| Program | Level | First cycle |
|---|---|---|
| | Name of the program | Mathematics Education, Pure Mathematics, Applied Mathematics, Mathematics and Informatics Educations |

| COURSE | | | | |
|---|---|---|---|---|
| Course title | **Linear algebra I** | | | |
| Course code | Semester | Course status | ECTS | Contact hours (L+AE+LE) |
| PMAT 140 | I | compulsory | 5 | 3+2+0 |
| Lecturer | | | | |
| Course Goals | The goal is to teach students to solve the systems of linear equations, understand and use vector spaces and linear transformations. | | | |
| Learning Outcomes | It is expected that students learn specified course contents and use the same in the other areas of mathematics. | | | |

**COURSE CONTENT**

Matrices, the matrix algebra, rank of the matrix.
Hermit canonical form of the matrix.
Gauss-Jordan method of elimination, matrix equations.
Determinants. Properties of determinants. Laplace rule. Crammer rule.
Discussion of the systems of linear equations.
Vector space, subspace. Linear combination of the vectors.
Basis and dimension of the vector space.
Direct sums of the vector spaces.
Linear transformations, a kernel and rang.
Algebra of linear transformations, composition, invertibility and isomorphism.
Change of the basis matrix.
Dual spaces.

**LITERATURE**

[1] Amela Muratović-Ribić, Uvod u linearnu algebru, Prirodno-matematički fakultet, Univerzitet u Sarajevu
[2] Stephen H. Friedberg, Arnold J. Insel, Lawrence E. Spence, Linear algebra, Pearson; 4th edition (2002)
[3] Charles L. Byrne, Applied and Computational Linear Algebra: A First Course, University of Massachuttsetts, Lowell, 2013.
[4] Momčilo Uščumlić, Pavle Miličić, Zbirka zadataka iz više matematike I, Naučna knjiga, Begograd, 1980.

**STUDENT WORKLOAD (hours in a semester)**

| Lectures | 45 | Tutorial | 30 | Individual work | 50 | T o t a l | 125 |
|---|---|---|---|---|---|---|---|

| GRADING | | | REMARKS |
|---|---|---|---|
| Criterion | Maximum points | Minimum points | |
| Midterm exams | 50 | 25 | |
| Homework assignment | | | |
| Project | | | |
| Laboratory assignments | | | |
| Final exam | 50 | 25 | |
| T o t a l | 100 | 55 | |