جامعة : المنصورة

كـــلية : العلـــوم

قسم / الرياضيات

١- بيانات المقرر		
كود المادة : Math 419	اسم المقرر : Topology (2)	المستوى: الرابع
التخصص : رياضيات	عدد الوحدات الدراسية: ٢ ساعة معتمدة نظرى ٢: تمارين: ١ عملى: ٠	

٢- هدف المقرر :	
For students undertaking this course, the aims are to: - Give a further development of the concepts introduced in the course introduction to topology, emphasizing topics coming from algebraic topology. - Introduce the student to the basic concepts of homotopy and homology theory, and explain the need for different algebraic invariants of topological spaces.	
٣- المستهدف من تدريس المقرر	
أ- المعلومات و المفاهيم :	**a- Knowledge and Understanding :** **On completing this course, students will be able to:** a1 - Understanding of the concepts of homotopy and homology of mappings a2 - Be aware by the types of constructing groups for topological spaces a3 - Apply these invariants on specific surfaces
ب- المهارات الذهنية :	**b- Intellectual Skills:** **On completing this course, students will be able to:** b1- See how algebra and topology interact in the field of algebraic topology b2- Calculate the homotopy and homology group of natural occurring topological spaces b3- Understand the structural differences between homology and homotopy
ج- المهارات المهنية الخاصة بالمقرر :	**c-Professional and Practical Skills:** **On completing this course, students will be able to:** c1 - Solve problems associated with this course. c2 - Improve ability Classification of Spaces
د- المهارات العامة :	**d-General and Transferable Skills:**

On completing this course, students will be able to: d1- Encourage the students to express them selves in the class and to present their views d2- Work effectively in a group and independently d3- To improve ability to communicate mathematics, both orally and in writing	
– Connectedness – Definition using open sets and integer-valued functions – examples - continuous image of a connected space. Path-connectedness - path-connected spaces connected spaces - connected open sets in Euclidean . – Homotopy of continuous mappings - paths and homotopy - the fundamental group - the fundamental group of a product space - examples - Van Kampen's theorem . – Surfaces: Classification and orientation theory . – Homology: basic definitions and examples - chain complexes and their homology - simplicial homology of simplicial polyhedras - maps of complexes - singular homology.	**٤- محتوى المقرر :**
1- Direct lecturing . 2- Tutorials 3- Quiz sheets	**٥- أســـاليـــب التعليـــم و التعلـم :**
The same as normal students, only skeletal disabilities are allowed in the Faculty of Science.	**٦- أساليب التعليم و التعلم للطـــلاب ذوى القـــدرات المحـــدودة:**
٧- تقويـــــم الطـــلاب :	
1- Oral Exam. to assess a1-a3,b1-b3,d1-d3 2- Final Exam to assess a1-a3,b1-b3,c1-c2 3- Mid-Term Exam to assess a1-a3,b1-b3,c1-c2	**أ- الأساليب المستخدمة**
1- Oral Eexam week 16 2- Final Exam week 16 3- Mid-Term Exam week 7	**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 :	

أ- المذكرات	- Lecture Notes
ب- الكتب ملزمة	
ج- كتب مقترحة	1] *Functional Analysis*, W. Rudin, McGraw--Hill (1973). This book is thorough, sophisticated and demanding. [2] *Functional Analysis*, F. Riesz and B. Sz.-Nagy, Dover (1990). This is a classic text, also much more sophisticated than the course. [3]* Functional Analysis in Modern Applied Mathematics, R.F. Curtain and A.J. Pritchard, Academic Press (1977). This book is closest to the course. [4] A.L.Brown &A.Page"Elements of Functional Analysis", London, 1970.
د- دوريـــــــــات علميـــة أو نشرات	http://www.mth.uea.ac.uk/~h720/teaching/functionalanalysis/materials/FAnotes.pdf http://www.math.nyu.edu/phd_students/vilensky/Functional_Analysis.pdf

(أ) مصفوفة المعارف والمهارات المستهدفة من المقرر الدراسى

المحتويات للمقرر	اسبوع الدراسة	المعارف الرئيسية	مهارات ذهنية	مهارات مهنية	مهارات عامة
Connectedness	1	a1,a2,a3	b1,b2,b3	c1,c2	d1,d2,d3
Definition using open sets and integer-valued functions – examples - continuous image of a connected space. Path-connectedness - path-connected spaces connected spaces - connected open sets in Euclidean .	2-4	a1,a2,a3	b1,b2,b3	c1,c2	d1,d2,d3
Homotopy of continuous mappings - paths and homotopy - the fundamental group - the fundamental group of a product space - examples - Van Kampen's theorem .	5-7	a1,a2,a3	b1,b2,b3	c1,c2	d1,d2,d3
Surfaces: Classification and orientation theory .	8-10	a1,a2,a3	b1,b2,b3	c1,c2	d1,d2,d3
Homology: basic definitions and examples - chain complexes and their homology - simplicial homology of simplicial polyhedras - maps of complexes - singular homology.	11-13	a1,a2,a3	b1,b2,b3	c1,c2	d1,d2,d3

أستاذ المادة : ا.د/ محمد السيد الشافعى

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