Study program: Industrial Engineering

Course title: Mathematics 1

Professor/assistant: PhD. Milica Cvetković

Type of course: compulsory

ECTS credits:6

Pre-requisites: -

Aims of the course:

To prepare a student to:

- acquire the necessary knowledge to successfully follow vocational subjects;
- apply a mathematical apparatus in solving engineering problems;

systematize and extend knowledge about matrices, determinants, vectors and their applications.

Learning outcomes:

Student is able to:

- apply the basic operations of the complex numbers to the algebraic and trigonometric form;
- calculate the arbitrary order determinant;
- know when there is an inverse matrix and how to calculate it;
- distinguish the methods of solving the linear equations systems and apply them appropriately;
- calculate the dot product, cross product and scalar triple product of vectors and apply them;

know the equations of the plane and lines in 3D coordinate system and determine mutual position (distances, angles, intersections)of points, lines and planes.

Syllabus

Theoretical part : Elementary algebra (number sets, polynomials). Linear algebra (matrices, determinants, linear equations, vectors). Analytical geometry in space.

Practical part : Introduction to higher mathematics (exponentiation, rooting, equations, inequations, logarithm, trigonometry). Complex numbers. Polynomials. Use of matrices in technique. Use of vectors in technique. Lines and planes in space.

Literature

1. S. Minčić, *Viša matematika 1 sa rešenim primerima i zadacima za vežbu*, Univerzitet u Nišu, 2014.
2. Grupa autora, *Matematika za više tehničke škole*, Zajednica viših škola, 1989.
3. Grupa autora, *Zbirka zadataka iz matematike za više tehničke škole*, Zajednica viših škola, 1989.

Number of active classes			Other forms of teaching:
Lectures: 2	Practical classes:2	Research work:	

Teaching methods

Grading system (maximum 100 points), **grading scale**from 5 to 10: below 51 points grade 5, grade 6 from 51-60 points, grade7 from 61-70 points, grade8 from 71-80 points, grade 9 from 81-90 points, grade 10 from 91-100 points.

Pre-exam obligations	**points**	**Final exam**	**points**
activity during theoretical lectures	**5+5=10**	written exam	**30**
practical training	**10+10=20**	oral exam	
colloquium(s)/seminar papers	**20+20=40**		
Sum	**70**	**Sum**	**30**