Course Syllabus

Course from study programme for the cycle: 2022/2023

I. General Information

Course name	Analytic geometry
Programme	Informatics
Level of studies (BA, BSc, MA, MSc, long-cycle MA)	BA
Form of studies (full-time, part-time)	full-time
Discipline	Informatics
Language of instruction	english

Course coordinator	Dr Grzegorz Dymek

Type of class *(use only the types mentioned below)*	Number of teaching hours	Semester	ECTS Points
lecture	15	II	3
tutorial			
classes			
laboratory classes	15	II	
workshops			
seminar			
introductory seminar			
foreign language classes			
practical placement			
field work			
diploma laboratory			
translation classes			
study visit			

Course pre-requisites	1. Ability to do arithmetical calculations on real numbers. 2. Knowledge of basic formulas and functions.

II. Course Objectives

1. Gaining knowledge of fundamental notions of analytic geometry and mathematical methods used in it.
2. Gaining skills of formulate various problems in the language of analytic geometry.
3. Preparing to further study of computer science.
4. Gaining skills of the IT tools usage to solve problems of analytic geometry.

III. Course learning outcomes with reference to programme learning outcomes

Symbol	Description of course learning outcome	Reference to programme learning outcome
KNOWLEDGE		
W_01	Student knows fundamental notions and theorems of analytic geometry	K_W02
W_02	Student knows typical problems which can be described and solved by methods of analytic geometry	K_W02
W_03	Student knows basic examples illustrating listed notions	K_W02
SKILLS		
U_01	Student presents correct mathematical reasoning, formulate theorems and definitions	K_U21
U_02	Student has ability to find own methods of solving various problems (vectors, lines, panes), in particular by using IT tools	K_U21
U_03	Student knows conics	K_U22
SOCIAL COMPETENCIES		
K_01	Student is able to evaluate his/her knowledge from analytic geometry	K_K01

IV. Course Content

1. n-dimensional Cartesian space. Points and vectors.
2. Lines, planes and k-dimensional hyperplanes.
3. Affine maps.
4. Conics.
5. IT tools for solving problems of analytic geometry available in computer labs.

V. Didactic methods used and forms of assessment of learning outcomes

Symbol	Didactic methods *(choose from the list)*	Forms of assessment *(choose from the list)*	Documentation type *(choose from the list)*
KNOWLEDGE			
W_01	conventional lecture, discussion, practical classes	test, written exam, oral exam	evaluated test, protocol
W_02	conventional lecture, discussion, practical classes	test, written exam, oral exam	evaluated test, protocol
W_03	conventional lecture, discussion, practical classes	test, written exam, oral exam	evaluated test, protocol
SKILLS			
U_01	discussion, practical classes, laboratory classes, design thinking, project-based learning	test, written exam, oral exam, preparation of the project	evaluated test, protocol, files
U_02	discussion, practical classes, laboratory classes, design thinking, project-based learning	test, written exam, oral exam, preparation of the project	evaluated test, protocol, files

U_03	discussion, practical classes, laboratory classes, design thinking, project-based learning	test, written exam, oral exam, preparation of the project	evaluated test, protocol, files
SOCIAL COMPETENCIES			
K_01	discussion, practical classes, laboratory classes, design thinking, project-based learning	test, written exam, oral exam, preparation of the project	evaluated test, protocol, files

VI. Grading criteria, weighting factors.....

LECTURE:
The completion of laboratory classes is required. Written and oral exam together constitute the final grade:
91 – 100% excellent
81 – 90% very good
71 – 80% good
61 – 70% satisfactory
51 – 60% sufficient
less than 51% fail
LABORATORY CLASSES:
At least 80% of attendance is required. Tests and projects implemented in the computer lab together constitute the final grade:
91 – 100% excellent
81 – 90% very good
71 – 80% good
61 – 70% satisfactory
51 – 60% sufficient
less than 51% fail
Detailed assessment rules are given during lectures and laboratory classes.

VII. Student workload

Form of activity	Number of hours
Number of contact hours (with the teacher)	Lecture: 15 hrs. Laboratory classes: 15 hrs. Individual consultations: 30 hrs. In total: 60 hrs.
Number of hours of individual student work	Preparation for classes: 15 hrs. Studying books: 15 hrs. Preparation for tests and exams: 30 hrs In total: 60 hrs.

VIII. Literature

Basic literature
1. K. Borsuk, Multidimensional analytic geometry, PWN-Polish Scientific Publishers, Warszawa 1969. 2. R.A. Sharipov, Course of analytical geometry - https://arxiv.org/pdf/1111.6521.pdf
Additional literature
1. I. Vaisman, Analytical Geometry, World Scientific, 1997.