



Maths 204 Syllabus

1. College	Science										
2. Department	Mathematics										
3. Program	B.Sc in Mathematics										
4. Course code	Maths 204										
5. Course title	Calculus and Analytic Geometry III										
6. Course credits:	Lecture Hours: 3	Lab Hours: 0	Credit Hours: 3								
7. Pre-requisites:	Maths 122										
8. Course web-page:	https://www.mathxl.com										
9. Lectures Timing & Location											
10. Course coordinator	Dr. Ahmed Matar										
11. Academic year	2017-2018										
12. Semester:	√	First		Second		Summer					
13. Textbook(s):	Thomas Calculus (Early Transcendental), 12th edition (Pearson)										
14. References:	Calculus, by Smith and Minton. 4 th edition (McGraw-Hill).										
15. Other resources used (e.g. e-Learning, field visits, periodicals, software, etc.):	<ul style="list-style-type: none"> Paul's Online Math. Notes : http://tutorial.math.lamar.edu Salman Khan Academy: http://www.khanacademy.org/math/calculus/differential-calculus/ 										
16. Course description (from the catalog):	<p><i>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. Derivatives and integrals of exponential, logarithmic and inverse trigonometric functions</i></p>										
17. Course Intended Learning Outcomes (CILOs):	Students who successfully complete this course should be able to:										
	Mapping to PILOs										
CILOs	a	b	c	d	e	f	g	h	i	j	k
1. Identify and sketch parametric and polar curves	√										
2. Manipulate basic vector operations.	√										
3. Apply dot and cross products to solve geometrical problems.	√			√							
4. Identify and sketch quadrics in space.	√										
5. Evaluate limits and derivatives for multivariable functions and vector valued functions.	√										
6. Identify and sketch the domain of continuity for multivariable functions and vector valued functions.	√										

7. Locate extrema of multivariable functions.	√		√								
8. Evaluate multiple integrals in rectangular and polar coordinates.	√										
9. Calculate areas and volumes using multiple integrals.	√		√	√							
10. Explain various aspects of vector fields and line integrals.	√										
11. Apply Green's theorem and Stokes' theorem to evaluate line and surface integrals.	√			√							

18. Course assessment:			
<i>Assessment Type</i>	<i>Number</i>	<i>Weight</i>	<i>Date</i>
<i>Quizzes</i>	-	-	
<i>Tests</i>	2	50%	TBA
<i>Laboratory/Practical</i>	-	-	-
<i>Assignments/Online Homework's</i>	22	10 %	See Weekly Problems Sheet
<i>Projects/Case Studies</i>	-	-	-
<i>Final</i>	1	40%	TBA Comprehensive
Total	25	100%	

19. 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.

20. 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.

21.Course Weekly Breakdown:

