**Code and Name:**

**MAT5210 Meromorphic Functions and Some Applications**

**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 teach students the concept and properties of meromorphic functions.

**Materials:**

1. S. Saks, A. Zygmund, *Analytic Functions*
2. A. I. Markushevich, *The Theory of Analytical Functions*
3. Rolf Nevanlinna, *Analytic Functions*

**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 | **Meromorphic Functions**: Power series within a circle of convergence | Face-to-Face |
| 3 | **Abel's Theorem** | Face-to-Face |
| 4 | **Laurent Series**: Convergence rings | Face-to-Face |
| 5 | **Applications of Laurent Expansions** | Face-to-Face |
| 6 | Isolated singular points | Face-to-Face |
| 7 | Regular, meromorphic, and rational functions | Face-to-Face |
| 8 | Roots of meromorphic functions | Face-to-Face |
| 9 | **Midterm Exam** | Face-to-Face |
| 10 | Logarithmic derivatives | Face-to-Face |
| 11 | Rouche's theorem and applications | Face-to-Face |
| 12 | Hurwitz's theorem and applications | Face-to-Face |
| 13 | Meromorphic transformations | Face-to-Face |
| 14 | Analytic functions in two variables | 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. Learn the concept and properties of meromorphic functions.
2. Understand Abel's theorem and power series within circles of convergence.
3. Grasp logarithmic derivatives.
4. Learn and apply Rouche's theorem.
5. Understand analytic functions in two variables.

**Special Notes:**

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