



University of Bahrain
Quality Assurance
& Accreditation Center



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.abdullaaid.net/MATHS101
9. Course Coordinator	Dr. Muhannad Shahwan
10. Academic Year	2016/2017
11. Semester	Second
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:	<ul style="list-style-type: none">• George Thomas Jr, Maurice Weir, and Joel Hass, <i>Thomas' Calculus Early Transcendentals</i>, 2008, 12th Edition, Pearson, ISBN-13: 978-1292021232
14. References:	<ol style="list-style-type: none">1. James Stewart, <i>Calculus, Early Transcendentals</i>, 2012, 7th Edition, Brooks/Cole Cengage Learning, ISBN-13: 978-0538498876.2. Robert Smith and Ronald Monton, <i>Calculus, Early Transcendentals</i>, 2011, 4th Edition, McGraw-Hill Education, ISBN-13: 978-0073532325.3. Bill Briggs, Lyle Cochran, and Bernard Gillett, <i>Calculus: Early Transcendentals</i>, 2014, 2nd Edition, Pearson, ISBN-13: 978-03219473454. Michael Spivak, <i>Calculus</i>, 2008, 4th Edition, Publish, ISBN-13: 978-0914098911. For "A+" students
15. Other Resources:	<ul style="list-style-type: none">• 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 <i>How to Ace Calculus: The Streetwise Guide</i>, 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 1,2,3,4,5 Test 2: CILOS 5,6,7,8	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%	11:30 AM – 12:30 PM	March 20, 2017	Hall 18	Sections 2.2–2.6
2	Test 2	25%	4:00 PM – 5:00 PM	May 11, 2017	Hall 18	Sections 3.2–4.8
3	Online Homework	10%	See the homework rules	See the homework rules	See the homework rules	Sections 2.2–5.5
4	Final Exam	40%	11:30 AM – 1:30 PM	June 7, 2017	TBA	All sections

19. Course Instructor:			
Section(s)	Instructor	Office	Online HW Course ID
1, 2, 3, 4, 5	Dr. Muhannad Shahwan	S41–2101	XL2M-B1RD-701Y-2UI2
6, 7, 8	Dr. A.Salam Al-mannai	S41–2084	XL2M-B1RF-701Y-4UI2
9, 19	Dr. Abdulla Eid	S41–2098	XL2M-B1RC-701Y-1UI2
10, 11, 17	Dr. A.aziz Lahji	S41–2138	XL2M-B1RG-701Y-5UI2
12, 13,14	Dr. Mohammed Aiyub	S41–2042	XL2M-B1RJ-701Y-8UI2
15, 16	Dr. Ishtiaq Khan	S41–2046	XL2M-B1RL-801Y-0UI2
18	Dr. Khalid Amin	S41–2100	XL2M-E1KW-201Y-7UI2
20	Dr. Anwar Abdulhusain	S41–2131	XL2M-H1B1-601Y-0UI2
21, 22	Dr. A. Sameea Abusafiya	S41–2051	XL2M-H1B2-601Y-1UI2

20. Attendance Policy:
<p>Extracts from the University Bulletin regarding withdrawal and enforced withdrawal (Article 31):</p> <p>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.</p> <p>(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.</p> <p>(b) A grade of (WF) is given to a student who misses 25% or more, but with no valid excuse.</p> <p>The classroom environment should be conducive 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.</p>

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:

- Feb 19, 2017: First day of the semester (Instruction begins).
- March 2, 2017: Last day to drop courses without a ‘W’ grade.
- April 16 – 20 , 2017: The mid semester break.
- May 11, 2017: Last day to withdraw with a ‘W’ grade.
- June 5, 2017: Last day of instruction.
- June 7, 2017: Final exam.

