**Code and Name:**

**MAT5620 General Topology**

**Unit:**

Institute of Science, Department of Mathematics

**Details:**

* **Term:** 2023-2024 Spring
* **Status:** Elective
* **Class Level:** 1
* **Credit Hours:** 3-0-0-3
* **ECTS:** 6
* **Language:** Turkish

**Course Instructors:**

* **Course Coordinator:** ...
* **Assistant Instructor:** ...
	+ **Phone:** ...
	+ **Email:** ...@firat.edu.tr
	+ **Social Accounts:** ...

**Weekly Schedule**

| **Monday** | **Tuesday** | **Wednesday** | **Thursday** | **Friday** | **Saturday** |
| --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |

**Teaching Method:**
Each weekly hour will include at least 45 minutes of face-to-face teaching.

**Location:**

* **In-person (YY):** Classroom (To be announced)
* **Remote (UE):** -

**Objective:**

To establish the necessary foundational knowledge in topology.

**Materials:**

1. M.C. Gemignani, *Elementary Topology*, 2nd ed., Dover, 1990
2. J.R. Munkres, *Topology*, 2nd ed., Prentice Hall, 2000
3. C.W. Patty, *Foundations of Topology*, 2nd ed., Jones & Bartlett Publishers, 2008
4. L.A. Steen & J.A. Seebach, *Counterexamples in Topology*, Dover, 1995
5. M.C. Gemignani, *Elementary Topology*

**Student Responsibilities:**

Students are required to attend at least 70% of the classes.

**Weekly Lesson Plan:**

| **Week** | **Topic** | **Methodology** |
| --- | --- | --- |
| 1 | Introduction to the course and key concepts | Face-to-Face |
| 2 | **Metric Spaces**: Definitions, open and closed sets | Face-to-Face |
| 3 | Boundary points and neighborhoods of a set | Face-to-Face |
| 4 | Convergence and continuity in metric spaces | Face-to-Face |
| 5 | **Topological Spaces**: Definitions, open sets, interior points, isolated points, and limit points | Face-to-Face |
| 6 | Exterior and boundary points, closed sets, closure | Face-to-Face |
| 7 | Isolated and limit points, bases, subbases, open neighborhoods | Face-to-Face |
| 8 | Fine and coarse topologies, continuous functions, homeomorphisms | Face-to-Face |
| 9 | **Midterm Exam** | Face-to-Face |
| 10 | Subspace topology, metric topology, and equivalent metrics | Face-to-Face |
| 11 | Connected spaces, local connectedness, and path connectedness | Face-to-Face |
| 12 | Compactness, compact spaces, countability and separation axioms | Face-to-Face |
| 13 | T0, T1, and T2 spaces, regular and normal spaces | Face-to-Face |
| 14 | Urysohn's lemma, Tietze extension theorem | Face-to-Face |

**Assessment and Evaluation:**

| **Method** | **Quantity** | **Weight** |
| --- | --- | --- |
| **Midterm Exam** | 1 | 50% |
| **Quizzes** | None | - |
| **Assignments** | Pre- and post-midterm activities | - |
| **Projects** | None | - |
| **Final Exam** | 1 | 50% |

**Learning Outcomes:**

1. Understand metric spaces, open and closed sets, boundary points, and neighborhoods.
2. Learn convergence and continuity in metric spaces, and concepts of topological spaces.
3. Grasp the concepts of exterior, boundary, isolated, and limit points.
4. Learn fine and coarse topologies, continuous functions, and homeomorphisms.
5. Understand compact spaces, T-spaces, regular and normal spaces, and Urysohn's lemma.

**Special Notes:**

* **UE:** Remote Education
* **YY:** Face-to-Face Education