



MATHS 102 Course Syllabus

1. Course code:	MATHS 102	2. Course title:	Calculus II			
3. College:	Science					
4. Department:	Mathematics					
5. Program:	B. Sc. (For Engineering Students and IT students only)					
6. Course credits:	Lecture Hours: 3	Lab Hours: 0	Credit Hours: 3			
7. Course NQF Level:	5					
8. NQF Credits:	12					
9. Prerequisite:	MATHS 101					
10. Course Section:	1					
11. Lectures Timing & Location:	UTH 8:00 – 8:50, remote learning in Microsoft Teams					
12. Course web page:	www.blackboard.uob.edu.bh and www.webassign.net					
13. Course Instructor:	Dr. Ahmed Matar					
14. Office Hours and Location:	TBA					
15. Course coordinators:	Dr. Abdulla Eid and Dr. Babacar Seck					
16. Academic year:	2020-2021					
17. Semester:		First	√	Second		Summer

1 University of Bahrain – Quality Assurance & Accreditation Center - Course Syllabus Form
Note: Additional information could be added as required by the Instructor, (e.g., Policies)

Note: Items shown underlined cannot be changed without the department consent.

QF-20-rev.a.3

<p>18. Textbook(s): James Stewart, Calculus, Early Transcendentals (Metric Version), 2018, 8th Edition, Brooks/Cole Cengage Learning, ISBN: 978-1-305-27237-8.</p>
<p>19. References</p> <ol style="list-style-type: none"> 1) Calculus, by Smith and Minton. 4th edition (McGraw-Hill). 2) Thomas Calculus (Early Transcendentals), 13th edition (Pearson)
<p>20. Other learning resources used (e. g. e-Learning, field visits, periodicals, software, etc.):</p> <p>Recorded videos are available in Microsoft Stream. Search "MATHS102" to view all of them.</p>
<p>21. Course description (as per the published):</p> <p>Applications of definite integrals, including areas, volume, and surface areas of solids of revolution, arc length and centroids. Transcendental functions, indeterminate form, and L'Hopital's Rule. Techniques of integration and improper integrals. Infinite series, power series. Maclaurin and Taylor Theorem.</p>

22. Course Intended Learning Outcomes (CILOs): Students who successfully complete this course should be able to:											
	<i>Mapping to PILOs</i>										
<i>CILOs</i>	a	b	c	d	e	f	g	h	i	j	k
1. Find area and volume between curves and surfaces of revolutions using definite integrals.											
2. Apply L'Hopital's rule to find limits involving indeterminate forms.											
3. Evaluate proper and improper integrals using different integration techniques.											
4. Recognize the convergence or divergence of an infinite series.											
5. Approximate limits, derivatives, and integrals using power series expansion of functions.											

23. Course assessment				
<i>Assessment Type</i>	<i>Details/ Explanation of Assessment in relation to CILOs</i>	<i>Number</i>	<i>Weight</i>	<i>Date(s)</i>
Quizzes	N/A			
Midterms	Test 1: 1,2,3. (Section 4.4 – 7.3) Test 2: 3, 4. (Sections 7.4 – 8.5)	2	20%+20%	Test 1: 27/3/2021 Test 2: 8/5/2021 From 8 AM to 9 AM
Laboratory/Practical	N/A			
Online Assignments	CILOs 1-5 (WebAssign)	20 (The best 15)	20 %	Throughout the Semester
Projects/Case Studies	N/A			
Final	All CILOs	1	40 %	29/5/2021 from 11:30 AM to 1:30 PM
Total		23	100 %	

24. Description of Topics Covered	
<i>Topic Title (e.g. chapter/experiment title)</i>	<i>Description</i>
Chapter 4: Applications of Differentiation	Indeterminate Forms and L'Hopital's rule

Chapter 5: Integrals	Evaluation of the area between different types of curves
Chapter 6: Applications of Integration	Volumes of rotating area about a given axis by using disks, washer, and cylindrical shell methods
Chapter 7: Techniques of Integration	Integration by parts, Trigonometric integration, Trigonometric substitutions, Integration of rational functions by partial fractions, Improper Integration
Chapter 11: Infinite Sequence and Series	Sequences. Infinite series- investigating the convergence and divergence of a given series by using different types of tests; Integral test, Comparison test, the ratio test. Alternating series, absolute and conditional test. Power series. Taylor and Maclaurin series, Convergence of Taylor series, Application of Taylor series.

