M030	Obligatory - Year 5	**Didactics of Mathematics II**	L+P+S (1+2+1) + (1+2+1)	ECTS 5+5

Course objectives. The aim of the course is to prepare students for efficient and successful planning, organization, realization and evaluation of the process of teaching mathematics and the application of modern as well as traditional didactic teaching methods and strategies in the process of teaching mathematics in elementary and secondary school. The possibility of applying certain strategies and teaching methods depending on the mathematical content to be adopted, the age and abilities of students as well as the goals of some secondary schools will be studied by means of a combination of lectures, seminars and practical work. The emphasis of this course is put on the application of methods acquired in the course Didactics of Mathematics I, the work with advanced students, how to prepare them for mathematics competitions and the work with students having difficulties in learning mathematics.

Desirable prerequisites. The materials from previous years.

Syllabus.
1. Methodology and topics of work with gifted students. Mathematics competitions.
2. Work with students with difficulties in learning mathematics.
3. Tasks in teaching mathematics. Closed and open tasks. Setting up and solving mathematical problems. Methods for solving different types of tasks.
4. Preparing students to be able to write a professional article aimed at working with gifted students. Preparation for the presentation at a professional conference.
5. Didactics of selected topics in mathematics.
6. Analysis of the teaching contents together with the mathematics teaching materials in other countries.

Expected learning outcomes.
After completing the course, students are expected to:
- apply appropriate methods of working and learning to students of different mathematical abilities and interests;
- use various methods of problem solving appropriate to pupils and secondary school students;
- study and work on the topics from professional mathematical literature, have an oral presentation and write about it in form of an article, using mathematical language and notation;
- establish cooperation with mathematical journals;
- use popular-scientific literature as a motivation for the appropriate mathematical content;
- conduct a teaching lesson in elementary and secondary school professionally and methodically correctly;
- use mathematical methods and mathematical terminology correctly.

Teaching methods and student assessment.
Lectures and exercises are obligatory. Exercises are performed in cooperation with primary and secondary schools. Students have the obligation to attend, analyze and conduct the arranged lessons under the guidance of the methodologist, together with the primary or secondary school tutor. Mid-term exams cover the subject matter of primary and secondary school. After the lectures and exercises students take an exam, which consists only of the oral part.

Can the course be taught in English: Yes.

Basic literature:
1. M. Pavleković, Metodika nastave matematike s informatikom I, Element, Zagreb, 2001.

Recommended literature:
1. M. Pavleković, Metodika nastave matematike s informatikom II, Element, Zagreb, 1999.
2. Z. Kurnik, Posebne metode rješavanja matematičkih problema, Element, Zagreb, 2010.

3. G. Polya, Kako ću riješiti matematički zadatak, Školska knjiga, Zagreb, 1984.
4. M. Sharma, Matematika bez suza, ed. Ilona Posokhova, Ostvarenje, Lekenik, 2000.
5. Textbooks, exercise books and other learning materials for primary and secondary school.
6. Journals: Matka, Matematičko-fizički list, Matematika i škola, Osječki matematički list, Poučak, Mathematics Teacher
7. S. Posamentier, J. Stepelman, Teaching Secondary School Mathematics:Techniques and Enrichment Units, Prentice Hall, 1998.
8. S. G. Krantz, How to teach mathematics, Amer. Math. Soc., Boston, 1999.