جامعة : المنصورة
كـــلية : العلـــوم
قـــســـم:الرياضيات

توصيف مقرر دراسى

١- بيانات المقرر		
الرمز الكودى : Mathematics	أسم المقرر: Pure Mathematics	المستوى: الثانى (بيولوجي)
التخصص: علوم البيئة	عدد الوحدات الدراسية: ٥ نظرى ٣ تمارين ٢ عملى ٠	

٢- هدف المقرر:	The course provides an overview of standard methods for the solution of ordinary differential equations and difference equations which appears in the biological systems and the model of the infection diseases, with an introduction to some of the underlying theory and calculus of functions of more than one variable. Moreover, it provides overview for the standard solutions of linear algebraic systems and the geometry of plane in order to understand the geometry of biological behaviour like cellular automate.
٣- المستهدف من التدريس المقرر:	
أ- المعلومات والمفاهيم:	a- Knowledge and Understanding : On completing this course, students will be able to: a1. Aplly some of the standard methods for solution of first- and second-order ordinary differential equations. a2. Explain continuity and differentiabity of functions of two or more variables. a3. Explain the topics of Advanced Calculus. a4. Explain the applications of differential equations and difference equations. a5. Explain some ideas about the Partial differentiation. a6. Explain the basic concepts of the plane. a7. Explain the fundamental operations on matrices and calculate the determinant and the inverse of a matrix. a8. Solve systems of linear equations. a9. Apply standard methods in linear algebra to understand the biological systems transformations.
ب- المهارات الذهنية	b- Intellectual Skills: On completing this course, students will be able to: b1-. Critical thinking and how to compare different approaches to the same problem. b2. Continuity and differentiability of functions of two variables. b3. Solve systems of linear equations by using Gaussian elimination to reduce the augmented matrix to row echelon form or to reduced row echelon form. b4. Apply the basic techniques of matrix algebra, including finding the inverse of an invertible matrix using Gauss-Jordan elimination.

c-Professional and Practical Skills: On completing this course, students will be able to: c1. Classify and first and second order ODEs. c2. Solving some simple problems in n- dimensional space. c3. Solving some problems in advanced calculus.	ج- المهارات المهنية الخاصة بالمقرر:
d-General and Transferable Skills: On completing this course, students will be able to: d1. Communicate effectively with others. d2. Solving problems. d3. Use Internet and library.	د- المهارات العامة :
✓ Definitions. First order differential eq. ✓ Second order differential eq. and difference equations ✓ Function of several variables ✓ Partial differentiation. Continuity, differentiability and the chain rule. ✓ Taylor's theory, Maxima of functions of two variables, Differentiation of integrals ✓ Multiple integrals, change of variables. ✓ Matrices ✓ Interpolation, models ✓ Straight line and plane in space	٤- محتوى المقرر:
4 - Teaching and Learning Methods 4. 1 - Lectures (3 hours). 4.2 - Tutorial (3 hours).	٥- اساليب التعليم والتعلم:
The same as normal students, only skeletal disabilities are allowed in the Faculty of Science.	٦- أساليب التعليم والتعلم للطلاب ذوى القدرات المحدودة:
	٧- تقويم الطلاب :
Student Assessment Methods Final exam | to assess | a1-a9, c1 c2,c3 Oral exam | to assess | a1, a2, a3. b1,b2,b3,d1,d2, d3	أ- الأساليب المستخدمة :
Assessment Schedule Assessment 1 | Week # | 14 Assessment 2 | Week # | 14 Assessment 3 | Week # | 13	ب- التوقيت :
Weighting of Assessments Final-Term Examination 90 Oral Examination 10 Practical Examination 0 Semester work 0 Other types of assessment 0 Total 100	ج- توزيع الدرجات :
	٨- قائمة الكتب الدراسية والمراجع :
Lecture notes issued and authorized by the department	أ- مذكرات:

ب- كتب ملزمة	Cox, W., Ordinary Differential Equations, Arnold, 1996.
ج- كتب مقترحة :	Lindsay, K. and Weiglhofer, W., Ordinary Differential Equations and Applications, Albion, 1999
د- دوريات علمية أو نشرات..	different web sites of the mathematics science

(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.	١	a1	b1	c1	d1
Second order differential eq. and difference equations	٣-٢	a1, a4, a8	b1	c1	d1,d2, d3
Function of several variables	٥-٤	a2, a3			d1, d2
Partial differentiation. Continuity, differentiability and the chain rule.	٦	a3, a5	b2	c3	d1, d2
Taylor's theory, Maxima of functions of two variables, Differentiation of integrals	٧	a1,a2, a3	b1, b3	c1,c2	d1,d2, d3
Multiple integrals, change of variables.	٩-٨	a1,a2, a3	b1, b2, b3	c2	d1, d2, d3
Matrices	١٠	a7	b3, b4	c3	d1, d2
Interpolation, models	٢-١١١	a9	b1, b3, b4	c1,c3	d1, d2, d3
Straight line and plane in space	١٤-١٣	a6	b1, b2, b3	c2	d1, d2

أستاذ المقرر: أ.د. أحمد صادق حجازى

رئيس مجلس القسم العلمى : أ.د. أحمد حبيب محمد نجيب البسيونى