COURSE DESCRIPTIONS

Faculty	**Science and Information Technology**				
Department	**Mathematics**			**NQF level**	**6**
Course Title	**General Topology**	**Code**	**505704**	**Prerequisite**	**-**
Credit Hours	**3**	**Theory**	**3**	**Practical**	-
Course Leader	**Dr Tariq Qawasmeh**	**email**	**ta.qawasmeh@jadara.edu.jo**		
Lecturers	**Dr Tariq Qawasmeh**	**emails**	**ta.qawasmeh@jadara.edu.jo**		
Lecture time	**Sat 12:00-15:00**	**Classroom**	**D106**		
Semester	**First Semester 2021\2022**	**Production**	**2020**	**Updated**	**2021**
Awards	**-**			**Attendance**	Fulltime

Short Description

Methods of generate Topological Spaces, new Topological Spaces and their Topological Properties, Jones Lemma and Urysohn's Lemma, Covering Spaces such as Compact, Lindeloff space, Countably Compact and Sequentially Compact Spaces, One point compactification, Metric spaces and Connected Spaces.

Course Objectives

- To Know Some Topological Properties for new Topological Spaces such as Niemytzki plane, Sorgenfrey line Space and Irrational Slope Topology.
- Understand the concept of functional Hausdroff and completely Hausdroff spaces.
- Studying Jones lemma and know how to prove that the Topological Space is not Normal Space.
- To know the way to convert non compact sets to compact sets (Compactification).
- Understand the concept of Metric Spaces and Lebesgue Covering Lemma.
- Understand the concept of Connected spaces and Clopen sets.

Learning Outcomes

A. Knowledge - Theoretical Understanding

a1) Understand fundamentals and basic properties for different Topologies
a2) Understand Topological Properties for different topological Spaces

B. Knowledge - Practical Application

a3) Should be able to use the basic tools of Topology.

C. Skills - Generic Problem Solving and Analytical Skills
b1) Ability to analyze the Topological Properties and theorems and connected them to reach to suitable solution. b2) Learn how to prove several facts concerning theories and lemmas.
D. Skills - Communication, ICT, and Numeracy
E. Competence: Autonomy, Responsibility, and Context
c1) use the theory, methods and techniques of the course to solve Topological problems. (S1)
Teaching and Learning Methods
Lecture in the class room
Assessment Methods
• Discussion and Interaction • Midterm exam, Final exam, Class Assignment Quizzes,

Course Contents					
Week	**Hours**	**CLOs**	**Topics**	**Teaching & Learning Methods**	**Assessment Methods**
1.	**3**	**a1, a2, a3**	Topological Spaces, Neighborhood, Limit points, Derive sets, **G_δ set, F_σ set**, Dense set.	Lecturing, Discussion	Discussion and Interaction
2.	**3**	**a1, a3, b1**	Product spaces, Interior, Exterior point in Product spaces, Continuous functions, open and closed functions.	Lecturing, examples, Discussion	Discussion and Interaction
3.	**3**	**a1, b2, c1**	Bases and Sub-bases, Axiom of Countability	Lecturing, Discussion	Discussion and Interaction
4.	**3**	**a1, b2, c1**	Separation Axioms, T_0, T_1, Hausdroff spaces, Regular spaces, Normal spaces.	Lecturing, Discussion	Discussion and Interaction
5.	**3**	**a1, a3, c1**	Functional Hausdroff spaces, Completely Hausdroff spaces, Irrational Slope Topology	Lecturing, Discussion	Discussion and Interaction
6.	**3**	**a1, b2, c1**	Methods of generating Topology, Niemytzki plane, Sorgenfrey line Space, Sorgenfrey line plane.	Lecturing, Discussion	Discussion and Interaction
7.	**3**	**a1, a3, c1**	Covering Spaces, Compact space, Lindeloff space, Countably Compact and Sequentially Compact Spaces.	Lecturing, examples, Discussion	Discussion and Interaction
8.	**3**	**a1, b1,**	Covering Spaces, Compact space, Lindeloff space, Countably Compact	Lecturing, examples,	Discussion and

		c1	and Sequentially Compact Spaces.	Discussion	Interaction
9.	**3**	**a1, b2, c1**	Normal Spaces, Jones Lemma, Urysohn's Lemma.	Lecturing, Discussion	Discussion and Interaction
10.	**3**	**a1, b2, c1**	Normal Spaces, Jones Lemma, Urysohn's Lemma.	Lecturing, examples, Discussion	Discussion and Interaction
11.	**3**	**a1, b2, c1**	One Point Compactification.	Lecturing, Discussion	Discussion and Interaction
12.	**3**	**a1, b1, c1**	Metric spaces, Lebesgue Covering Lemma.	Lecturing, Discussion	Discussion and Interaction
13.	**3**	**a1, b1, c1**	Metric spaces, Lebesgue Covering Lemma.	Lecturing, Discussion	Discussion and Interaction
14.	**3**	**a1, b1, c1**	Connected Spaces.	Lecturing, examples, Discussion	Discussion and Interaction
15.	**3**	**a1, b1, c1**	Connected Spaces.	Lecturing, examples, Discussion	Discussion and Interaction
Final Exam					

Infrastructure	
Textbook	General Topology by Ryszard Engelking, Revised and completed edition.
References	- General Topology by Stephen willard. - Counter Examples in Topology by Lynn Steen and J. Arthur Seebach,Jr. -An introduction to General topology byPaul E. Long
Required reading	
Electronic materials	Any Internet Resources.
Other	Any Manuscript, Chapters, Book related with Topology and Topological spaces.

Course Assessment Plan								
Assessment Method		**Grade**	**CLOs**					
			a1	**a2**	**a3**	**b1**	**b2**	**c1**
First (Midterm)		30%	10%	5%		5%	5%	5%
Second (if applicable)								
Final Exam		40%	8 %	8%	14%	5%		5%
Coursework		30%						
Coursework assessment methods	Assignments						5%	5%
	Case study							
	Discussion and interaction							
	Group work activities							
	Lab tests and assignments							
	Presentations			5%		5%		
	Quizzes		5%		5%			
Total		**100**	**23**	**18**	**19**	**15**	**10**	**15**

Plagiarism
Plagiarism is claiming that someone else's work is your own. The department has a strict policy regarding plagiarism and, if plagiarism is indeed discovered, this policy will be applied. Note that punishments apply also to anyone assisting another to commit plagiarism (for example by knowingly allowing someone to copy your code). Plagiarism is different from group work in which a number of individuals share ideas on how to carry out the coursework. You are strongly encouraged to work in small groups, and you will certainly not be penalized for doing so. This means that you may work together on the program. What is important is that you have a full understanding of all aspects of the completed program. In order to allow proper assessment that this is indeed the case, you must adhere strictly to the course work requirements as outlined above and detailed in the coursework problem description. These requirements are in place to encourage individual understanding, facilitate individual assessment, and deter plagiarism.

منسق المادة
د. طارق قواسمة

رئيس قسم الرياضيات
د. أيمن هزايمـــــــــــــــــــــــه