



Course Specifications

Course Title:	General topology
Course Code:	473 math-3
Program:	Bachelor in Mathematics
Department:	Mathematics
College:	Faculty of science and Arts
Institution:	Najran University

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A. Course Identification

1. Credit hours:3
2. Course type
a. University <input type="checkbox"/> College <input type="checkbox"/> Department <input checked="" type="checkbox"/> Others <input type="checkbox"/>
b. Required <input checked="" type="checkbox"/> Elective <input type="checkbox"/>
3. Level/year at which this course is offered: Level seven / Third year
4. Pre-requisites for this course (if any): Real analysis 1
5. Co-requisites for this course : None

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	3	100%
2	Blended	---	---
3	E-learning	---	---
4	Correspondence	---	---
5	Other	---	---

7. Actual Learning Hours (based on academic semester)

No	Activity	Learning Hours
Contact Hours		
1	Lecture	45
2	Laboratory/Studio	---
3	Tutorial	---
4	Others	3
	Total	48
Other Learning Hours*		
1	Study	30
2	Assignments	10
3	Library	---
4	Projects/Research Essays/Theses	---
5	Office hours	15
	Total	103

* The length of time that a learner takes to complete learning activities that lead to achievement of course learning outcomes, such as study time, homework assignments, projects, preparing presentations, library times

B. Course Objectives and Learning Outcomes**1. Course Description**

This course will provide an introduction to general topology. The course will begin with a brief review of basic set theory. Topics covered include topological spaces, Base, Sub base, topological properties (Continuity, connectedness, compactness, separation axioms) and their application to problems, some of the major theorems in general topology.

2. Course Main Objective:

This course aims at providing students with the basic concepts of topology and the continuous function, open(resp. closed) functions in topological spaces, separation axioms, connectedness, compactness.

3. Course Learning Outcomes

CLOs		Aligned PLOs
1	Knowledge:	
1.1	Define Topological space, T_1 - space, T_2 - space, T_3 - space, T_4 - space, metric space, and the relationship between them.	
1.2	Recognize the students on the poofs of the theorems, the types of the topological spaces, separation axioms and continuous and open function.	
2	Skills :	
2.1	Apply appropriate mathematical in solving problems in topological spaces	
2.2	Solve problems on separation axioms (T_0 , T_1 , T_2 , T_3 , and T_4 spaces), regular spaces, normal spaces, neighborhoods, continuous functions, compactness and connectedness.	
3	Competence:	
3.1	Work effectively within groups and independently	
3.2		

C. Course Content

No	List of Topics	Contact Hours
1	Topological spaces (Concept of topology- Metric Topologies -open and closed sets-Neighborhood and neighborhood systems- Base and sub base for a topology.	9
2	Fundamental sets and fundamental points (limit points –derived set-closure of sets- interior point –exterior points-boundary point fundamental theorems for them.)	6
3	Coarser and finer topologies. Subspaces, relative topologies. Continuous functions –open function –closed functions-homeomorphisms (.hereditary and topological properties	9
4	Connectedness (connected spaces- continuity and Connectedness – locally connectedness)	6

5	Compactness (compact sets- compact spaces-finite intersection property-continuity and compactness)	9
6	Separation axioms (T_i - spaces, $i = 1, 2, 3, 4$) with topological property.	6
Total		45

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	Knowledge		
1.1	Define Topological space, T_1 - space, T_2 - space, T_3 - space, T_4 - space, metric space, and the relationship between them.	<ul style="list-style-type: none"> lectures discussions 	<ul style="list-style-type: none"> Quizzes assignments
1.2	Recognize the students on the proofs of the theorems, the types of the topological spaces, separation axioms continuous function and open function	<ul style="list-style-type: none"> lectures discussions 	<ul style="list-style-type: none"> Written Exam Quizzes. assignments
2.0	Skills		
2.1	Solving problems in topological spaces, limit point, neighborhood and normal space, regular space.	<ul style="list-style-type: none"> Lectures discussions 	<ul style="list-style-type: none"> Quizzes. Assignments Exercises Exams Written Exam
2.3	Demonstrate performance of different separation axioms (T_0 , T_1 , T_2 , T_3 , and T_4 spaces), regular spaces and normal spaces and the relation between them.	<ul style="list-style-type: none"> lectures discussions 	<ul style="list-style-type: none"> Homework. Exercises Written Exam
3.0	Competence		
3.1	Work effectively within groups and independently	<ul style="list-style-type: none"> Lecture Discussions. 	<ul style="list-style-type: none"> Design projects. Oral Exam Written Exam
3.2		<ul style="list-style-type: none"> Lecture Discussions. 	<ul style="list-style-type: none"> Oral Exam Quizzes. Written Exam

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
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#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Exercises, Homework & Assignments	Open	10%
2	Oral Exam and Rubrics	14 th Week	5%
3	Quizzes	Open	5%
4	Written Test(1)	7 th Week	15%
5	Written Test(2)	13 th Week	15%
6	Final Exam	End of Semester	50%

*Assessment task (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice :

- Introducing the course syllabus, grading scale and the distribution of marks for the course in the first lecture of the course.
- Arrangements for availability of teaching staff for individual student consultations and academic advice (include amount of time teaching staff are expected to be available each week).
- Office hours for a teaching staff for one hour weekly.

F. Learning Resources and Facilities

1. Learning Resources

Required Textbooks	مقدمة في التوبولوجي العام د. احمد محمد ظهران مكتبة الخيتي الثقافية ١٤٢٠هـ
Essential References Materials	<ul style="list-style-type: none"> • Sideny A. Morris Topology without tears Version of March 31, 2014² • Kelly, J. L., General Topology, D. Van Nostrand Co., Inc., Princeton, N.J. 1955.
Electronic Materials	<ul style="list-style-type: none"> • Topology atlas • http://at.yorku.ca/topology/ • www.topologywithouttears.net
Other Learning Materials	<ul style="list-style-type: none"> • -----

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Lecture halls, containing white boards, and electronic monitors, and 25 seat approximately.
Technology Resources (AV, data show, Smart Board, software,	<ul style="list-style-type: none"> • Laptop

Item	Resources
etc.)	<ul style="list-style-type: none"> • smart board • Projector. • Wi Fi
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	None

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching and assessment	Peer reviewer	Rubrics (indirect)
Student course evaluation survey at the end of semester.	Students	Questionnaire (Indirect)
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Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)

Evaluators (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)

Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Council / Committee	Mathematics
Reference No.	*****
Date	*****