MP001	**Pupils' mathematical competitions**	L	P	S	ECTS
		1	0	1	3

Course objectives. The objective of the course is to train students individual and project work: research and collect the literature (in all available media - print and electronic, especially on the Internet), prepare, write and present seminar paper which cover topics of mathematical competitions. Particularly, students will be aquainted with the topics of elementary mathematics intended for mathematically gifted pupils in primary and secondary schools. Topics in the course are selected so as to allow training of students i.e. future teachers to teach problem solving mathematics teaching at all educational levels.

Prerequisites. Undergraduate mathematics or computer science study programme.

Course content.
1. Number theory - divisibility, prime numbers and Diophantine equations
2. Polynomials (zeros and factorization) and functional equations
3. The application of mathematical induction
4. Complex numbers and application
5. Inequality (inequality among means, trigonometric inequality)
6. Geometric constructions
7. Planimetry
8. The application of trigonometry in planimetry and stereometry
9. Vectors in planimetry
10. Special topics

LEARNING OUTCOMES

No.	LEARNING OUTCOMES
1.	Develop a plan and programme of elective mathematics course in primary and secondary school.
2.	Organize and conduct training for primary and secondary school pupils
3.	Select and prepare a topic for elective mathematics course in primary school.
4.	Select and prepare a topic for elective mathematics course in secondary school.

RELATING THE LEARNING OUTCOMES, ORGANIZATION OF THE EDUCATIONAL PROCESS AND ASSESSMENT OF THE LEARNING OUTCOMES

TEACHING ACTIVITY	ECTS	LEARNING OUTCOME **	STUDENT ACTIVITY*	EVALUATION METHOD	POINTS	
					min	max
Attending lectures	1	1-4	The presence at lectures, discussions, teamwork and independent work on assignments	Attendance lists, tracking activities	0	4
Seminar	1	1-4	Write seminar paper	Public presentation	25	48
Final exam	1	1-4	Repeating	Oral exam	25	48

TOTAL	3				50	100

Teaching methods and knowledge assessment. Attendance at lectures and seminars is mandatory. Students have to prepare, write and present seminar paper in which they analyze certain mathematical topics, provide examples and tasks intended for appropriate pupil's age in primary and secondary schools. Students will receive a final grade based on the oral exam and seminar paper.

Basic literature:
1. B. Pavković i dr., Male teme iz matematike, Mala matematička biblioteka, HMD, Zagreb, 1994.
2. V. Stošić, Natjecanja učenika osnovnih škola, HMD, Zagreb, 2000.
3. Dujella, M. Bombardelli, S. Slijepčević, Matematička natjecanja učenika srednjih škola, HMD i Element, Zagreb, 1996.

Recommended literature:
1. serija knjižica Matematička natjecanja, HMD i Element
2. http://public.carnet.hr/mat-natj/index.htm