UNIVERSITY
WARMIA AND MAZURY IN OLSZTYN

Faculty of Mathematics and Computer Science

Course title: **ANALYTIC GEOMETRY**

ECTS credit allocation (and other scores): **4**

Semester: autumn

Level of study: ISCED-6 - first-cycle programmes (EQF-6)

Branch of science: Natural sciences

Language: English / Polish

Number of hours per semester: 30 lectures + 30 classes = 60 hours

Course coordinator/ Department and e-mail: Erasmus coordinator Anna Szczepkowska/ WMiI, erasmuswmii.uwm.edu.pl

Type of classes: classes and lectures

Substantive content

CLASSES: Solving problems illustrating main theorems proved in the course.

LECTURES:

Vectors, linear space, scalar product, vector product and mixed product. Coordinates, equations of a line in 3-dimensional euclidean space, equations of planes. Conics. Linear operators and matrices. Jordan form. Bilinear and quadratic forms. Definite quadratic forms and their signatures. Sylvester's criterion. Canonical representaion of quadratic forms over the reals and over the complex numbers. Classification of conics.

LEARNING PURPOSE

Understanding the method of coordinates and using it in the description of classical geometric objects.

On completion of the study programme the graduate will gain:

Knowledge:

The student knows the most important concepts and theorems of analytic geometry. Understands the role and the importance of assumptions of proof in geometry. The student knows equations of lines, planes and conics.

Skills:

The student knows how to solve basic types of problems related to equations of elementary geometric objects.

Social Competencies:

The student knows the limits of his own knowledge and understands the need for further education. He works independently and in a team. Can formulate questions for understanding the subject or filling in the gaps in the reasoning.

BASIC LITERATURE

1) M.Stark, Geometria analityczna, wyd. PWN, 1974

SUPPLEMENTARY LITERATURE

The allocated number of ECTS points consists of:

Contact hours with an academic teacher: 2,14 ECTS points,

Student's independent work: 1,86 ECTS points,