Course Syllabus

Code - Course Title	**MTE510 - Development of Algebraic Thinking in Primary Schools**
Course Type	I. SEMESTER
Laboratory + Practice	3+0
ECTS	**6.0**
Language of Instruction	Türkçe
Course Type	Elective Courses
Course Instructor(s)	PROF. DR. DİLEK TANIŞLI

Mode of Delivery	The mode of delivery of this course is Face to face
Prerequisites	There is no prerequisite or co-requisite for this course.
Courses Recomended	There is no recommended optional programme component for this course.
Recommended Resources	Blanton, M., & Kaput, J. (2004). Elementary grades students' capacity for functional thinking. In M. J. Hoynes, & A. B. Fuglestad (Eds.), Proceedings of the 28thConference of the International Group for the Psychology of Mathematics Education,Vol. 2, pp. 135-142. Bergen, Norway: International Group for the Psychology of Mathematics Educational. Blanton, M. L., & Kaput, J. J. (2005). Helping elementary teachers build mathematical generality into curriculum and instruction. ZDM Mathematics Education, 37 (1), 34-42. Blanton, M. L. (2008). Algebra and the elementary classroom. Transforming thinking, transforming practice. Portsmouth, N.H. : Heinemann. Bishop, J. W., Otto, A. D. ve. Lubunski, C. A. (2001). Promoting algebraic reasoning using students' thinking. Mathematics Teaching in The Middle School.6(9), 508-514. Cathcart, W. G., Pothier, V. M., Vance, T. H. ve Bezuk, N. S. (2003). Learning mathematics in elementary and middle schools. 3rd ed-Upper Saddle River, N.J: Merrill/Prentice Hall. Driscoll, M. (1999). Fostering algebraic thinking. A guide for teachers grades 6-10. Portsmouth, N.H.: Heinemann. Herbert, K. ve Brown, R. H. (1997). Patterns as tools for algebraic reasoning. Teaching Children Mathematics. 3, 123-128. Kaput, J.J, Carraher, D.W and Blanton, M.L. (2007). Algebra in the Early Grades.Taylor Francis Group. Kaput, J. (1999). Teaching and learning a new algebra. In E. Fennema & T. Romberg (Eds.), Mathematics classrooms that promote understanding (pp. 133-155). Mahwah, NJ: Lawrence Erlbaum Associates. Kaput, J. J., (2008). What is algebra? What is algebraic reasoning?. In J. J. Kaput, D. W. C. & M. L. Blanton (Eds.), Algebra in the early grades (pp. 5-17). Mahwah, NJ: Lawrence Erlbaum Associates/Taylor &Francis; Group. Kenney, P. A. ve Silver, E. A. (1997). Probing the foundations of algebra: Grade-4 pattern items in NAEP. Teaching Childeren Mathematics. 3, 268-274. Lannin, J. K. (2003). Developing algebraic reasoning through generalization. Mathematics Teaching In The Middle School. 8 (7), 342-348. Moses, B. (1999). Algebraic Thinking Grades K-12. NCTM, Reston, Virginia. Orton, A. ve Orton, J. (1999). Pattern and the approach to algebra. In A. Orton (Ed.), Pattern in the teaching and learning of mathematics (104-120). London and New York: Cassell. Reys, R. E., Suydam, M. N., Lindquist M. M. ve Smith. N. L. (1998). Helping children learn mathematics. 5th ed-Boston: Allyn and Bacon. Steele, D. (2005). Using writing to access students' schemata knowledge for algebraic thinking. School Science and Mathematics.103(3), 142-154. Van De Walle, J. A. (2004). Elementary and Middle School Mathematics.5th ed-Boston: Allyn and Bacon.
Work Placement	N/A

Course Syllabus

Weeks	Learning Outcomes	Topics	Teaching Methods
Week - 1		THE NATURAL OF ALGEBRAIC THINKING what is algebraic thinking? The basic concepts in algebraical thinking	
Week - 2		The development of algebraical reasoning	
Week - 3		The generalization perspective in the development of algebraic reasoning	
Week - 4		The problem solving perspective in the development of algebraic reasoning	
Week - 5		The modeling perspective in the development of algebraic reasoning	
Week - 6		The modeling perspective in the development of algebraic reasoning	
Week - 7		The functional perspective in the development of algebraic reasoning	
Week - 8		The functional perspective in the development of algebraic reasoning	
Week - 9		The use of technology in the development of algebraic reasoning	
Week - 10		The student difficulties and misconceptions in the development of algebraic thinking	
Week - 11		The student difficulties and misconceptions in the development of algebraic thinking	
Week - 12		The investigate research related to algebraic thinking.	
Week - 13		Examination of research related to algebraic thinking.	
Week - 14		Examination of research related to algebraic thinking.	

Learning Outcomes

#	Learning Outcome
1	Will be able to analyze the basic concepts of algebraic thinking.
2	Will be able to analyze the development of algebraic reasoning
3	Will be able to analyze the generalization perspective in the development of algebraic reasoning.
4	Will be able to analyze the problem solving perspective in the development of algebraic reasoning.
5	Will be able to analyze the modeling perspective in the development of algebraic reasoning.
6	Will be able to analyze the functional perspective in the development of algebraic reasoning.
7	Will be able to analyze the use of technology in the development of algebraic reasoning.
8	Will be able to analyze the student difficulties and misconceptions in the development of algebraic thinking.
9	Will be able to analyze research related to algebraic thinking.

Sustainable Development Goals

No content has been provided.

Course Theme

No content has been provided.

AKTS Workload

Activity	Duration (Hour)	Count	Workload
Teorik Derse Katılım	0	0	0
Sınıf Dışı Çalışma (Ön Hazırlık & Pekiştirme Amaçlı)	0	0	0
Ödevler	0	0	0
Proje - Rapor - Sunum Hazırlama	0	0	0
Ara Sınav Hazırlığı (sınav süresi dahil)	0	0	0
Final Sınavı Hazırlığı (sınav süresi dahil)	0	0	0
Uygulama (Laboratuvar, Müzik/Enstrüman Uygulaması, Atölye/Saha Çalışması vb.)	0	0	0
Staj Uygulaması	0	0	0
		Calculated ECTS	**0**

Assessment Method and Passing Requirements

No content has been provided.

Assessment Method and Passing Requirements	Quamtity	Percentage (%)
1.Midterm Exam	1	40
Final Exam	1	60
	Sum (%)	**100**