توصيف مقرر دراسي

جامعة : المنصورة
كـليـة : العلـــــوم
قســـم : الرياضيات

١ ـ بيانات المقرر		
كود المادة : Math 328	**اسم المقرر : Difference Equations (2)**	**المستوى: الثالث**
التخصص : الإحصاء وعلوم الحاسب	**عدد الوحدات الدراسية: ٢ ساعة معتمدة نظرى ٢: تمارين: ١ عملى: ٠**	

٢ ـ هدف المقرر:	**For students undertaking this course, the aims are to:** – Understand the concepts of difference equations. – Solve linear difference equations. – Study stability of linear and nonlinear equations. – Use computer package to study the qualitative behavior for the solutions of the difference equations.
٣ ـ المستهدف من التدريس المقرر:	
أ-المعلومات والمفاهيم:	**a- Knowledge and Understanding :** **On completing this course, students will be able to:** a1- develop knowledge and understanding on Qualitative data. a2- know and understand difference calculus. a3- solve linear difference equations as well as systems of difference equations. a4- convert a problem to a difference equation.
ب-المهارات الذهنية	**b- Intellectual Skills:** **On completing this course, students will be able to:** b1- Represent the data. b2- Estimate some of the Statistical measurements. b3- Determine the appropriate method of solution. b4- Apply the Z-Transformation.
ج- المهارات المهنية الخاصة بالمقرر:	**c-Professional and Practical Skills:** **On completing this course, students will be able to:** c1- make the model of the problem on the form of difference equation. c2- know the applications of discrete analysis.
د- المهارات العامة :	**d-General and Transferable Skills:** **On completing this course, students will be able to:** d1- work on team. d2- use the internet. d3- introduce new idea to solve some problems.
٤ ـ محتوى المقرر:	– Some definitions of difference equations, Existence and Uniqueness theorem, Difference operator, Shift operator and some properties of this operators, relation between them, Inverse of difference operator. – First order difference equations (algebraic solution and geometrical method of solution(Linear difference equations (Casoration – Fundamental theorems for homogenous equations(Linear difference equations with constant coefficients) – Dynamics of First-Order Difference Equations. – Linear Difference Equations of Higher Order. – Systems of Linear Difference Equations. – Stability Theory. – Higher-Order Scalar Difference Equations. – The Z-Transform Method and Volterra Difference Equations.

– Oscillation Theory. – Asymptotic Behavior of Difference Equations.	
1- lectures (2H/W) 2- Tutorial (2H/W) 3- Report	**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 :	
1. Mid-term exam to assess a1-a4,c1,c2 2. Final exam to assess a1-a4,b1-b4,d1,d3 3. Oral exam to assess a3,a4,b3,b4,c2,d2 4. Report to assess a1-a4,d1-d3	**أ- الأساليب المستخدمة :**
1. Mid-term exam Week 7 2. Final exam Week 16 3. Oral exam Week 16 4. Report Week 16	**ب- التوقيت :**
Mid-term examination 10% Final-Term Examination 80% Oral Examination 10% Total 100%	**ج- توزيع الدرجات :**
٨- قائمة الكتب الدراسية والمراجع :	
	أ- مذكرات:
1- Elaydi, Saber, An Introduction to Difference Equations 3rd ed., 2005, ISBN: 0-387-23059-9. 2- S. Elaydi, An Introduction to Difference Equations, Second Edition ،Springe-Verlag, New York, 1999. 3- معادلات الفروق - والنماذج الإقتصادية الخطية الديناميكية - د/غزال عبدالعزيز عامر 4- Difference Equations: An Introduction with Applications, Harcourt/Academic Press, Second Edition, San Diego, 2001	**ب- كتب ملزمة**
	ج- كتب مقترحة :
http://en.wikipedia.org/wiki	**د- دوريات علمية أو نشرات..**

(أ) مصفوفة المعارف والمهارات المستهدفة من المقرر الدراسي

المحتويات للمقرر	أسبوع الدراسة	المعارف الرئيسية	مهارات ذهنية	مهارات مهنية	مهارات عامة
– Some definitions of difference equations, Existence and Uniqueness theorem, Difference operator, Shift operator and some properties of this operators, relation between them, Inverse of difference operator.					
– First order difference equations (algebraic solution and geometrical method of solution(Linear difference equations (Casoration – Fundamental theorems for homogenous equations(Linear difference equations with constant coefficients)					
– Dynamics of First-Order Difference Equations.					
– Linear Difference Equations of Higher Order.					
– Systems of Linear Difference Equations.					
– Stability Theory.					
– Higher-Order Scalar Difference Equations.					
– The Z-Transform Method and Volterra Difference Equations.					
– Oscillation Theory.					
– Asymptotic Behavior of Difference Equations.					

أستاذ المادة : ا.د/

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