Week	Date	Topics covered	CILOs	Teaching Method	Assessment
1	17/09/17	12.1 3D Coordinate Systems 12.2 Vectors	1,2 3	Lecture & Problem solving	HW 1, Test 1 & Final Exam
2	24/09/17	12.3 The Dot Product 12.4 The Cross Product	3 3	Lecture & Problem solving	HW 2, HW 3, Test 1 & Final Exam
3	01/10/17	12.5 Lines and Planes in Space	1,3	Lecture & Problem solving	HW 3, HW4, Test 1 & Final Exam
4	08/10/17	12.6 Cylinders and Quadric Surfaces 13.1 Curves in Space and Their Tangents 13.2 Integrals of vector valued functions	4 5 5	Lecture & Problem solving	HW 5, HW 6, Test 1 & Final Exam
5	15/10/17	13.3 Arc Length in Space 14.1 Functions of Several Variables	5 6	Lecture & Problem solving	HW 6, HW 7, Test 1 & Final Exam
6	22/10/17	14.3 Partial Derivatives 14.4 The Chain Rule	5 5	Lecture & Problem solving	HW 8, Test 1 & Final Exam
7	29/10/17	14.5 Directional Derivatives 14.6 Tangent Planes	5 5	Lecture & Problem solving	HW 9, HW 10, Test 1 & Final Exam
8	5/11/7	Mid-Semester Break		Lecture & Problem solving	HW 11, Test 2 & Final HW 12, Test 2 & Final
9	12/11/17	14.7 Extreme Values and Saddle Points	7		
10	19/11/17	14.8 Lagrange Multipliers	7	Lecture & Problem solving	HW 13, HW 14, Test 2 & Final Exam
11	26/11/17	15.1 Double and Iterated Integrals over Rectangles 15.2 Double Integrals over General Regions	8 8	Lecture & Problem solving	HW 15, HW16, Test 2 & Final Exam
12	03/12/17	15.3 Area by Double Integrals 15.4 Double Integrals in Polar Form	8,9 8,9	Lecture & Problem solving	HW 17, HW 18, Test 2 & Final Exam
13	10/12/17	15.5 Triple Integrals 15.7 Triple Integrals in Cylindrical and Spherical Coordinates	9 9	Lecture & Problem solving	HW 19, HW 20 & Final Exam
14	17/12/17	16.1 Line Integrals 16.2 Vector Fields and Line Integrals	10 10	Lecture & Problem solving	HW 21, HW 22 & Final Exam
15	24/12/17	16.3 Path Independence, Conservative Fields, and Potential Functions	10	Lecture & Problem solving	Final Exam
16	31/12/17	16.4 Green's Theorem	11	Lecture & Problem solving	Final Exam

Weekly Problems & Important Dates

Week	Date	Topics covered	Examples	Problems	Important Dates
1	17/09/17	12.1 3D Coordinate Systems 12.2 Vectors	1-5 1,3,4	1-58 17-22,32-34	21/9 Hijri new year
2	24/09/17	12.3 The Dot Product 12.4 The Cross Product	1-7 1-4, 6	1-14 1-8,15-25, 27-31,35-50	
3	01/10/17	12.5 Lines and Planes in Space	1-3,6-7,10	1-28,33-56	
4	08/10/17	12.6 Cylinders and Quadric Surfaces 13.1 Curves in Space and Their Tangents 13.2 Integrals of vector valued functions	1,2 2,3a,4 1-3	13-26 1-22 1-16	
5	15/10/17	13.3 Arc Length in Space 14.1 Functions of Several Variables	1-3 1-4	1-14 1-16, 31-36, 49-64	
6	22/10/17	14.3 Partial Derivatives 14.4 The Chain Rule	1-3, 6, 9-11 1-6	1-54 1-44	Test 1 24/10
7	29/10/17	14.5 Directional Derivatives 14.6 Tangent Planes	2,3,4,6 1-3	1-36 1-18	29/10-30/10 Ashura holiday
8	5/11/7	Mid-Semester Break			
9	12/11/17	14.7 Extreme Values and Saddle Points	3-6	1-44	
10	19/11/17	14.8 Lagrange Multipliers	3,4	1-16	
11	26/11/17	15.1 Double and Iterated Integrals over Rectangles 15.2 Double Integrals over General Regions	1,2 1-4	1-28 1-56	Test 2 26/11 30/11 Prophet birthday
12	03/12/17	15.3 Area by Double Integrals 15.4 Double Integrals in Polar Form	1-3 3-6	1-22 9-22	
13	10/12/17	15.5 Triple Integrals 15.7 Triple Integrals in Cylindrical and Spherical Coordinates	1-3 1, 3-5	1-36 1-48	
14	17/12/17	16.1 Line Integrals 16.2 Vector Fields and Line Integrals	1-2 1-5	1-32 1-24	16/12-17/12 National day
15	24/12/17	16.3 Path Independence, Conservative Fields, and Potential Functions	1-5	1-12,18-22	
16	31/12/17	16.4 Green's Theorem	3-5	5-12, 21-24	4/1 Last day of classes