



Academic Course Specification Form

استمارة توصيف المقرر الأكاديمي

القسم الخاص بالطالب Section Concerning the Student

1. Course Code:	MATHS 122	1. رمز المقرر:
2. Course Title	Calculus and Analytical Geometry II	2. اسم المقرر:
3. College:	College of Science	3. الكلية:
4. Department:	Department of Mathematics	4. القسم:
5. Academic Program:	B.Sc. in Mathematics (Study Plan 2017)	5. البرنامج الأكاديمي:
6. Course Credits:	4-0-4	6. عدد الساعات المعتمدة:
7. Course NQF Level	5	7. مستوى المقرر وفقاً للإطار الوطني للمؤهلات:
8. Notional Hours:	178	8. عدد الساعات الافتراضية:
9. NQF Credits	18	9. عدد الساعات المعتمدة للمقرر وفقاً للإطار الوطني للمؤهلات:
10. European Credit Transfer System (ECTS) credits	9	10. عدد الساعات للمقرر بالنظام الأوروبي
11. Prerequisite:	MATHS 121	11. المتطلب المسبق للمقرر:
12. Lectures Timing & Location:	TBA	12. وقت المحاضرة ومكانها:
13. General Mode of Teaching and Learning	Tranditional تقليدي	13. النمط العام للتعليم والتعلم:
14. Course Coordinator:	TBA	14. منسق المقرر:
15. Course Instructor:	TBA	15. مدرس المقرر:
16. Office Hours and Location:	TBA	16. الساعات المكتبية ومكانها:
17. Instructor's Email:	TBA	17. البريد الإلكتروني لمدرس المقرر:
18. Academic Year:		18. السنة الأكاديمية:
19. Semester:	First Semester الفصل الأول	19. الفصل الدراسي:

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May 2024

Changing any elements of the form is strictly prohibited.
يرجى عدم تغيير أي عنصر من عناصر الاستمارة

20. Textbook(s):		20. الكتب الدراسية للمقرر:
James Stewart, Calculus, Early Transcendentals (Metric Version), 2020, 9th Edition, Brooks/Cole Cengage Learning.		
21. References:		21. المراجع:
1. Calculus, by Smith and Minton. 4th edition (McGraw-Hill). 2. Thomas Calculus (Early Transcendentals), 13th edition (Pearson)		
22. Other learning resources used (e.g. e-Learning, field visits, periodicals, software, etc.):		22. مصادر أخرى (مثال : التعلم الالكتروني، زيارات ميدانية، دورات، برامج كمبيوتر، الخ)
a) Recorded videos are available in Microsoft Stream. Search "MATHS101" to view all of them. b) Paul's Online Notes at http://tutorial.math.lamar.edu c) Calculus resources: http://www.calculus.org		
23. Course Description (as published in the College Catalogue):		23. توصيف المقرر (حسبما ورد في دليل الكلية):
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.		
24. Course Intended Learning Outcomes (3 to 5 CILOs):		24. مخرجات التعلم للمقرر (CILOs) (3 إلى 5 مخرجات تعليمية):
1. Find the 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.		
25. Course Assessment Percentages (As per Regulations of Study and Examination at the University of Bahrain):		25. أساليب التقويم ونسبها المئوية (بحسب نظام الدراسة والامتحانات في جامعة البحرين):
ASSIGNMENTS		20%
TEST 1		20%
TEST 2		20%
EXAM		40%
TOTAL		100%
There should be at least two assignments per semester so that each won't exceed 10% of the total grade. These assignments are usually conducted using e-learning tools such as Blackboard, WebAssign, and ALEKS.		

26. وصف الموضوعات التي ينبغي تناولها:	
26. Description of Topics Covered:	
<i>Topic Title</i> (e.g. chapter/experiment title) الموضوع	<i>Description</i> التفصيل
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.
Chapter 10: Parametric Equations and Polar coordinates.	Polar coordinates- Graphing in polar coordinates-Areas and Length in Polar Coordinates.
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
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27. Weekly Schedule			27. الجدول الأسبوعي:	
Week الأسبوع	Date التاريخ	Topics Covered المواضيع المعروضة	CIOs المخرجات التعلمية للمقرر (CIOs)	Teaching/Assessment Mode and Method منهجية ونمط التدريس/التقييم
01		4.4 L'hospital's Rule	2	Traditional Teaching تدريس تقليدي
02		5.5 The Substitution Rule 6.1 Area Between Curves	1	
03		6.2 Volumes 6.3 Volumes by Cylindrical Shells	1	
04		7.1 Integration by Parts	3	
05		7.2 Trigonometric Integrals 7.3 Trigonometric Substitution	3	
06		7.4 Integral of Rational functions by Partial Fractions 7.7 Approximate Integration	3	
07		7.8 Improper integrals 8.1 Arc Length	3	
08		8.2 Surface area 11.1 Sequences	4	
09		11.2 Series 11.3 The Integral Test	4	
10		11.4 The Comparison Tests 11.5 Alternating Series	4	
11		11.6 Absolute conditional and The Ratio and Root Tests 11.7 Strategy for Testing Series	4 4	
12		11.8 Power Series	5	
13		11.9 Representations of Functions as Power Series 11.10 Taylor and Maclaurin Series	5	
14		10.1-Curves Defined by Parametric Equations 10.2-Calculus with Parametric Curves	1	
15		10.3-Polar Coordinates 10.4-Areas & Lengths in Polar Coordinates	1	

28. Academic Integrity Statement:	28. بيان النزاهة الأكاديمية:
Students are to observe the highest level of honesty and academic ethics in pursuit of their academic goals as per UOB Regulations of Student Conduct and Academic Integrity, Anti-plagiarism Policies , and Students' Rights and Responsibilities Handbook . The consequences for cheating, plagiarism, unauthorized collaboration, and other forms of academic dishonesty can be very serious and will be dealt with as per the aforementioned policies and regulations.	يعتبر الصدق والنزاهة عنصران أساسيان في العملية الأكاديمية. حيث يُتوقع من الطلاب خلال سعيهم لتحقيق أهدافهم الأكاديمية التحلي بالأمانة والأخلاق في جميع الأوقات، وذلك وفقاً للوائح والأنظمة الخاصة بطلبة جامعة البحرين، بالإضافة إلى دليل حقوق الطلبة وواجباتهم ، وكما جاء في سياسة الانتحال الخاصة بجامعة البحرين . حيث سيتم التعامل مع أي انتهاك للنزاهة الأكاديمية بحسب ما تنص عليه السياسات والأنظمة السابق ذكرها.
29. Attendance and Absence Regulations:	29. نظام الحضور والغياب:
Students are required to adhere to regular attendance for class lectures and practical sessions, as determined by the nature of the course, as per Article (33), of Regulations of Study and Examination at the University of Bahrain .	يُتوقع من الطلاب الالتزام بالحضور المنتظم للساعات الصفية والعملية بحسب طبيعة المقرر، وفقاً للمادة (33)، من نظام الدراسة والامتحانات في جامعة البحرين .