Course Syllabus

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.

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)	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.

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	conventional lecture, discussion, practical classes	test, written exam, oral exam	evaluated test, protocol
U_02	conventional lecture, discussion, practical classes	test, written exam, oral exam	evaluated test, protocol
U_03	conventional lecture, discussion, practical classes	test, written exam, oral exam	evaluated test, protocol
SOCIAL COMPETENCIES			
K_01	conventional lecture, discussion, practical classes	test, written exam, oral exam	evaluated test, protocol

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

91% – 100% excellent (5.0)
81% – 90% very good (4.5)
71% – 80% good (4.0)
61% – 70% satisfactory (3.5)
50% – 60% sufficient (3.0)
less than 50% fail (2.0)

Grade insufficient
(W) - student does not know fundamental notions discussed on classes;
(U) - student cannot solve basic problems from analytic geometry;
(K) - student is unconscientious, does not participate in classes, does not do notes.

Grade sufficient
(W) - student knows fundamental notions discussed on classes. He/She knows examples illustrating these notions;
(U) - student can solve basic problems from analytic geometry. He/She can apply basic techniques of solving such problems;
(K) - student participates in classes, does notes.

Grade good
(W) - student knows well fundamental notions discussed on classes. He/She has a knowledge of basic properties of these notions and their proofs. He/She knows how use these properties to solve basic problems;
(U) - student can solve basic problems from analytic geometry. He/She can apply more advanced techniques of solving such problems. He/She can use basic properties of notions;
(K) - student is prepared to classes. He/She has a knowledge of basic properties of these notions and their proofs.

Grade very good
(W) - student knows well fundamental notions discussed on classes. He/She has a knowledge of more advanced properties of these notions and their proofs. He/She knows how use these properties to solve more advanced problems. He/She knows more important techniques of proofs;
(U) - student can solve more advanced problems from analytic geometry. He/She can apply more advanced techniques of solving such problems. He/She can use more advanced properties of notions. He/She can perform simple proofs;
(K) - student participates actively in classes, asks questions, proposes solutions.

VII. Student workload

Form of activity	Number of hours
Number of contact hours (with the teacher)	Lecture: 15 hrs. 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.