	UNIVERSITY OF EAST SARAJEVO Faculty of Technology Zvornik	
	Study programme: *Chemical Engineering and Technology*	
	Cycle I	Year I

Course title	APPLICATION OF COMPUTERS IN ENGINEERING
Department	Department for Process Engineering – Faculty of Technology Zvornik

Course code	**Course status**	**Semester**	**ECTS**
04-1-004-1	Compulsory	I	5

Teacher	Goran Tadić, PhD, Full Professor
Teaching assistant	Goran Tadić, PhD, Full Professor

Number of classes/ teaching workload (per week)			Individual student workload (in hours per semester)			Student workload coefficient S_o
Lectures	**Auditory exercises**	**Laboratory exercises**	**Lectures**	**Auditory exercises**	**Laboratory exercises**	**S_o**
2	0	2	45	0	45	1.5
2*15 + 0*15 + 2*15 = 60 hours			2*15*1.5 + 0*15*1.5 + 2*15*1.5 = 90 hours			
Total course workload 60 + 90 = 150 hours per semester						

Learning outcomes	After finishing the course, students will be able to: 1. demonstrate and utilize the knowledge of the basics of computer work, programming and application of the MATLAB software package in the chemical engineering fields; 2. use numerical methods to solve non-linear algebraic equations; 3. perform numerical integration and numerical solution of differential equations; 4. analyze and solve a system of linear algebraic equations.
Prerequisites	No prerequisites
Teaching methods	Lectures, exercises in the computer laboratory, consultations, seminar paper, mid-term tests (colloquia).
Syllabus outline per week	1. Introduction. PC computers. Principles of programming. 2. Matlab - introduction 3. Matlab - creating arrays 4. Matlab - mathematical operations with arrays 5. Matlab - two-dimensional plots 6. Matlab - programming 7. Matlab - polynomials, curve fitting and interpolation. 8. Mid-term test (colloquium) I 9. Numerical solution of nonlinear algebraic equations 10. Solving systems of linear equations 11. Iterative methods 12. Numerical integration 13. Numerical solution of ordinary differential equations 14. Basic sources of errors in numerical calculations on the computer 15. Mid-term test (colloquium) II Mid-term tests are taken after the 8th week and the 15th week. Semester verification is required after the 15th week.

Obligatory reading			
Author	**Title, publisher**	**Year**	**Pages**
Gilat, A.	MATLAB: An Introduction with Applications, John Wiley&Sons	2008	1-357
Dukkipati, R.	Matlab: An Introduction with Applications, Prentice Hall	2009	1-85
Palm, W.	Introduction to Matlab for Engineers, The McGrow-Hill Companies	2011	3-96; 147-199; 219-251; 331-408
Additional reading			

Author	Title, publisher	Year	Pages
Etter, D.	Engineering problem solving with Matlab	1998	20-90
Suktovsky, R.	Numerical integration, Department of Mathematics, University of Osijek	2004	1-164
Ćalasan, L., Petkovska, M.	Matlab and additional modules Control system Toolbox and Simulink, Mikro knjiga	1996	1-256

Obligations, assessment methods and grading system	Type of student evaluation		Grade points	Percentage
	Pre-exam obligations			
		Attendance	6	6 %
		Seminar paper	24	24 %
		Mid-term test (colloquium) 1	20	20%
		Mid-term test (colloquium) 2	20	20%
	Final examination			
		Final examination (oral)	30	30 %
	Total		100	100 %

Web page	www.tfzv.ues.rs.ba
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