Week	Date	Topics covered	CILOs	Teaching Method	Assessment	Examples	Suggested Problems
1	07/02/2021	4.4 L'hospital's Rule	2	Lecture & Problem solving	HW1, Test1, Final	1-10	1-4, 8-68, 73-76
2	14/02/2021	5.5 The Substitution Rule	1	Lecture & Problem solving	HW2, Test1, Final	1 – 11	1-48, 53-73, 87-94
3	21/02/2021	6.1 Area Between Curves 6.2 Volumes	1	Lecture & Problem solving	HW3,4, Test1, Final	1,2,6,7 2-6	1-29, 33, 34, 56, 59 1-30
4	28/02/2021	6.2 Volumes 6.3 Volumes by Cylindrical Shells	1	Lecture & Problem solving	HW4,5, Test1, Final	1-4	1-20, 37-43
5	07/03/2021	7.1 Integration by Parts	3	Lecture & Problem solving	HW 6, Test1 Final	1-5	1-42, 61-65, 71
6	14/03/2021	7.2 Trigonometric Integrals 7.3 Trigonometric Substitution	3	Lecture & Problem solving	HW7,8, Test1, Test2, Final	1-9 1,3-7	1-49, 61-64 1-30
7	21/03/2021	7.4 Integral of Rational functions by Partial Fractions 7.7 Approximate Integration	3	Lecture & Problem solving	HW8,9, Test2, Final	1-9 1, 3(a), 4, 7(a)	1-52 7-18
8	28/03/2021	7.8 Improper integrals	3	Lecture & Problem solving	HW10, Test2, Final	1-10	1,2,5-40,49-54, 55-59, 63
9	4-8/04/2021	Mid semester break					
10	11/04/2021	11.1 Sequences 11.2 Series	4	Lecture & Problem solving	HW11,12, Test2, Final	1-9, 11-13 1-11	1-56 1-8, 15-63, 75,76,81,82
11	18/04/2021	11.2 Series 11.3 The Integral	4	Lecture & Problem solving	HW12,13, Test2, Final	1-6	3-40
12	25/04/2021	11.4 The Comparison Tests 11.5 Alternating	4	Lecture & Problem solving	HW15, HW16 Test2, Final	1-5 1-4	1-36, 38,39,40(b),41(b) 1-203-30, 31-
13	02/05/2021	11.6 Absolute and conditional convergence and The Ratio and Root Tests	4 4	Lecture & Problem solving	HW17, Test2, Final	1-6 1-6	1-40, 44,45 1-35
14	09/05/2021	11.6 Absolute conditional and The Ratio and Root Tests 11.7 Strategy for	4 4	Lecture & Problem solving	HW18, Final	1-6 1-6	1-40, 44,45 1-35
15	16/05/2021	11.8 Power Series	5	Lecture & Problem solving	HW19, Final	1-5	1-32

16	23/05/2021	11.9 <i>Representations of Functions as Power Series</i> 11.10 <i>Taylor and Maclaurin Series</i>	5	Lecture & Problem solving	HW20, Final	1-8 1,3-13	1-20, 25-32 1, 3-26, 31-43, 49-80
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Online Homework schedule

H.W #	Assignment coverage	Date "Start" (D/M/Y) 1:00 am	Date "Due" (D/M/Y) 11:59 pm
1	Section 4.4	7/2/2021	18/2/2021
2	Section 5.5	14/2/2021	25/2/2021
3	Section 6.1	21/2/2021	9/3/2021
4	Section 6.2	21/2/2021	11/3/2021
5	Section 6.3	28/2/2021	16/3/2021
6	Section 7.1	7/3/2021	18/3/2021
7	Section 7.2	14/3/2021	25/3/2021
8	Section 7.3	14/3/2021	1/4/2021
9	Section 7.4	21/3/2021	13/4/2021
10	Section 7.7	21/3/2021	15/4/2021
11	Section 7.8	28/3/2021	20/4/2021
12	Section 11.1	11/4/2021	22/4/2021
13	Section 11.2	11/4/2021	27/4/2021
14	Section 11.3	18/4/2021	29/4/2021
15	Section 11.4	25/4/2021	6/5/2021
16	Section 11.5	25/4/2021	20/5/2021
17	Section 11.6	2/5/2021	20/5/2021
18	Section 11.7	9/5/2021	20/5/2021
19	Section 11.8	9/5/2021	27/5/2021
20	Section 11.9	9/5/2021	27/5/2021

NB: There will be **NO** extension to any missed homework. However, we will take the grades of **the best 15 homework sets**. It is the student's responsibility to be familiar

with WebAssign. **No makeup** test will be provided, based on **right-answer and wrong format**.

25. 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 automatic 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.*

26. Academic Honesty and 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 # 4/2006. Please refer the UOB website-Deanship of Students Affairs-Guidance Office.

27. Important Dates

- Sunday Feb. 7, 2021: First day of classes (instruction begins).
- Sunday March 7, 2021: Last day to drop courses without a 'W' grade.
- Saturday March 27, 2021: Test 1
- Sunday April 4 – Thursday April 8, 2021: Mid semester break.
- Thursday April 29, 2021: Last day to withdraw with a 'W' grade.
- Saturday May 8, 2021: Test 2
- Tuesday May 11, 2021: Last day to withdraw with 'WA' or 'WF' grade.
- Thursday May 27th, 2021: Last day of classes.
- Saturday May 29, 2021: The Final exam.

