

<b>Department</b> Department of Mathematics			<b>Academic Year</b> 2022-2023	<b>Date</b> 01 / 12 / 2022	
<b>Course Unit Code</b> MATH2108	<b>Course Unit Title</b> Metric Space Topology		<b>Semester/Year</b> Spring / 2	<b>Number of ECTS Credits</b> 5	
<b>Language of Instruction</b>	Turkish				
<b>Type of Course Unit</b>	Elective				
<b>Prerequisites and co-requisites</b>	-				
<b>Address of course</b>	-				
<b>Local Credit</b>	<b>Theoretical</b>	<b>Practical</b>	<b>Laboratory</b>	<b>Presentation</b>	<b>Project</b>
4	4	0	-	-	-
<b>Name of Lecturers</b>	Professor Yavuz ALTIN				
<b>Assistants</b>	-				

<b>Course content</b>	Metric, Metric value calculations, Open and closed rounds in metric space, Limited and unlimited sets in metric space, Normed vector spaces, Norm value calculations, Open and closed rounds in normed space, Limited and unlimited sets in normed space, Convergent series Coordinate convergence, point and regular Convergence, Convergence of Function series and Uniform convergence, Equivalent metrics, Cauchy sequences, Completeness, Isometry, Complement, Lp spaces, Open sets, Interior of a set, accumulation points.
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<b>Weekly Detailed Course Contents</b>	
<b>Week</b>	<b>Topic</b>
1	Metric definition, Metric value calculations
2	Open and closed ball in metric space
3	Bounded and unlimited sets in metric space
4	Normed vector spaces, Norm value calculations
5	Open and closed ball in normed space, Limited and unlimited sets in normed space
6	Convergent sequences Coordinate convergence, point and uniform convergence
7	Uniform convergence with convergence of series of functions
8	Equivalent metrics, Cauchy sequences, Completeness, Isometry, Complementary, Lp spaces
9	General application
10	Open sets, Inside a set, clutter points
11	Closed sets, closing and closing points are the boundary of a set
12	Open and closed properties in subspaces, Separability, Metric topology
13	Countability Axioms, Baire category Theorem
14	A brief evaluation of the course content and topics

<b>Course Resources</b>	Soykan,Y. Metrik uzaylar ve Topolojisi, Nobel yayınları, Ankara, 2012 2. Jain, P.K. and Ahmad, K. Metric Spaces ,Narosa Publishing House, 1993
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<b>Assessment Methods and Criteria</b>	<b>In-Term studies</b>	<b>Quantity</b>	<b>Percentage (%)</b>
	<b>Mid-Term Exams</b>	1	40
	<b>Quizzes</b>	-	-
	<b>Assignments</b>	-	-
	<b>Projects</b>	-	-
	<b>Term assignment</b>	-	-
	<b>Laboratory</b>	-	-
	<b>Other</b>	-	-
	<b>Final exam</b>	1	60

<b>Methods and Criteria</b>	Success grade of a course; determined using a relative assessment system or the discretion of the instructor. In order to be evaluated in the courses where the relative evaluation system and the discretion of the instructor are applied, the student's final exam grade must be at least YSAS. Students who fall below this score are considered unsuccessful. For the courses that cannot be evaluated with the relative evaluation system, the letter grades corresponding to the success grades are determined by the discretion of the instructor from the table created by the Senate over 100 points by using the distribution of the raw success grades at the end of the semester. A student who has taken one of the AA, BA, BB, CB or CC grades from a course is deemed to have succeeded in that course. A student who has received either DC or DD grades from a course is deemed to have conditionally passed that course. A student who receives DD and DC letter grades must have a GPA of at least 2.00 in order to be considered successful in this course. A student who receives an FF grade in a course is deemed to have failed that course.
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<b>Percentage of Course Category (%)</b>	<b>Mathematics and Basic Sciences</b>	100
	<b>Computer Sciences</b>	0
	<b>Programming Design</b>	0
	<b>Social Sciences</b>	0

<b>Course Outcome</b>	Learns the concept of metric space and its properties, learns normed spaces and their properties, understands open and closed rounds, learns point convergence and uniform convergence, learns $L_p$ spaces.
<b>Aims of the course</b>	<ol style="list-style-type: none"> <li>1. Giving students the necessary basic information about the Metric Space Topology course</li> <li>2. To provide students with technical knowledge that can produce the most appropriate solution for the problems that concern the Metric Space Topology course and require solutions.</li> </ol>
<b>The way of processing course</b>	Face to face

<b>Relation of the course with program outcomes</b>				
Learning outcomes		1	2	3
<b>1</b>	To have advanced theoretical and applied knowledge in a way to prioritize the scientific approach supported by textbooks containing up-to-date information in the field, application tools and other resources			
<b>2</b>	Adapting and transferring the knowledge gained in the field to secondary education			
<b>3</b>	Ability to independently carry out an advanced study in the field			
<b>4</b>	Be aware of the necessity of lifelong learning and continuously improve their professional knowledge and skills.			
<b>5</b>	Using a foreign language at least at the European Language Portfolio B1 General Level, following the information in the field and being able to communicate with colleagues			
<b>6</b>	To be able to use information and communication technologies together with computer software at minimum advanced level of European computer license required by the field.			
<b>7</b>	Have the ability to make oral and written presentation in native language			
<b>8</b>	Having the ability to understand spoken English and use English at reading level			
<b>9</b>	To have the ability to assimilate mathematical concepts and understand the relationships between them, to recognize different aspects of the same concepts and relationships		X	
<b>10</b>	To have the ability to define and formulate the relationships between items in non-mathematical disciplines in the language of mathematics.			X
<b>11</b>	To have the ability to use mathematical knowledge in different problems			X
<b>12</b>	Having the ability to develop computer programs using mathematical knowledge			
<b>Contribution of the course: 1:No 2:Partially 3:Completely</b>				

**Preparer:** Prof. Dr. Yavuz ALTIN  
**Preparation date:** 01 / 12 / 2022