

جامعة : المنصورة

كلية : العلوم

قسم : الرياضيات

توصيف مقرر دراسي

١. بيانات المقرر		
المستوى : الاول	أسم المقرر: Differential & Integral calculus	الرمز الكودي : ر ١١٢
٠ : عملي	٢ : نظري	٣ : عدد الوحدات الدراسية

For students undertaking this course, the aims are to: 1 - Introduce and develop skills in mathematics needed to guarantee a solid foundation for the applications of calculus to follow in later courses.	٢. هدف المقرر:
٣. المستهدف من التدريس المقرر:	
a- Knowledge and Understanding : On completing this course, students will be able to: a - 1 - ensure familiarity with methods of differentiation and integration and their applications in problems. a - 2 - recognize classical functions whose derivatives must be memorized. a - 3 - be able to easily evaluate both derivatives and integrals. a - 4 - understand the main concepts and techniques of single and multivariable calculus.	ا. المعلومات والمفاهيم:
b- Intellectual Skills: On completing this course, students will be able to: b 1 - be comfortable with a rigorous mathematical thinking. b 2 - apply rigorous mathematical treatments to some fundamental studies. b 3 - be aware of the importance of the main concepts of a derivative, a definite integral and an indefinite integral together with their possible uses in different fields of study.	ب. المهارات الذهنية
c-Professional and Practical Skills: On completing this course, students will be able to: c1 - Analyze basic concepts in calculus and perceive the most important results	ج- المهارات المهنية الخاصة بالمقرر:

<p>of their applications.</p> <p>c2 - introduce techniques for solving simple differential equations.</p> <p>c3 - apply the given general results to particular cases.</p>	
<p>d-General and Transferable Skills: On completing this course, students will be able to:</p> <p>d1 - work effectively both in team and independently.</p> <p>d2 - develop mathematical techniques for application in physical sciences.</p> <p>d3 - communicate mathematical ideas and conclusions with colleagues.</p> <p>d - 4 - interact with colleagues for problem solving.</p>	<p>د- المهارات العامة :</p>
<ol style="list-style-type: none"> 1- Real-valued functions: types of functions (maxima and minima, monotonicity, types of symmetry, types of curvatures...etc) - properties of basic functions (exponential and log functions, trigonometric and inverse functions, hyperbolic and inverse hyperbolic functions) . 2- Limits and continuity: definitions (one-sided and total limits, limits at infinity and infinite limits) - properties and rules - continuity (at a point, on an interval, continuity of basic functions, types of discontinuity, theorems on continuous functions). 3- Differentiation: differentiability - rules of differentiation - derivatives of basic functions - different differentiation techniques (implicit differentiation, parametric differentiation, logarithmic differentiation) - higher derivatives and Leibnitz's Rule – applications. 4- Integration: indefinite integrals and their properties - simple integrals - basic integration methods (integration by substitution, trigonometric integrals, integration by parts, integration using partial fractions) - definite integrals - Riemann integrals. 5- Applications of definite and indefinite integrals: simple differential equations - equations of motion - areas - volumes - surface areas - arc lengths. 	<p>٤ . محتوى المقرر:</p>
<p>5.1 - 2 Hours lectures per week.</p> <p>5.2 - 2 Hours tutorials per week.</p> <p>5- Teaching and Learning Methods:</p>	<p>٥ . اساليب التعليم والتعلم:</p>

<p>The same as normal students, only skeletal disabilities are allowed in the Faculty of Science.</p>	<p>٦. أساليب التعليم والتعلم للطلاب ذوي القدرات المحدودة:</p>									
<p>٧. تقويم الطلاب :</p>										
<p>Student Assessment Methods</p> <table border="1" data-bbox="108 510 906 750"> <tr> <td>Oral exam</td> <td>To assess</td> <td>B1-b3 and d1-d</td> </tr> <tr> <td>Final exam</td> <td>to assess</td> <td>A1-a4 and c1-c3</td> </tr> <tr> <td>Sheet exam</td> <td>to assess</td> <td></td> </tr> </table>	Oral exam	To assess	B1-b3 and d1-d	Final exam	to assess	A1-a4 and c1-c3	Sheet exam	to assess		<p>أ- الأساليب المستخدمة :</p>
Oral exam	To assess	B1-b3 and d1-d								
Final exam	to assess	A1-a4 and c1-c3								
Sheet exam	to assess									
<p>Assessment Schedule</p>		<p>ب- التوقيت :</p>								
<p>Assessment 1</p>	<p>Week #sheet exam.</p>	<p>Week 10</p>								
<p>Assessment 2</p>	<p>Week #oral exam</p>	<p>Week 12</p>								
<p>Assessment 3</p>	<p>Week #written exam</p>	<p>week15</p>								
<p>Weighting of Assessments</p>		<p>ج- توزيع الدرجات :</p>								
<p>Final-Term Examination</p>	<p>80%</p>									
<p>Mid-term</p>	<p>10%</p>									
<p>Oral Examination</p>	<p>10%</p>									
<p>Practical Examination</p>	<p>0%</p>									
<p>Semester work</p>	<p>0%</p>									
<p>Other types of assessment</p>	<p>0%</p>									
<p>Total</p>	<p>100%</p>									
<p>٨- قائمة الكتب الدراسية والمراجع :</p>		<p>أ- مذكرات:</p>								
<p>1 - Lecture notes prepared by academic staff members in the Department.</p>	<p>ب- كتب ملزمة</p>									
<p>1 - G.B.Thomas and Ross L. Finny "Calculus and Analytic Geometry (9th edition)", addison Wesley, 1995.</p>										

2 - Howard Anton, Calculus, John Wily & Sons, INC 1999.	
	ج-كتب مقترحة
	د- دوريات علمية أو نشرات..

مصفوفة المعارف والمهارات المستهدفة من المقرر الدراسي

المحتويات للمقرر	اسبوع الدراسة	المعارف الرئيسية	مهارات ذهنية	مهارات مهنية	مهارات عامة
1- Real-valued functions: types of functions (maxima and minima, monotonicity, types of symmetry, types of curvatures...etc) - properties of basic functions (exponential and log functions, trigonometric and inverse functions, hyperbolic and inverse hyperbolic functions).	1	a2 , a4	b1 , b2		
2- Limits and continuity: definitions (one-sided and total limits, limits at infinity and infinite limits) - properties and rules - continuity (at a point, on an interval, continuity of basic functions, types of discontinuity, theorems on continuous functions).	2 -3	a2 , a4	b1 , b2		
3- Differentiation : differentiability - rules of differentiation - derivatives of basic functions - different differentiation techniques (implicit differentiation, parametric differentiation, logarithmic differentiation) – higher derivatives and Leibnitz's Rule - applications	4 -8	a1 , a2 , a3 , a4	b1 , b2,b3		
4- Integration : indefinite integrals and their properties - simple integrals - basic integration methods (integration by substitution , trigonometric integrals , integration by parts , integration using partial fractions) - definite integrals -	9-12	a1 , a2 , a3 , a4	b1 , b2,b3		

Riemann integrals					
5- Applications of definite and indefinite integrals: simple differential equations - equations of motion - areas - volumes - surface areas - arc lengths.	13-14	a1 , a4	b1 , b2,b3		

أستاذ المادة: د. /منتصر أحمد طه سعفان

رئيس مجلس القسم العلمي: أ.د / مجدى الياس فارس