1.	Field of study	Computer Science
2.	Academic year of entry	2017/2018 (summer term), 2018/2019 (summer term)
3.	Level of qualifications/degree	second-cycle studies
4.	Degree profile	general academic
5.	Mode of study	full-time

Module: Declarative languages

Module code: 08-IN-IJO-S2-JD

1. Number of the ECTS credits: 2

2. Learning outcomes of the module			
code	**description**	**learning outcomes of the programme**	**level of competence (scale 1-5)**
JD_U_5	Is able to implement algorithms by means of the Prolog language	K_2_A_I_U13	1
		K_2_A_I_U14	1
		K_2_A_I_U15	1
JD_U_6	Is able to implement algorithms according to functional and object-oriented paradigms in the FSharp language	K_2_A_I_U13	1
JD_U_7	Is able to code an optimization problem in the GNU MathProg language and solve it	K_2_A_I_U13	1
		K_2_A_I_U14	1
JD_U_8	Is able to code an optimization problem in the OML language and solve it by means of a spreadsheet or a program written in the Fsharp language	K_2_A_I_U13	1
		K_2_A_I_U14	1
		K_2_A_I_U17	1
JD_W_1	Have a knowledge on programming in logic and is able to characterise this kind of coding	K_2_A_I_W10	1
		K_2_A_I_W17	2
JD_W_2	Have a knowledge on functional programming and is able to characterise this kind of coding	K_2_A_I_W06	2
		K_2_A_I_W10	2
JD_W_3	Have a knowledge on integer linear programming	K_2_A_I_W06	1
		K_2_A_I_W09	2
JD_W_4	Have a knowledge on mathematical modelling (linear and non-linear programming, CSP systems)	K_2_A_I_W03	1
		K_2_A_I_W09	2

3. Module description

Description	The objective is to prepare students for solving combinatorial optimization and other sorts of problems by means of declarative languages. Based on selected examples both programming in logic (Prolog) and functional programming (Fsharp) techniques have been presented. As regards mathematical modelling two languages have been described: the GNU MathProg for linear programming and the Optimization Modeling Language (OML) to linear, non-linear and constraint satisfaction problems. The course must be completed using the university e-learning platform.
Prerequisites	

4. Assessment of the learning outcomes of the module

code	type	description	learning outcomes of the module
JD_w_1	Credit test	Test with multi-choice questions with single correct answer involving whole material (a quiz on the Moodle platform).	JD_W_1, JD_W_2, JD_W_3, JD_W_4
JD_w_2	Control tests	Writing and submitting programs for selected exercises from e-learning tutorials.	JD_U_5, JD_U_6, JD_U_7, JD_U_8

5. Forms of teaching

code	form of teaching		number of hours	required hours of student's own work	number of hours	assessment of the learning outcomes of the module
	type	description (including teaching methods)		description		
JD_fs_1	lecture	E-books (one for every theme) containing theoretical background, examples, and exercises (through the university e-learning platform).	15	Reading e-books and getting familiar with specified software.	15	JD_w_1
JD_fs_2	laboratory classes	Solving exercises from the e-books and submitting them though the university e-learning platform	15	Analyse of examples and solving exercises (mainly requiring coding)	15	JD_w_2