

Study programmes: Bachelor studies - Mathematics				
Course name: P265 - Introduction to interactive theorem proving				
Lecturers: Filip Marić and other teachers of Department of Computer Science				
Status: Elective				
ECTS: 6				
Attendance prerequisites: None				
Course aims: Gaining introductory knowledge on interactive theorem proving using the proof assistant Isabelle/HOL.				
Course outcome: After the course, student can use the proof assistant Isabelle/HOL to formalize some simple mathematical theories and formally verify some basic algorithms.				
Course content:				
<ul style="list-style-type: none"> - Formal theorem proving and interactive theorem provers. - Natural deduction. Implementation in Isabelle/HOL. - Declarative proof formats - Isabelle/Isar. - Sets. Numbers. Functions. Relations. - Induction. - Elements of functional programming in HOL. Algebraic data types. - Some examples of formalization of mathematics in Isabelle/HOL. - Some examples of program verification in Isabelle/HOL. 				
Literature:				
1. Tobias Nipkow, Lawrence C. Paulson, Markus Wenzel: Isabelle/HOL, a proof assistant for Higher-Order Logic.				
2. T. Nipkow: A Tutorial Introduction to Structured Isar Proofs.				
3. Miran Lipovača: Learn You a Haskell for Great Good. (teacher can choose some other appropriate literature)				
Number of hours: 5	Lectures: 2	Tutorials: 3	Laboratory: -	Research: -
Teaching and learning methods: Frontal, group, and practical.				
Assessment (maximal 100 points)				
Course assignments	points	Final exam	points	
Lectures	10	Written exam	-	
Exercises / Tutorials	-	Oral exam	-	
Colloquia	20	Written-oral exam	50	
Essay / Project	20			