. The fundamental theorem of calculus.	8	Lecture and problem-solving	HW 10, Test 2, Final Exam
12	09.12.2018	Indefinite integral and substitution method.	9	Lecture and problem-solving	HW 11, Final Exam
13	16.12.2018	Substitution method and area between curves. Extreme values of functions. Mean Value Theorem	8,9,10	Lecture and problem-solving	HW 10, Test 2, Final Exam
14	23.12.2018	Monotonic functions and 1st derivative test. Concavity and curve sketching.	10,11	Lecture and problem-solving	Final Exam
15	30.12.2018	Applied optimization.	12	Lecture and problem-solving	Final Exam

			24. Course Weekly Examples and Problems:		
Week	**Date**	**Section**	**Topics Covered**	**Examples**	**Problems**
1	16.09.2018	2.2	Limit of a function and limit laws	5,6,7,9,10	11–42,63
2	23.09.2018	2.4	One sided limits	2	1–4, 11–18
3	30.09.2018	2.5	Continuity		13–16, 25–28, 43–48, Handout 1
4	07.10.2018	2.6	Limits involving infinity; asymptotes of graphs	2,3,6	13–48
5	14.10.2018	3.2 3.3	The derivative as a function Differentiation rules	1,2 1,3	1–12 1–54
6	21.10.2018	3.5 3.6	Derivatives of trigonometric functions The chain rule	1–6, (Sec 2.4: 5, 6) 1–6	1–34, 55, 56, (Sec 2.4: 21–42) 1–90
7	28.10.2018	3.7	Implicit Differentiation	1–5	1–40
	04.11.2018		**Mid semester break**		
8	11.11.2018	3.8 3.9	Derivatives of inverse functions and logarithms Inverse trigonometric functions	3,5,6,7 2,3	11–96 21–42
9	18.11.2018	3.10 3.11	Related Rates Linearization and differentiatials	1–5	3–12, 20,21 1–14, 19–38
10	25.11.2018	4.8	Anti–derivatives	1,2,3,6	25–70, 91–113
11	02.12.2018	5.3 5.4	Definite Integrals The fundamental theorem of calculus	2 2,3	9–14 1–34, 39–56
12	09.12.2018	5.5	Indefinite integral and substitution method	1–9	1–37, 43-66
13	16.12.2018	5.6 4.1 4.2	Substitution method and area between curves Extreme values of functions Mean Value Theorem	1,2 2,3 2	1–46 21–28, 45–52 1–7
14	23.12.2018	4.3 4.4	Monotonic functions and 1st derivative test Concavity and curve sketching	1 7	19–24 9–22
15	30.12.2018	4.6	Applied optimization	1,2	1,2,4–8,11,12,29,30,33–36