توصيف مقرر دراسي

جامعة : المنصورة

كلية : العـــــلوم

قســم : الرياضيات

١ـ بيانات المقرر		
الرمز الكودى : Math112	**أسم المقرر:** **Differential & Integral Calculus**	**المستوى: الأول**
التخصص: رياضيات	**عدد الوحدات الدراسية: ٣ ساعة معتمدة نظرى ٢ تمارين ٢ عملى ٠**	

٢- هدف المقرر :	**For students undertaking this course, the aims are to:** 1 - provide a firm foundation in the concepts and techniques of the calculus, including real numbers, standard functions, curve sketching, limits, continuity, differentiation, integration of functions of one variable. The core concepts of limits, differentiation and integration are revised. Techniques for applying the calculus are developed and strongly reinforced.
٣- المستهدف من تدريس المقرر	
أ- المعلومات و المفاهيم :	**a- Knowledge and Understanding :** **On completing this course, students will be able to:** a1- be familiar with the idea of a domain of definition and an inverse function a2- be familiar with elementary functions, the basic rules of the differential and integral calculus for functions of one variable; a3- ensure familiarity with methods of differentiation, Integration and their applications in problems a4- evaluate and manipulate derivatives and integration
ب المهارات الذهنية:	**b- Intellectual Skills:** **On completing this course, students will be able to:** b1- introduce rigorous mathematical treatments of some fundamental topics in mathematics b2- be comfortable with proofs by differentiation, integration of functions of one variable

c-Professional and Practical Skills **On completing the course students will be able to:** c1- Understand the basic concepts and results in calculus. c2- Introduce techniques for solving simple differential equations c2- apply the given general results to particular cases.	**ج- المهارات المهنية الخاصة بالمقرر :**
d-General and Transferable Skills **On completing the course students will be able to:** d1- Work effectively both in team and independently d2- Mathematical techniques for application in the physical sciences d3- problem solving d4- Use Internet and library	**د- المهارات العامة :**
1- Numbers and Functions 2- Limits and continuity. 3- Differentiation: (Basic ideas; tangent of curve; the product and quotient rule; the chain rule); higher derivatives 4- Derivatives of trigonometric functions and their inverse 5- Derivatives of the log function and in function; the exponential function 6- Derivatives of hyperbolic functions and their inverse and Applications of derivatives(normal and Tangent line) 7- Integration and Techniques of Integration: (Integration by substitution- Integration of trigonometric and hyperbolic functions - Integration of parts - Integration of rational functions by partial fractions) 8- Application of integration	**٤- محتوى المقـــرر**
1 - Lectures (2H/W) 2 - Tutorial (2H/w)	**٥- أســـاليـــب التعليـــم و التعلـم**
The same as normal students, only skeletal disabilities are allowed in the Faculty of Science.	**٦- أساليب التعليم و التعلم للطـــلاب ذوى القـدرات المحـدودة**
	٧- تقويـــــم الطـــلاب :

أ- الأساليب المستخدمة	1 - Final examination	to assess	a1,a2,a3,a4, b2,c1-c3 ,d2, d3
	2 - Oral examination	to assess	a2,b1,b2,d1,d4
	3- Mid_Term Examination	to assess	a1- a2,b1,b2,c1-c3,d1,d4
ب- التوقيت	1 - Final examination	week	15
	2 - Oral examination	week	15
	3- Mid_Term Examination	week	7

ج- توزيع الدرجات

Final-Term Examination	80%
Oral Examination	10 %
Practical Examination	0%
Mid-Term Exam	10%
Other types of assessment	0%
Total	100%

٨- قائمة الكتب الدراسية و المراجع :

أ- مذكرات:

Lecture Notes

ب- كتب ملزمة

1 - Howard Anton, Calculus, John Wily & Sons, INC 1999

2 - James Stewart, Calculus: Early Transcendentals, 5th ed., Brooks Cole (2002)

3 - Crowell, B. "Calculus" Light and Matter, Fullerton. Retrieved (2003).

4 - Keisler, H. J."Elementary Calculus: An Approach Using Infinitesimals (2000).

ج- كتب مقترحة :

1 - Jordan, D.W. & Smith, P. Mathematical Techniques: An introduction for the engineering, physical, and mathematical sciences (3rd edition), Oxford University Press, Oxford, 2002

2 - James Stewart, Calculus, Early Transcendentals, Thomson, 5th Edition, International Student Edition, 2003.

3 - Donald A. McQuarrie (2003). Mathematical Methods for Scientists and Engineers, University Science Books. ISBN 9781891389245

4 - P.J. Eccles, An Introduction to Mathematical Reasoning: Numbers, Sets and Functions, Cambridge University Press, 1997.

د- دوريات علمية أو نشرات..

1 - http://en.wikipedia.org/wiki/Calculus

2 - http://www.math.niu.edu/~beachy/aaol /

3 - http://www.sosmath.com/calculus/calculus.html	

مصفوفة المعارف والمهارات المستهدفة من المقرر الدراسى

المحتويات للمقرر	اسبوع الدراسة	المعارف الرئيسية	مهارات ذهنية	مهارات مهنية	مهارات عامة
Numbers and Functions	1	a1	b1	c1	d1
Limits and continuity.	2	a1	b1	c1	d1, d3
Differentiation: (Basic ideas; tangent of curve; the product and quotient rule; the chain rule); higher derivatives	3-4	a2, a3	b1, b2	c1	d1, d3
Derivatives of trigonometric functions and their inverse	5-7	a2, a3	b2	c2	d1, d3
Derivatives of the log function and ln function; the exponential function	8	a2, a3	b2	c2	d1,d2,d3
Derivatives of hyperbolic functions and their inverse and Applications of derivatives(normal and Tangent line)	9	a2, a3	b2	c4	d1,d3,d4
Integration and Techniques of Integration: (Integration by substitution-Integration of trigonometric and hyperbolic functions - Integration of parts - Integration of rational functions by partial fractions)	10-12	a3, a4	b2	c3	d1, d3
Application of integration	13	a3, a4	b2	c4	d1- d4

أستاذ المادة : أ.د. / محمد السيد ابراهيم الشافعى

رئيس مجلس القسم العلمي :ا.د. مجدى الياس فارس