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|-------|---------------------------------------|---|---|---|-----------|
| MP002 | Mathematics Teaching Methods I | L | P | S | ECTS 6 |
| | | 2 | 1 | 1 | |

Course objective. The aim of the course is to acquaint students to the correct definition of mathematical concepts, ways of defining, proving and argumentation in mathematics. Also this course will systematize geometry concepts in primary and secondary mathematics education.

Prerequisites. Undergraduate mathematics or computer science study programme.

Course content.

1. The goal of teaching mathematics. National curriculum for mathematics in primary and secondary school.
2. Construction of mathematical concepts. Mathematical language (utilization and symbols). Mathematical concept. Designing examples and counterexamples. The interpretation and application of the definition of the mathematical concepts.
3. Proof and argumentation. Theorem and proof. Formulation, demonstration and application of theorems in school mathematics. Proof without words.
4. Didactics of teaching geometry. Building Euclidean geometry in primary and secondary schools. Trigonometric ratios. Studying topics from primary and secondary mathematics education with demonstration of different methods.

LEARNING OUTCOMES

| No. | LEARNING OUTCOMES |
|-----|--|
| 1. | Use mathematical content, symbols and terminology necessary in school education. |
| 2. | Define mathematical concepts intuitively and mathematically correctly, with respect to the standards of making mathematical definitions, and identify incorrect mathematical definition. |
| 3. | Programs used dynamic geometry for displaying geometric concepts. |
| 4. | Develop a didactical approach for appropriate geometrical concept in elementary and secondary schools. |

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 and exercises | 1 | 1-4 | The presence at lectures, discussions, teamwork and independent work on assignments | Attendance lists, tracking activities | 0 | 10 |
| Seminar | 1 | 1-4 | Writing seminar paper | Public presentation | 10 | 15 |
| Demonstration lessons | 1 | 1-4 | Attending demonstration lesson in school | Attendance lists, | 5 | 15 |

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|-----------------------------|---|-----|-----------------------------------|--|----|-----|
| Written exam (Mid-terms) | 2 | 1-4 | Preparing for the written exam | Verification of correct answers (evaluation) | 20 | 30 |
| Final exam | 1 | 1-4 | Repeating and revising | Oral exam | 15 | 30 |
| TOTAL | 6 | | | | 50 | 100 |

Teaching methods and knowledge assessment. Lectures, exercises and seminars are obligatory. Students are expected to regularly attend classes (obligatory presence on at least 85% of the lectures, exercises and seminars). Other requirements for students include: active participation in lectures, exercises and seminars, writing and presentation of seminar papers. Seminar papers will be evaluated. The examination consists of written and oral part.

Can a subject taught in English: Yes

Basic literature:

1. Z. Kurnik, Znanstveni okviri nastave matematike, Element, 2009.
2. M.Pavleković, Metodika nastave matematike s informatikom I, Element, Zagreb, 2001.
3. M.Pavleković, Metodika nastave matematike s informatikom II, Element, Zagreb, 1999.
4. Lj. Jukić Matić, I. Matić, Priručnik za nastavu matematike, Odjel za matematiku, 2017.

Recommended literature:

1. Journals for school teachers
2. Mathematics textbooks for primary and secondary school