

Content

Course Code	Course Name	Semester	Theory	Practice	Lab	Credit	ECTS
MAT301	Topology	5	4	0	0	4	8

Prerequisites	
Admission Requirements	

Language of Instruction	French
Course Type	Compulsory
Course Level	Bachelor Degree
Objective	Master elementary topology via the study of the topology of metric spaces.
Content	Metric spaces (main inequalities, distances, equivalent distances, examples of metric sapces, normed vector spaces and convexity, distance between two sets and diametre, open and closed balls, neighborhood, open and closed sets, closure and interior, dense subsets). Topology (topological spaces, induced topology). Sequences in metric spaces (convergence, convergence in a product of metric spaces, limit point, charactersation of closed sets with sequences, Cauchy sequences, complete spaces). Continuous maps between metric spaces (sequential and topological characterisation of continuity, uniform continuity, lipshizt maps). Compacitness. Connectednes.
References	Léa Blanc-Centi - Cours de Topologie http://math.univ-lille1.fr/~blanccen/Enseignement/td/1314/L3/Topologie_Cours.pdf

Theory Topics

Week	Weekly Contents
1	Metric spaces: Definitions
2	Metric spaces: Properties of the distance, ball
3	Metric spaces: Distance between two subsets, diameter
4	Metric spaces: Norms, Normed vector spaces
5	Topological spaces: Definitions, open closed subsets
6	Topological spaces: Topology of the metric spaces
7	Exam
8	Sequences in metric spaces
9	Topological spaces: Closure, interior and boundary
10	Continuous functions: Continuity on a point, global continuity
11	Continuous functions: Homeomorphisms
12	Compactness
13	Compactness
14	Connexity