Course Syllabus

Code - Course Title	**MAT381 - Teaching Numbers and Algebra**
Course Type	V. SEMESTER
Laboratory + Practice	2+2
ECTS	**6.0**
Language of Instruction	Türkçe
Course Type	Required Courses
Course Instructor(s)	PROF. DR. NİLÜFER KÖSE, PROF. DR. DİLEK TANIŞLI

Mode of Delivery	The mode delivery of this course is face face
Place of Delivery	On Campus
Used Educational Platforms	Face-to-face
Prerequisites	There is no prerequisite or c0-requisite for this course.
Courses Recomended	None
Recommended Resources	Altun, M. (2015). Mathematics Teaching in Primary Schools. Bursa: Aktüel Yayınları.Olkun, S. and Toluk Uçar, Z. (2007). Activity-Based Mathematics Teaching in Primary Education. Ankara: Maya Akademi.Hırdıroğlu, Ç.N. (2019). Numbers and Operations: Natural, Integer and Rational Numbers. In Kamuran Tarım and Güney Hacıömeoğlu (Eds), Foundations of Mathematics Teaching, Ankara: Anı Yayınları.Van De Walle, J. A., Karp, K. S., Bay-Williams, J. M. (2010). Teaching Elementary and Middle School Mathematics: Developmental Approach (Translation Editor: S. Durmuş) (Translated from the 7th Edition). Ankara: Nobel Akademik Yayıncılık.Aktaş, G.S. (2019). Algebraic Thinking and Teaching with Application Examples. Pegem Akademi Yayınları.
Work Placement	The projects prepared by the groups will be presented in the classroom environment.
Aims of the Course	The aim of this course is to ensure that pre-service teachers develop a deep understanding of the fundamental mathematical concepts and the relationships between these concepts regarding the numbers and algebra learning areas in the secondary school mathematics curriculum, and to enable them to analyze students' learning processes and the difficulties they may encounter. Within the scope of the course, it is intended that pre-service teachers effectively utilize different representation forms, real-life contexts, problem-solving, and mathematical reasoning processes in the teaching of number and algebra concepts, and design instructional activities that support conceptual understanding and the development of algebraic thinking. Furthermore, the course aims to develop the competencies of pre-service teachers in designing, implementing, and evaluating lessons for the teaching of numbers and algebra, taking into account the skill, disposition, value, and content components of the current mathematics curriculum.

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Weeks	Learning Outcomes	Topics	Teaching Methods
Week - 1		Setting up a number system: Natural numbers, Integers, Rational numbers and Real numbers	
Week - 2		Student difficulties, mistakes, and misconceptions about concepts in numbers and algebra learning areas	

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Weeks	Learning Outcomes	Topics	Teaching Methods
Week - 3		Teaching fractions and operations in fractions	
Week - 4		Teaching of topic decimal notations.	
Week - 5		Teaching of topics multipliers and multiples, divisibility rules, least common multiple and greatest common factor concepts and applications.	
Week - 6		Teaching of topics integers and in operations in integers.	
Week - 7		Teaching of Rational Numbers, Ratio and Proportion.	
Week - 8		Teaching of topics real numbers, exponents and roots.	
Week - 9		Early Algebra: Arithmetic-algebra relation	
Week - 10		Teaching of variable, algebraic expression	
Week - 11		Teaching of equality and equation	
Week - 12		Teaching of linear equations	
Week - 13		Teaching of inequalities	

Learning Outcomes

#	Learning Outcome
1	Explain the mathematical meaning of the concepts in the field of learning numbers and algebra
2	Establishes the relationship between these concepts and mathematics education.
3	Establishes the relationship between these subjects with daily life and other lessons.
4	Designs teaching plans for these concepts.
5	Evaluates the teaching plans related to these concepts.
6	Evaluates student knowledge related to these concepts.
7	Collaborates in teaching practices.
8	Takes responsibility for their own learning in teaching practices.
9	Examines the structure of the Mathematics Curriculum

Sustainable Development Goals

✓ Quality Education

Course Theme

✓ Educational Sciences and Educational Technologies

AKTS Workload

Activity	Duration (Hour)	Count	Workload
Teorik Derse Katılım	2.00	14	28
Sınıf Dışı Çalışma (Ön Hazırlık & Pekiştirme Amaçlı)	2.00	14	28
Ödevler	3.00	8	24
Proje - Rapor - Sunum Hazırlama	12.00	1	12
Ara Sınav Hazırlığı (sınav süresi dahil)	12.00	1	12
Final Sınavı Hazırlığı (sınav süresi dahil)	18.00	1	18
Uygulama (Laboratuvar, Müzik/Enstrüman Uygulaması, Atölye/Saha Çalışması vb.)	2.00	14	28
Staj Uygulaması	0.00	0	0
		Calculated ECTS	**6.0**

Assessment Method and Passing Requirements

✓ Open-Ended Test ✓ Homework

Assessment Method and Passing Requirements	Quamtity	Percentage (%)
1.Midterm Exam	1	30
Final Exam	1	40
Homework	1	30
	Sum (%)	**100**