Course Specification
— (Bachelor)

Course Title: **General topology**	
Course Code: **2024101-3**	
Program: Bachelor in Mathematics	
Department: Mathematics and Statistics Department	
College: **Faculty of Sciences**	
Institution: **Taif University**	
Version: **1**	
Last Revision Date: **20/05/2023**	

Table of Contents

A. General information about the course:

1. Course Identification

1. Credit hours: 3

2. Course type

A.	☐University	☐College	☒ Department	☐ Track	☐Others
B.	☒ Required			☐Elective	

3. Level/year at which this course is offered: Level 7 / fourth Year

4. Course general Description:

This course reinforces and extends the concepts and techniques of in Set theory, and introduces the concept of Topological spaces, Base, Subbase, Continuity, Separation axiom, Compactness, Connectedness and their application to problems. Topology is the study of extension Geometry. In this course we will explore the link between form and other sciences. My approach will be primarily at the whole concepts previous, and although a background in sets theory, it is not absolutely crucial for success in this course. It's more important that the students are curious and willing to learn. The students will be exposed to current research in topology through lecture, by reading scientific articles and by writing a short research report on a topic of the student choice that is as broadly or narrowly related to topology.

5. Pre-requirements for this course (if any):

Set theory (2022106-3)

6. Co-requirements for this course (if any):

None

7. Course Main Objective(s):

The student will be taught as follows:
- Recognizing the basic concepts of topology.
- Explaining Cartesian product topology, Base and sub base and Matric space.
- Describe continuity, open maps, closed maps and Homeomorphism.
- Outline Separation axioms, Regular spaces and Normal spaces.
- Describe Compactness and Connectedness and Components.

2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	3Hr/week	100%
2	E-learning		
3	Hybrid • Traditional classroom • E-learning		
4	Distance learning		

3. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	**Lectures**	45
2.	**Laboratory/Studio**	NA
3.	**Field**	NA
4.	**Tutorial**	NA
5.	**Others (specify)**	NA
Total		**45**

B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
1.0	**Knowledge and understanding**			
1.1	Recognize topological space.	K1	• Lectures • Group discussions `	• Quizzes • Assignments
1.2	Describe continuity, open maps, closed maps and Homeomorphism.	K1	• Lectures • Group discussions	• Exams • Assignments
1.3	Outline Separation axioms, Regular spaces and Normal spaces.	K1	• Lectures • Group discussions	• Quizzes • Assignments
2.0	**Skills**			
2.1	Apply the different Separation axioms.	S1	• Interactive classes • Group discussions	• Quizzes • Assignments
2.2	Measure the topology induced by Metric space.	S1	• Lectures • Group discussions	• Exams • Quizzes

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
3.0	**Values, autonomy, and responsibility**			
3.1	Articulate ethical behavior associated with institutional Guidelines in classroom	V3	• Lectures • Group discussions	• Exams • Quizzes

C. Course Content

No	List of Topics	Contact Hours
1.	Introduction about topology and topological definitions	3
2.	Topological spaces (Open set, Limit points, Closed set and Closure)	3
3.	Topological spaces (Closure)	3
4.	Topological spaces (Interior, Exterior and Boundary)	3
5.	Base, Sub base and Cartesian product topology	3
6.	Continuity	3
7.	**First Midterm exam**	3
8.	Open maps and Closed maps and Homeomorphisms	3
9.	Separation axioms- 1	3
10.	Separation axioms- II	3
11.	Metric spaces	3
12	Connectedness and Components	3
13.	**Second Midterm exam**	3
14.	Compactness-1	3
15	Compactness-II	3
Total		45

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Quizzes	Continuous Evaluation	10 %
2.	Assignments, report	Continuous Evaluation	10 %
3.	Midterm 1 Exam	8-9	15%
4.	Midterm 2 Exam	12-13	15%
5.	Final Exam	15-16	50%

*Assessment Activities (i.e., Written test, oral test, oral presentation, group project, essay, etc.).

E. Learning Resources and Facilities

1. References and Learning Resources

Essential References	Fundamentals of General Topology: Problems and Exercises by A. Alam, 2005, Publisher: DAR ALZAMAN LIBRARY, SAUDI ARABIA (Arabic Language), 2005. ISBN: 2058
Supportive References	J. R. Munkres, Topology, second edition, Pearson, Mar 10, 2017. ISBN-13: 978-0131816299, ISBN-10: 0131816292
Electronic Materials	Sidney A. Morris, Book: topology without tears, Version of June 2, 2020, www.topologywithouttears.net
Other Learning Materials	

2. Required Facilities and equipment

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	Classrooms
Technology equipment (Projector, smart board, software)	Data show, Blackboard
Other equipment (Depending on the nature of the specialty)	None

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Students, Program Leader	Direct & Indirect
Effectiveness of students assessment	Faculty, Program Leader	Direct
Quality of learning resources	Students, Faculty	Indirect
The extent to which CLOs have been achieved	Faculty	Direct & Indirect
Other		

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

Assessment Methods (Direct, Indirect)

G. Specification Approval

COUNCIL /COMMITTEE	Department Council

REFERENCE NO.	4
DATE	October 2023