QF01/0408-4.0E	Course Plan for Bachelor program - Study Plan Development and Updating Procedures/ Mathematics Department

Study plan No.	**2022/2021**		**University Specialization**	**Bachelor of Mathematics**	
Course No.	**0101432**		**Course name**	**Topology**	
Credit Hours	**3**		**Prerequisite/ Co-requisite**	**Real Analysis (1)**	
Course type	☐ MANDATORY UNIVERSITY REQUIREMENT	☐ UNIVERSITY ELECTIVE REQUIREMENTS	☐ FACULTY MANDATORY REQUIREMENT	☐ Support course family requirements	✓ **Mandatory requirements**	☐ Elective requirements
Teaching style	☐ Full online learning		✓ **Blended learning**		☐ Traditional learning	
Teaching model	☐ 1 Synchronous: 1 asynchronous		✓ **1 face to face : 1 asynchronous**		☐ 2 Traditional	

Faculty member and study divisions' information (to be filled in each semester by the subject instructor)

Name	Academic rank	Office No.	Phone No.	E-mail	
Division number	**Time**	**Place**	**Number of students**	**Teaching style**	**Approved model**
				Lecture	

Brief description

Topological spaces, Open and closed sets, Interior points, Boundary points, Limit points, Closure sets, Subspace topology, Bases and subbases, Continuous functions, Homeomorphisms, Hausdroff space, Separation axioms, Connected space, Compact spaces, Metric spaces, The metrizability.

Learning resources

Course book information (Title, author, date of issue, publisher ... etc)	An introduction to General Topology. By: Paul E. Wong			
Supportive learning resources (Books, databases, periodicals, software, applications, others)	1) Topology. By: James Munkers 2) Topology. By: Zeeman 3) Topology. By: Zeeman 4) Topology By: J Dugundji			
Supporting websites	• http://www.fsc.uaeu.ac.ae/math/topologyCenter.htm • http://ecaculus.org http://library.atgti.az/			
The physical environment for teaching	✓ Class room	☐ labs	✓ Virtual educational platform	☐ Others
Necessary equipment and software	**N/A**			
Supporting people with				

special needs	
For technical support	

Course learning outcomes (S= Skills, C= Competences K= Knowledge,)

No.	Course learning outcomes	The associated program learning output code
	Knowledge	
K1	Recognize the definition of topological spaces, subspace and product space and test the main examples of topological space,	MK2
K2	Describe the interior , closure, exterior, boundary and dense	MK2
K3	Utilize base and subbase	MK2
K4	Discuss separation axiom, continuity and homeomorphism	MK4
K5	Recognize connectedness and compactness	MK4
	Skills	
S1	Exercising mathematical logic in topology.	MS1
S2	Using scientific methodology as a way of thinking and as a tool in facing topological problems.	MS2
	Competences	
C1	Applying mathematics thinking skills in topology.	MC2
C2	Developing scientific methodology for topological pursuing graduate studies.	MC3

Mechanisms for direct evaluation of learning outcomes

Type of assessment / learning style	Fully electronic learning	Blended learning	Traditional Learning (Theory Learning)	Traditional Learning (Practical Learning)
Midterm exam	30%	**30%**	40%	30%
Participation / practical applications	0	**0**	10%	30%
Asynchronous interactive activities	30%	**20%**	0	0
Final exam	40%	**50%**	50%	40%

Schedule of simultaneous / face-to-face encounters and their topics

Week	Subject	learning style	Reference
1	Topology and topological spaces Examples of topological spaces, the left ray topology, the co-finite topology and, discrete and indiscrete topologies	Lecture	61 – 68
2	The usual topological space and lower limit topology.	Lecture	69 - 72
3	The definition of open sets and closed sets with their properties and redefine the topological space by means of open sets and closed sets	Lecture	80 – 82
4	The definition of interior points and closure of subset. And prove some important properties.	learning through problem solving	82 – 84
5	The definition of a limit point of a subset A and prove some important properties. The definition of the exterior of a subset A. And prove some important properties.	Lecture	84 – 87
6	The definition of a dense and prove some important properties.	Lecture	87 – 90

7	Bases and subbases, definitions, examples proving theorems involving these notions.	Lecture	92 – 96
8	The subspace of a topology, the product topology and relative topological space. **Mid Exam**	Lecture	78 – 80 136 – 142
9	The separation axioms and examples and theorems	Lecture	142 – 144
10	Continuous functions and homeomorphisms with the def. of a topological property.	Lecture	113 – 120
11	Connected spaces .Connectedness is a topological property.	Lecture	191 – 198
12	Compact spaces.	Lecture	210 – 216
13	The Heine –Boral theorem. Proving that compact subset of T2 space is closed and closed subset of compact is compact.	Lecture	220 – 224
14	Metric spaces.	learning through projects	243 – 250
15	The metrizability	Lecture	236 – 243
16	**Final Exam**		

Schedule of asynchronous interactive activities (in the case of e-learning and blended learning)

Week	Task / activity	Reference	Expected results
1	Assignments 1	Text Book	Submitting pdf document on the virtual educational platform
2	Work sheet 1	Ref.2	Submitting pdf document on the virtual educational platform
3	Assignments 2	Ref.2	Submitting pdf document on the virtual educational platform
4	Assignments 3	Lecture note	Submitting pdf document on the virtual educational platform
5	Assignments 4	Virtual educational platform	Discussion in the class
6	Assignments 5	Internet sources	Submitting pdf document on the virtual educational platform
7	Video 1	Virtual educational platform	Discussion in the class
8	Work sheet 2	Text Book	Submitting pdf document on the virtual educational platform
9	Assignments 6	Text Book	Submitting pdf document on the virtual educational platform
10	Assignments 7	Virtual educational platform	Submitting pdf document on the virtual educational platform
11	Assignments 8	Lecture note	Submitting pdf document on the virtual educational platform
12	Quiz 1	Virtual educational platform	Discussion in the class
13	Assignments 9	Lecture note	Submitting pdf document on the virtual educational platform
14	Video 2	Virtual educational platform	Discussion in the class
15	Assignments 9	Ref.2	Submitting pdf document on the virtual educational platform
16	**Final Exam**		