**Code and Name:**

**MAT5660 Foundations of Mathematics**

**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 introduce basic mathematical concepts such as propositions, sets, numbers, groups, rings, fields, and vector spaces, and to enable students to conduct research in fundamental areas of mathematics.

**Materials:**

1. V. Asil, H. Bulut, E. Turhan, Y. Altın, H. Altınok, *Basic and General Mathematics*, Ertem Basım ve Yayım, 2006
2. M. Balcı, *General Mathematics*, Balcı Publications, 2008
3. D.G. Zill, W.S. Wright, *Calculus* (Translated by İsmail Naci Şengül), Nobel Publishing, 2013
4. R. Ellis, D. Gulick, *Calculus*, Saunders College Publishing, 1991

**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 | **Sets**: Properties, operations on sets | Face-to-Face |
| 3 | **Propositions**: Definitions and examples | Face-to-Face |
| 4 | **Numbers**: Rational numbers, decimal representation, absolute value, sign function, floor function | Face-to-Face |
| 5 | **Numbers**: Exponents, roots, inequalities | Face-to-Face |
| 6 | **Trigonometry**: Definitions and applications | Face-to-Face |
| 7 | **Complex Numbers**: Definitions and properties | Face-to-Face |
| 8 | **Equations**: Equality, linear equations | Face-to-Face |
| 9 | **Midterm Exam** | Face-to-Face |
| 10 | **Parabolas**: Definitions and examples | Face-to-Face |
| 11 | **Logarithms**: Properties and applications | Face-to-Face |
| 12 | **Algebraic Structures**: Groups, rings, fields | Face-to-Face |
| 13 | **Algebraic Structures**: Vector spaces and algebra | Face-to-Face |
| 14 | **Systems of Equations**: Solution methods | 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. Use materials related to fundamental mathematical concepts.
2. Evaluate mathematical concepts and theories using scientific methods.
3. Express basic concepts of algebraic structures.
4. Understand and solve systems of equations.
5. Define specific functions.

**Special Notes:**

* **UE:** Remote Education