Program	Level	First cycle
	Name of the program	Theoretical Computer Science

COURSE

Course title	**Linear Algebra**			
Course code	Semester	Course status	ECTS	Contact hours (L+AE+LE)
PMAT 195	II	Mandatory course	6	3+3+0
Lecturer				
Course Goals	This course introduces students to matrix algebra, vector spaces and linear transformations in finte dimensional vector spaces.			
Learning Outcomes	Upon succeseful completion of the course students will be able to: - recognize and work with linear transformations and matrices of linear transformations, - apply tools from linear algebra in order to find eigenvalues and eigenvectors of matrices, - perform matrix decompositions, - identify, formulate, and solve mathematical and computer science problems which use tools from linear algebra.			

COURSE CONTENT

- Linear systems, vector equations, matrix equations,
- Linear transformations, matrix of a linear transformation,
- Matrix algebra, invertible matrices,
- Determinants,
- Vector spaces,
- Eigenavalues and eigenvectors, matrix diagonalization,
- Orthogonal sets of vectors, inner product, orthogonal projections and Gramm-Schmidt process of orthogonalization,
- Symmetric matrices and quadratic forms, singular values and SVD (singular value decomposition),
- Geometry of vector spaces.

LITERATURE

[1] David C. Lay, Linear Algebra and Its Applications, Pearson (2015).
[2] Gilbert Strang, Linear Algebra and Its Applications, Brooks Cole (2006),
[3] Eric Lengyel, Mathematics for 3D Game Programming and Computer Graphics, Cengage (2011),
[4] Sheldon Axler, Linear Algebra Done Right, Springer, 2004.

STUDENT WORKLOAD (hours in a semester)

Lectures	45	Exercises	45	Individual work	60	T o t a l	150

GRADING			**REMARKS**
Criterion	Maximum points	Minimum points	
Midterm exams	50	25	
Final exam	50	25	
T o t a l	100	55	