توصيف مقرر دراسي

جامعة : المنصورة
كـليـة : العلـــــوم
قســـم : الرياضيات

١ـ بيانات المقرر		
كود المادة : Math 216	**اسم المقرر : Calculus of Several Variables**	**المستوى: الثانى**
التخصص: إحصاء وعلوم الحاسب	**عدد الوحدات الدراسية: ٣ ساعة معتمدة نظرى ٢: تمارين: ٢ عملى: ٠**	

٢ـ هدف المقرر :	**For students undertaking this course, the aims are to:** - provide an overview of standard methods for the calculus of functions of more than one variable and Multiple and linear integrals
٣ـ المستهدف من تدريس المقرر	
أ- المعلومات و المفاهيم :	**a- Knowledge and Understanding** **completing this course, students will be able to:** a1 - Understand continuity anddifferentiability of functions of two or more variables. a2 - Understanding some ideas about the Partial differentiation a3 - Understand the applications of Partial differentiation
ب- المهارات الذهنية :	**b- Intellectual Skills** **completing this course, students will be able to:** b1- Critically think and compare different approaches to the same problem b2- Use logical and intellectual skills b3- apply the basic skills of continuity and differentiability of functions of two variables. b4 - Continuity and differentiability of functions of two variables b5 - apply the basic techniques of Multiple and linear integrals
ج- المهارات المهنية الخاصة بالمقرر :	**c- Professional and Practical Skills** **completing this course, students will be able to:** c1 - Solving some problems in advanced calculus
د- المهارات العامة :	**d- General and Transferable Skills** **completing this course, students will be able to:** d1 - Solving problems d2 - Ability to work in team d3 - Use Internet and library
٤ـ محتوى المقرر :	**Part 1 : Differential calculus of functions of several variables –** – Limits and continuity – – Partial derivatives – – Directional derivatives and the gradient - – Normal lines and tangent planes - Extreme – – Lagrange multipliers. **Part 2: Multiple Integrals-** – Double integrals in different spaces and their application- – Triple integrals in different spaces and their applications – – Transformation of coordinates – – Change of variables in multiple. **Part 3:** – Topics in vector Calculus-

– Line integrals and applications – – Green's Theorem – – Independent of path of line integrals in the plane and dimensional spaces – – Surface integrals – – The divergence Theorem – – Stock's Theorem.	
1- Lectures (2H/W) 2- Tutorials (2H/w)	٥- أساليب التعليم و التعلم :
The same as normal students, only skeletal disabilities are allowed in the Faculty of Science.	٦- أساليب التعليم و التعلم للطلاب ذوى القدرات المحدودة
٧- تقويم الطلاب :	
1- Oral exam to assess b1-b3,d1-d3 2- Mid-Term Exam to assess a1-a3,b1-b3 3- Final exam to assess a1-a3,b1-b5,c1-c3	أ- الأساليب المستخدمة
1- Oral week 14 2-Mid-Term Exam week 7 3- Final exam week 15	ب- التوقيت
- Mid-Term Examination 10 % - Final-Term Examination 80% - Oral Examination 10% - Practical Examination 0% Total 100%	ج- توزيع الدرجات
٨- قائمة الكتب الدراسية و المراجع :	
Lectures notes available in the Dept	أ- المذكرات
- C. H Edwards, Elementary differential equations with boundary value problems, Pearson Prentice Hall, 2004	ب- الكتب ملزمة
1- W.E. Boyce & R.C. Di Prima, "Elementary Differential Equations and Boundary Value Problems", Wiley 2- M. Braun, "Differential Equations and their Applications", Springer-Verlag. 3- C.H. Edwards & D.E. Penney, "Elementary ifferential Equations with Boundary Value Problems", Prentice Hall. 4- R.K. Nagle & E.B. Saff, & A.D. Snider, "Fundamentals of Differential Equations and Boundary Value Problems", Addison-Wesley.	ج- كتب مقترحة
http://www.sosmath.com/diffeq/diffeq.html	د- دوريات علمية أو نشرات ... الخ

أ) مصفوفة المعارف والمهارات المستهدفة من المقرر الدراسي

المحتويات للمقرر	اسبوع الدراسة	المعارف الرئيسية	مهارات ذهنية	مهارات مهنية	مهارات عامة
Part 1 :					
– Differential calculus of functions of several variables					
– Limits and continuity					
– Partial derivatives					
– Directional derivatives and the gradient					
– Normal lines and tangent planes Extreme					
– Lagrange multipliers					
Part 2:					
– Multiple Integrals					
– Double integrals in different spaces and their application					
– Triple integrals in different spaces and their applications					
– Transformation of coordinates					
– Change of variables in multiple					
Part 3:					
– Topics in vector Calculus					
– Line integrals and applications					
– Green's Theorem					
– Independent of path of line integrals in the plane and dimensional spaces					
– Surface integrals					
– The divergence Theorem					
– Stock's Theorem.					

أستاذ المقرر: د. محاسن أحمد ابراهيم موسى

رئيس مجلس القسم العلمى : أ.د. مجدى إلياس فارس