Study Programme: Master in Elementary Teacher

Course Unit Title: Mathematical logic

Course Unit Code: MU-3-2-2-2

Name of Lecturer(s): Márta Takács, Zita Diana

Type and Level of Studies: Master Studies (MA)

Course Status (compulsory/elective): Elective

Semester (winter/summer): Winter

Language of instruction: Hungarian

Mode of course unit delivery (face-to-face/distance learning): Face-to-face learning

Number of ECTS Allocated: 4

Prerequisites: -

Course Aims: The aim of the course is to expand knowledge in the field of mathematical logic, and to learn about the implementation of mathematical logic in other mathematical fields. Strict rules and symbolization of mathematical logic show the basics of axiomatization and other mathematical areas.

Learning Outcomes:

After learning the basic rules of mathematical-logical reasoning, the student is more prepared for teaching mathematics, The student becomes acquainted with the fields of implementation of mathematical logic, that have become part of the everyday life of every generation, such as informatics, expert systems, formalization and axiomatization of all mathematical fields.

Syllabus:

Theory

Predictive logic, predicate operations, tables, and basic rules of thinking (modus ponens, modus tolens). Logical consequence. Normal forms. Boolean algebra. Axiomatic systems and logic. First order logic and quanta. Practical application of first-order logic, formulation of mathematical facts in the language of logic. More-valued logic and "fuzzy" logic.

Practice

Tasks related to the topic of the lectures are being made. Students present seminar papers, which are analyzed together, discussed.

Required Reading:

Compulsory:

Миличић, С. (1990): *Елементи математичке логике и теорије скупова*, Нови Сад: Институт за математику.

Urbán, János (1999): *Matematikai logika*, Budapest: Műszaki Könyvkiadó Kft

Optional:

<table>
<tr><td colspan="4">Hámori, Miklós (1983): Halmazok, matematikai logika, Általános iskolai szakköri füzet, Budapest: Tankönyvkiadó.

Прешић, С. (1983): Елементи математичке логике, Београд: Завод за уџбенике и наставна средства.</td></tr>
<tr><td>Weekly Contact Hours: 2 (30)</td><td colspan="2">Lectures:1 (15)</td><td>Practical work: 1 (15)</td></tr>
<tr><td colspan="4">Teaching Methods:
Lecture, practice, presentation, discussion, individual work, consultation.</td></tr>
<tr><td colspan="4">Knowledge Assessment (maximum of 100 points): 100</td></tr>
<tr><td>Pre-exam obligations</td><td>points</td><td>Final exam</td><td>points</td></tr>
<tr><td>Active class participation</td><td>10</td><td>written exam</td><td>30</td></tr>
<tr><td>Practical work</td><td>20</td><td>oral exam</td><td>20</td></tr>
<tr><td>Preliminary exam(s)</td><td></td><td></td><td></td></tr>
<tr><td>Seminar(s)</td><td>20</td><td></td><td></td></tr>
<tr><td colspan="4">The methods of knowledge assessment may differ; the table presents only some of the options: written exam, oral exam, project presentation, seminars, etc.</td></tr>
</table>