

توصيف مقرر دراسي

جامعة : المنصورة

كلية : العلوم

قسم : الرياضيات

١- بيانات المقرر		
المستوى: الثالث	اسم المقرر : Integral Equations	كود المادة : Math 318
عدد الوحدات الدراسية: ٢ ساعة معتمدة نظري: ٢ تمارين: ١ عملي: ٠		التخصص : رياضيات

For students undertaking this course, the aims are to: - Recognize the different methods for solving Integral equations of Fredholm and Volterra types.		٢- هدف المقرر:
٣- المستهدف من التدريس المقرر:		
a- Knowledge and Understanding On completing this course, students will be able to: a1-Demonstrate a detailed knowledge of the kinds of integral equations a2-Apply the methods of solution a3-Formulate some boundary and initial value problems a4-Understand the method and physical sources of integral equations		أ- المعلومات والمفاهيم:
b- Intellectual Skills On completing this course, students will be able to: b1-Formulate a suitable mathematical method of solution. problems b2-Use integral equations in physical problems b3-Understand modeling skills, logical thought and analysis.		ب- المهارات الذهنية
c- Professional and Practical Skills On completing this course, students will be able to: c1-solve various problems using the method illustrated c2-Solve some problems in mechanics(Abel's problems) c3-Use computer simulation		ج- المهارات المهنية الخاصة بالمقرر:

d- General and Transferable Skills On completing this course, students will be able to: d1-Work individual and with Team d2-Solve problems in of integral equations d3-Use library and internet			د- المهارات العامة :
<ul style="list-style-type: none"> – Volterra Integral equations of the 2nd kinds. Resolvent kernel – Solve the integral equation of convolution type by using of Laplace transformation – Integro-differential equations – Volterra integral equations of the 1st kind – Euler Integrals – Abel's problem and its generalization – Fredholm integral equations of the 2nd kind – Methods of Fredholm determinants. – Fredholm Iterated kernel- resolvent kernel – Degenerate kernels – Approximate methods of solution – applications 			٤- محتوى المقرر:
1- Lectures 2 -Internet search			٥- أساليب التعليم والتعلم
The same as normal students, only skeletal disabilities are allowed in the faculty of science.			٦- أساليب التعليم والتعلم للطلاب ذوي القدرات المحدودة:
٧- تقويم الطلاب :			
1- Final exam	to assess	a1- a4, b1- b3, c1-c3	أ- الأساليب المستخدمة :
2- Oral exam	to assess	a1- a4, b1-b3,d1-d3	
3- Mid-Term Exam	to assess	a1- a4, b1- b3, c1- c3	
1- Final exam	week	16	ب- التوقيت :
2- Oral exam	week	16	
3- Mid-Term Exam	week	7	
- Mid-Term Examination 10% - Final-Term Examination 80% - Oral Examination 10% - Practical Examination 0 Total 100%			ج- توزيع الدرجات :

٨- قائمة الكتب الدراسية والمراجع :	
أ- مذكرات:	
6.1- 1-ABDUL J. JERRI , Introduction to integral equations with applications, 1999, JOHN WILEY & SONS INC	ب- كتب ملزمة
6.2- Problems and Exercises in integral equations Mir Publ., Moscow	ج- كتب مقترحة
6.3- R Courant and D Hilbert, <i>Methods of Mathematical Physics, Vols. I and II</i> , Interscience	د- دوريات علمية أو نشرات..

(أ) مصفوفة المعارف والمهارات المستهدفة من المقرر الدراسي

المحتويات للمقرر	اسبوع الدراسة	المعارف الرئيسية	مهارات ذهنية	مهارات مهنية	مهارات عامة
Volterra Integral equations of the 2 nd kinds. Resolvent kernel	1-2	a1, a2	b1		
solve the integral equation of convolution type by using of Laplace transformation	3	a1, a2	b1		
Integro-differential equations	4	a1, a2	b2		
Volterra integral equations of the 1st kind	5	a1, a2	b3	c1,c2,c3	d1,d2,d3
Euler Integrals	6	a1, a2		c1,c2,c3	
Abel's problem and its generalization	7	a1,a2,a3,a4	b2,b3	c1,c2,c3	d1,d2,d3
Fredholm integral equations of the 2 nd kind	8	a1, a2		c1,c2,c3	d1,d2,d3
Methods of Fredholm determinants.	9	a1, a2, a3	b1		
Fredholm Iterated kernel- resolvent kernel	10	a1, a2, a3	b1		
Degenerate kernels	11	a1, a2, a3	b2		
Approximate methods of solution	12	a1, a2, a3	b3	c1,c2,c3	d1,d2,d3
applications	13-14	a1, a2, a3	b3	c1,c2,c3	

أستاذ المادة: أ.د. محمد نبيل علام

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