MATHEMATICAL LOGIC

(1) Syntax and semantics of propositional logic (formulas, models, truth in models, satisfiability, validity, consequence...)
(2) Normal forms (CNF, DNF); conversion to normal forms
(3) Horn formulas
(4) Compactness (with application)
(5) Proof theory of propositional logic (Hibert style calculus, resolution)
(6) Syntax and semantics of first order logic (terms, formulas, models, evaluations, truth in models, satisfiability, validity,consequence...)
(7) Free and bound variables, problems with substitutions
(8) Some important valid (and invalid) formulas
(9) Translations of mathematical concepts and statements to first order logic
(10) Syntax and semantics of propositional modal logic (formulas, models, frames, truth in models,...)
(11) Some modal formulas and their first order equivalents