DESCRIPTION OF THE COURSE OF STUDY

Course code	0541.6.MAT2.D.PLT2	
Name of the course in	Polish	**Przestrzenie liniowo-topologiczne**
	English	**Topological Vector Spaces**

1. LOCATION OF THE COURSE OF STUDY WITHIN THE SYSTEM OF STUDIES

1.1. Field of study	mathematics
1.2. Mode of study	full-time studies
1.3. Level of study	Graduate (Master)
1.4. Profile of study*	general academic profile of studies
1.5. Person/s preparing the course description	dr hab. Volodymyr Mykhaylyuk
1.6. Contact	volodymyr.mykhailiuk@ujk.edu.pl

2. GENERAL CHARACTERISTICS OF THE COURSE OF STUDY

2.1. Language of instruction	**Polish and English**
2.2. Prerequisites*	Topology I, Mathematical Analysis I-IV

3. DETAILED CHARACTERISTICS OF THE COURSE OF STUDY

3.1. Form of classes		Lectures and classes
3.2. Place of classes		classes in the UJK teaching room
3.3. Form of assessment		Graded credit (lectures), graded credit (classes)
3.4. Teaching methods		Lectures – information lecture Classes - discussions, solving problems
3.5. Bibliography	**Required reading**	Janich K. Topologia. PWN, Warszawa 1991 Bourbaki N. Topological Vector Spaces, Springer-Berlin, 2003
	Further reading	Schaefer H. Topological Vector Spaces, Springer-Verlag, 1999 Kelley J.L., Namioka I., Linear Topological Spaces, Springer-Verlag, Graduate Texts in Mathematics (GTM, volume 36), 1963

4. OBJECTIVES, SYLLABUS CONTENT AND INTENDED LEARNING OUTCOMES

4.1. Course objectives *(including form of classes)*
Lecture:
C1. To familiarize students with the basic notions related to topological vector spaces.
Classes:
C1. Acquiring skills in reasoning characteristic of topological vector spaces.
C2. Mastering reasoning skills for their use in the study of geometric objects.
C3. Formation of attitudes for proper student self-evaluation.

4.2. Detailed syllabus *(including form of classes)*
Lectures
 1. Neighbourhoods of the origin in topological vector spaces and its properties.
 2. Axioms of separations in topological vector spaces.
 3. Locally convex spaces and Minkowski functional.
 4. Bounded sets in topological vector spaces and normability of topological vector spaces.
 5. Metrizability and completely regularity of topological vector spaces.
Classes
 1. Neighbourhoods of the origin in topological vector spaces and its properties.
 2. Axioms of separations in topological vector spaces.
 3. Locally convex spaces and Minkowski functional.
 4. Bounded sets in topological vector spaces and normability of topological vector spaces.
 5. Metrizability and completely regularity of topological vector spaces.
 6. Spaces *D, S* and *E* in distribution theory.

4.3 Intended learning outcomes

Code	A student, who passed the course	Relation to learning outcomes
	within the scope of **KNOWLEDGE:**	
W01	basic notions from the field of topological vector spaces	MAT2A_W02 MAT2A_W10
W02	theorems of the theory of topological vector	MAT2A_W02 MAT2A_W03
W03	connections between theorems in the field of topological vector spaces	MAT2A_W01 MAT2A_W03
	within the scope of **ABILITIES:**	
U01	use topological properties of sets, functions and transformations	MAT2A_U03
U02	recognize the possibility of applying algebraic methods to topological problems	MAT2A_U03
U03	in the field of topology, carry out proofs that use tools from other areas of mathematics	MAT2A_U01
	within the scope of **SOCIAL COMPETENCE:**	
K01	Precisely formulates questions, serving to deepen one's own understanding of the essence of the subject area	MAT1A_K02

4.4. Methods of assessment of the intended learning outcomes

Teaching outcomes (code)	Method of assessment (+/-)								
	Test*			Effort in class*			Self-study*		
	Form of classes			Form of classes			Form of classes		
	L	C	...	L	C	...	L	C	...
W01	+	+		+	+		+	+	
W02	+	+		+	+		+	+	
W03	+	+		+	+		+	+	
U01		+		+	+		+	+	
U02		+		+	+		+	+	
U0		+		+	+		+	+	
K01	+	+		+	+		+	+	

4.5. Criteria of assessment of the intended learning outcomes

Form of classes	Grade	Criterion of assessment
lecture (L) (including e-learning)	3	at least 50% and no more than 60% of the total number of points possible
	3,5	more than 60% and no more than 70% of the total number of points possible
	4	more than 70% and no more than 80% of the total number of points possible
	4,5	more than 80% and no more than 90% of the total number of points possible
	5	more than 90% of the total number of points possible
classes (C)* (including e-learning)	3	at least 50% and no more than 60% of the total number of points possible
	3,5	more than 60% and no more than 70% of the total number of points possible
	4	more than 70% and no more than 80% of the total number of points possible
	4,5	more than 80% and no more than 90% of the total number of points possible
	5	more than 90% of the total number of points possible

5. BALANCE OF ECTS CREDITS – STUDENT'S WORK INPUT

Category	Student's workload

	Full-time studies	Extramural studies
NUMBER OF HOURS WITH THE DIRECT PARTICIPATION OF THE TEACHER /CONTACT HOURS/	47	
Participation in lectures*	15	
Participation in classes, ~~seminars, laboratories~~*	30	
Preparation in the ~~exam~~/ final test*	2	
INDEPENDENT WORK OF THE STUDENT/NON-CONTACT HOURS/	53	
Preparation for the lecture*	15	
Preparation for the classes, ~~seminars, laboratories~~*	20	
Preparation for the ~~exam~~/test*	18	
TOTAL NUMBER OF HOURS	100	
ECTS credits for the course of study	4	

Accepted for execution (date and legible signatures of the teachers running the course in the given academic year)

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