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

Course title	Mathematics 1
Department	

Course code	**Course status**	**Semester**	**ECTS**
04-1-003-1	Compulsory	I	6

Teacher	Boban Marinmković, PhD, full professor
Teaching assistant	Boban Marinmković, PhD, full professor

Number of hours/ 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**
3	2	0	45	45	0	1
3*15 + 2*15 + 0*15 = 60 h			3*15*1.40 + 2*15*1.40 + 0*15*1.40 = 90			
Total course workload 75 + 105 = 180 hours per semester						

Learning outcomes	After finishing the course, students will be able to: 1 use mathematical tool and apply to technical and technological disciplines 2. demonstrate and utilize knowledge about quantifications of processes and occurrences and graphical presentations of functional dependences 3. analyse and present solutions of problems and obtained results.
Prerequisites	
Teaching methods	Lectures, auditory exercises, seminar papers.
Syllabus outline per week	• Real numbers. Principle of mathematical induction. Binomial formula. Complex numbers. • De Moivre's formula. Root of complex numbers. Determinant, properties of determinants. • Matrices and basic operations. Inverse matrix. Rank of matrices. • Systems of algebraic equations. Matrix equations. Cramer s rule. Homogeneous systems. Gauss elimination. • Vectors. Addition, subtraction and multiplying of vectors with numbers. Linear independence of vectors. Decompositions of vectors. Coordinate system. • Division of segments. Scalar and vector product of two vectors. Mixed product of three vectors. • Plane equation. Line equation. Problems with line and plane equations. • Sequence of numbers. Limit of sequences and basic properties. • Cauchy's criteria of convergence. Number e. Mid-term test/Colloquium. • Functions of a real variable. Composition of functions. Inverse function. Monotonicity of functions. Elementary functions • Types of definitions of functions. Limit of functions and properties. Continuity of functions. • Properties of uniformly continuous functions. Increase of functions. Derivative and differential. Properties of derivative. • Derivative of and inverse function. Chain rule. Derivatives of parametrical and implicit functions. Table of derivatives. Derivatives and differentials of high order. • Basic theorems of differential calculus. Rolle's, Lagrange's and Cauchy's theorem. L'Hôpital's rule. Taylor and Maclaurin formula. • Examinations of functions via derivatives. Monotonicity and extreme points. Convexity and concavity. • Asymptotes. Graph of functions. Examples. Mid-term test/Colloquium.

Obligatory reading

Author	**Title, publisher**	**Year**	**Pages**
Uščumlić, M., Miličić, P.	Elementi više matematike 1, Naučna knjiga , Beograd	1990	

Uščumlić, M., Miličić, P.	Zbirka zadataka iz više matematike 1, Naučna knjiga , Beograd	1989	

Additional reading

Author	Title, publisher	Year	Pages
Uščumlić, M., Miličić, P. P.Nikić, Z.J., Čomić, L.	Matematika 1, FTN Novi Sad	2003	
Pap, E., Takači, Đ.,	Analiza 1, PMF Novi Sad	2003	

	Type of student evaluation	Grade points	Percentage
Obligations, assessment methods and grading system	Pre-exam obligations		
	Attendance	6	6 %
	Mid-term test I	32	25 %
	Mid-term test II	32	25 %
	Final examination		
	Final examination (oral)	30	30 %
	Total	100	100 %
Web page	www.tfzv.ues.rs.ba		
Date	2023		