Card of Course - Computer Algebra

Description of Course:	
Code of course	----------
Name of course	**Computer Algebra**
Version of course	2013/2014
A. Place of the course in system of study	
Level of education	Intermediate
Degree of education	Engineering
Kind of education	Full-time studies
Field of study	Transport
Profile of study	General academic profile
Specialisation	Main field
Place of teaching of course	Faculty of Transport
Place of realization of course	Department of Transportation Means Construction Theory.
Coordinator of course	Antoni Żochowski, Ph.D., Eng., Prof.
B. General characteristic of the course	
Block of courses	Main field
Group of courses	General
Level of course	Intermediate
Status of course	Faculty with choice limited
Language of course	English
Nominal semester	-
Academic year	2013/2014
Preliminary requirements	Elementary calculus and algebra, basic computer programming.
Limit of number of students	-

C. Effects of education and manner of teaching	
Purpose of course	To teach students the application of Matlab-like environment for modeling the physical and technical problems.
Methods of evaluation	Final modeling project.
Effects of education	Look – table 1
Form of didactic studies and number of hours per week	Computer Laboratory – 2 hours
Contents of education	1. Short introduction to Scilab (INRIA, France, www.scilab.org), distributing final project description. 2. Classroom project: approximating Euler constant for asymptotic behavior of the harmonic series. 3. Classroom project: Predator-prey model and analysis of dynamic systems. 4. Classroom project: order in chaos and Feigenbaum bifurcation diagram. 5. Evaluation of the implementations of the final project.
Methods of verification of effects of education	Assessment of the final project.
Examination	-
Literature	www.scilab.org - manuals
www of course	Does not have
D. Student's job	
Number of credits ECTS	3
Number of hours of student's job for achievement of education's effect (description):	75h (10h – computer laboratory, 15h – getting acquainted with the manuals, 20h – follow up study of classroom projects, 30h – unassisted implementation of the final project).
Number of credits ECTS on the course with direct participation of academic teacher	1
Number of credits ECTS on practical activities on the course	2
E. Additional informations	
Notes	

Date of last modernization	19.11.2013

Table 1

General academic profile			
Course's effects		**Field effects**	**Area effect**
Knowledge			
Effect:	Knowledge about typical Computer Algebra System and ability to use its capabilities.	Tr1A_W06	T1A_W02
Code of effect:	W_01		
Verification:	Classroom mini-projects.		
Effect:	Capability to build and implement the model of a simple physical/practical problem	Tr1A_W07	T1A_W02 T1A_W07 T1A_W08
Code of effect:	W_01		
Verification:	Final project.		
Skills			
Effect:	Ability to master the mathematical and computer related skills required for solving new problems.	Tr1A_U06	T1A_U05
Code of effect:	U_01		
Verification:	Classroom mini-projects		
Effect:	Ability to solve the new problem unassisted	Tr1A_U09	T1A_U07
Code of effect:	U_01		
Verification:	Final project		
Social competences			
Effect:	He is aware of the level of their knowledge and skills. He understands the need for further improvement of professional and personal development	T1A_K01	Tr1A_K01
Code of effect:	K01		

Verification:	Final project		