توصيف مقرر دراسي

جامعة : المنصورة

كليـة : العـــــلوم

قســم : الرياضيات

١- بيانات المقرر		
كود المادة : Math 214	**اسم المقرر :** **Ordinary Differential Equations**	**المستوى: الثانى**
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 an overview of standard methods for the solution of single ordinary differential equations and systems of equations, with an introduction to some of the underlying theory and calculus of functions of more than one variable.
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 some of the standard methods for solution of first- and second-order ordinary differential equations a2 - be aware of the implications of existence and uniqueness theorems a3 - Understand continuity and differentiability of functions of two or more variables. a4- Understand the applications of differential equations
ب- المهارات الذهنية:	**b- Intellectual Skills** **On completing this course, students will be able to:** b1- Critically think and compare different approaches to the same problem b2- develop skills in the use of computer tools for solving differential equations and integration b3- Use logical and intellectual skills b4- apply the basic skills of continuity and differentiability of functions of two variables.

c-Professional and Practical Skills **On completing this course, students will be able to:** c1 - Classify the first and second order ODEs c2 - Solve linear ODEs using standard methods. c3- pursue further studies in more advanced branches of modern mathematics: functional analysis, topology, optimization and nonlinear analysis	**ج- المهارات المهنية الخاصة بالمقرر :**
d-General and Transferable Skills **On completing this course, students will be able to:** d1- Ability to work in team d2- Solving problems d3- Use Internet and library	**د- المهارات العامة :**
• Definitions. First order differential eq. linear, separable,exact and homogenous • Second order differential eq.: reduction of order, constant coeff., 2nd -order linear eq. Euler's eq • Laplace transformation • Series solutions of 2nd-order linear differential eq. • Power series, solutions about an ordinary point • Equal roots of indicial eq. and roots differing by an integer • Introduction to systems of first-order eq. solutions of two linear first-order eq	**٤- محتوى المقرر :**
1- Lectures (4H/W) 2- Tutorials (3H/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 Examination to assess a1, a2, b1,b2,c1 3- Final exam to assess a1-a4,b4, c1-c3	**أ- الأساليب المستخدمة**
1. Oral week 15 2. Mid-Term Exam week 7 3. Final exam week 15	**ب- التوقيت**
- Mid-Term Examination 10 %	**ج- توزيع الدرجات**

- Final-Term Examination 80% - Oral Examination 10% - Practical Examination 0% Total 100%	
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- دوريـــات علميـــة أو نشرات ... الخ**

(أ) مصفوفة المعارف والمهارات المستهدفة من المقرر الدراسى

المحتويات للمقرر	اسبوع الدراسة	المعارف الرئيسية	مهارات ذهنية	مهارات مهنية	مهارات عامة
Definitions. First order differential eq.: linear, separable, exact and homogenous	1-2	a1, a4	b1,b2,b3	c1-c3	d2, d3
Second order differential eq.: reduction of order, constant coeff., 2nd -order linear eq. Euler's eq	3-4	a1,a2,a4	b1,b2,b3	c1-c3	d2, d3
Laplace transformation	5-6	a1, a4	b1,b2,b3	c1-c3	d2, d3
Series solutions of 2nd-order linear differential eq.	7-8	a1	b1,b2,b3	c1-c3	d1, d2,
Power series, solutions about an ordinary point	9-10	a1, a2	b2	c1-c3	d2,
Equal roots of indicial eq. and roots differing by an integer	11-12	a2, a3	b1,b2,b3	c1-c3	d1, d2
Introduction to systems of first-order eq. solutions of two linear first-order eq.	13-14	a1,a2,a3	b4	c1-c3	d1, d2

أستاذ المقرر: أ.د. على شمندى

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