

Course title: Programming paradigms (ID013)		
Lecturer(s): Mirjana K. Ivanović, Vladimir M. Kurbalija		
Status: elective		
ECTS: 7		
Requirements: none		
Learning objectives The aim of the course is to give a synthesis, a taxonomy and an introduction to the possible directions of research in the field of programming languages, programming paradigms and styles, and their processors (compilers and interpreters).		
Learning outcome At the end of the course it is expected from a successful student to be able to: - critically assesses key concepts in programming paradigms - critically assesses alternatives in programming paradigms, dependant on the requirements - apply research methods in the field of programming paradigms		
Syllabus <i>Theory</i> Review of research in the field: theoretical bases, programming languages and styles, paradigms, procedural, object-oriented and declarative programming style. Current trends in the research area, for example. aspect-oriented programming languages and compilers, declarative programming languages and compilers, parallel programming languages and compilers, formal basics of programming paradigm, agent-oriented programming languages, programming based on artifacts, distributed programming, generative programming languages ... <i>Practice</i> ---		
Recommended literature 1. Peter van Roz, Seif Haridi, Concepts, techniques, and models of computer programming, MIT press, 2004. 2. Raphael A. Finkel, Advanced Programming Language Design, Addison-Wesley, 1999. 3. Rysztof Czarnecki, Ulrich W. Eisenecker, Generative programming, Addison Wesley, 1999. 4. Ivan Kiselev, Aspect-Oriented Programming with AspectJ, SAMS Publishing, 1999 5. Bordini, R.H., Dastani, M., Dix, J., Seghrouchni, A.E.F. (Eds.): Multi-Agent Programming: Languages, Tools and Applications, Springer (2009) 6. Martin Odersky, Lex Spoon, Bill Venner, Programming in Scala, Artima Incorporated, 2008		
Weekly teaching load	Lectures:2	Student research:0
Teaching methodology Lectures are organized using classic teaching methods with use of a projector. Students independently explore various research topics, present and discuss results with other students and the lecturer. Students write seminar papers.		
Grading method (maximal number of points 100) Seminar paper 60 points, Oral examination 40 points		