האוניברסיטה העברית בירושלים
THE HEBREW UNIVERSITY OF JERUSALEM

The Hebrew University of Jerusalem

Syllabus

MATHEMATICAL LOGIC (2) - 80424

Last update 03-08-2017

HU Credits: 3

Degree/Cycle: 1st degree (Bachelor)

Responsible Department: mathematics

Academic year: 0

Semester: 2nd Semester

Teaching Languages: Hebrew

Campus: E. Safra

Course/Module Coordinator: Dr. Itay Kaplan

Coordinator Email: kaplan@math.huji.ac.il

Coordinator Office Hours: set an appointment

Teaching Staff:

Dr. Yatir Halevi
Mr. Shahar Uriel

Course/Module description:
We will study selected topics in model theory and recursion theory. In particular we will learn Godel's Incompleteness Theorem and Tarski's Theorem about the definition of truth. For more details see the list of topics.

Course/Module aims:
See learning outcomes.

Learning outcomes - On successful completion of this module, students should be able to:
Understand basic notions in Recursion Theory.

Understand the proof of Goedl's Incompleteness theorem.

Understand the notion of Godel numbering.

Deepend understanding of mathematical logic.

Attendance requirements(%):
0

Teaching arrangement and method of instruction: Lecture+exercise

Course/Module Content:
Elementary equivalence and elementary substructures. Types. Criteria for the Completeness of a Theory and for quantifier elimination. Recursion Theory:Recursive Functions, the Recursion Theorem, r.e. sets. Incompleteness and Undecidability. Godel's Incompleteness Theorems and Tarski's Theorem on the definability of Truth. The undecidability of the Theory of the semiring of Natural Numbers, the theory of graphs. The decidability of the theories of real and complex fields. Paris-Harrington Theorem. Different Logics.

Required Reading:
none

Additional Reading Material:

J.L. Bell and M. Machover, A Course in Mathematical Logic

R. Smullyan, Godel's Incompleteness Theorems

J.R. Shoenfield, Mathematical Logic

H. Enderton, A Mathematical Introduction to Logic

Course/Module evaluation:

End of year written/oral examination 85 %
Presentation 0 %
Participation in Tutorials 0 %
Project work 0 %
Assignments 15 %
Reports 0 %
Research project 0 %
Quizzes 0 %
Other 0 %

Additional information:

none