|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 1. Course title: Mathematical Logic for Computer Science | | | | | |
|  | | | | |
| 2. Code: | | 3. Type (lecture, practice etc.): lecture | | | |
|  | | | | |
| 4. Contact hours: 2 hoursper week | | 5. Number of credits (ECTS): 3 | | | |
|  | | | | |
| 6. Preliminary conditions (max. 3): | | | | | |
|  | | | | |
| 7. Announced:fall semester, spring semester, both | | | | | |
|  | | | | |
| 8. Limit for participants: - | | | | | |
|  | | | | |
| 10. Responsible teacher (faculty, institute and department):  Prof. Dr. Sándor Jenei (Faculty of Science, Institute of Mathematics and Informatics, Department of Informatics) | | | | | |
|  | | | | |
| 11. Teacher(s) and percentage: | | Prof. Dr. Sándor Jenei | | 100 % | |
|  | |  | |
|  | | | | |
| 12. Language:English | | | | | |
|  | | | | |
| 13. Course objectives and/or learning outcomes:  Objectives: The lecture intends to introduce students to the basics of Mathematical Logic (both the propositional and the predicate calculus) including basic definitions, results, and methodology. A further aim is to discuss the connections between Mathematical Logic and Mathematics, and between Mathematical Logic and Computer Science.  Learning outcomes: students completing the course will have *knowledge* on the basic notions and results of Mathematical Logic, along with the related specific terminology. They will be *able* to apply models of Mathematical Logic to practical problems, and to solve them. They will be *open* to incorporate models of Mathematical Logic into their problem-solving thinking. They will have a *competence* of representing available information into models of Mathematical Logic. Their positive *attitude* towards innovative methods will increase significantly. | | | | | |
|  | | | | |
| 14. Course outline   1. What is logic? 2. Arguments, Sentences, Two ways that arguments can go wrong 3. Deductive validity, Other logical notions, Formal languages 4. Sentential logic: Sentence letters, Connectives 5. Other symbolization, Sentences of SL 6. Truth-functional connectives, Complete truth tables, Using truth tables, Partial truth tables 7. Disjunctive and conjunctive normal forms, electric circuits 8. Quantified Logic: From sentences to predicates, Building blocks of Quantified Logic, Quantifiers 9. Translating to QL 10. Sentences of QL 11. Identity, Semantics for SL 12. Interpretations and models in QL, Semantics for identity 13. Working with models, Truth and derivation in QL | | | | | |
|  | | | | |
| 15. Mid-semester works  Attending lectures is highly recommended. Exercises, related to the topic of the week will be solved every week. | | | | | |
|  | | | | |
| 16. Course requirements and grading  Oral exam | | | | | |
|  | | | | |
| 17. List of readings   1. P.D. Magnus, forall*x* An Introduction to Formal Logic, University at Albany, State University of New York (<https://textbookequity.org/Textbooks/Magnus_forallx.pdf)> | | | | | |
|  | | | | |
| 18. Recommended texts, further readings   1. Selected exercises from the web sent on a weekly basis via email. | | | | | |
|  | | | | |
| **Date** | 19 April, 2017 | **Prepared by** |  | | |
| Prof. Dr. Sándor JENEI  responsible teacher | | |
|  | | | | |
| **Endorsed by** | | |  | | |
| program supervisor | | |