23. Weekly Breakdown:					
Week	Date	Topics Covered	CILOs	Teaching Method	Assessment
1	19.02.2017	Limit of a function and limit laws.	1,2	Lecture and problem-solving	HW 1, Test 1, Final Exam
2	26.02.2017	One sided limits.	1,2	Lecture and problem-solving	HW 2, Test 1, Final Exam
3	05.03.2017	Continuity.	3	Lecture and problem-solving	HW 2, Test 1, Final Exam
4	12.03.2017	Limits involving infinity; asymptotes of graphs.	1,2	Lecture and problem-solving	HW 3, Test 1, Final Exam
5	19.03.2017	The derivative as a function. Differentiation rules.	4,6 5,6	Lecture and problem-solving	HW 4, Test 1, Final Exam
6	26.03.2017	Derivatives of trigonometric functions. The chain rule	5,6	Lecture and problem-solving	HW 4, HW5, Test 1, Final Exam
7	02.04.2017	Implicit Differentiation.	5,6	Lecture and problem-solving	HW 6, Test 2, Final Exam
8	09.04.2017	Derivatives of inverse functions and logarithms. Inverse trigonometric functions.	1,5,6	Lecture and problem-solving	HW 6, HW 7, Test 2, Final Exam
	16.04.2017	Mid semester break			
9	23.04.2017	Related Rates. Linearization and differentials.	12	Lecture and problem-solving	HW 8, Test 2, Final Exam
10	30.04.2017	Anti-derivatives.	7	Lecture and problem-solving	HW 9, Test 2, Final Exam
11	07.05.2017	Definite Integrals. The fundamental theorem of calculus.	8	Lecture and problem-solving	HW 10, Test 2, Final Exam
12	14.05.2017	Indefinite integral and substitution method.	9	Lecture and problem-solving	HW 11, Final Exam
13	21.05.2017	Substitution method and area between curves. Extreme values of functions.	8,9,10	Lecture and problem-solving	HW 10, Test 2, Final Exam
14	28.05.2017	Monotonic functions and 1st derivative test. Concavity and curve sketching.	10,11	Lecture and problem-solving	Final Exam
15	04.06.2017	Applied optimization.	12	Lecture and problem-solving	Final Exam

24. Course Weekly Examples and Problems:					
Week	Date	Section	Topics Covered	Examples	Problems
1	19.02.2017	2.2	Limit of a function and limit laws	5,6,7,9,10	11–42,63
2	26.02.2017	2.4	One sided limits	2	1–4, 11–18
3	05.03.2017	2.5	Continuity		13–16, 25–28, 43–48, Handout 1
4	12.03.2017	2.6	Limits involving infinity; asymptotes of graphs	2,3,6	13–48
5	19.03.2017	3.2 3.3	The derivative as a function Differentiation rules	1,2 1,3	1–12 1–54
6	26.03.2017	3.5 3.6	Derivatives of trigonometric functions The chain rule	1–6 1–6	1–34, 55, 56 1–90
7	02.04.2017	3.7	Implicit Differentiation	1–5	1–40
8	09.04.2017	3.8 3.9	Derivatives of inverse functions and logarithms Inverse trigonometric functions	3,5,6,7 2,3	11–96 21–42
	16.04.2017		Mid semester break		
9	23.04.2017	3.10 3.11	Related Rates Linearization and differentials	1–3	3–12, 20,21 1–6
10	30.04.2017	4.8	Anti-derivatives	1,2,3,6	25–70, 91–113
11	07.05.2017	5.3 5.4	Definite Integrals The fundamental theorem of calculus	2 2,3	9–14 1–34, 39–56
12	14.05.2017	5.5	Indefinite integral and substitution method	1–9	1–37, 43–66
13	21.05.2017	5.6 4.1	Substitution method and area between curves Extreme values of functions	1,2 2,3	1–46 21–28, 45–52
14	28.05.2017	4.3 4.4	Monotonic functions and 1st derivative test Concavity and curve sketching	1 7	19–24 9–22
15	04.06.2017	4.6	Applied optimization	1,2	1,2,4–8,11,12,29,30,33–36