



Subject card

Subject name and code	Virtual Collaboration Teams, PG_00058933						
Field of study	Informatics						
Date of commencement of studies	October 2026	Academic year of realisation of subject			2028/2029		
Education level	first-cycle studies	Subject group			Obligatory subject group in the field of study Subject group related to scientific research in the field of study		
Mode of study	Part-time studies	Mode of delivery			at the university		
Year of study	3	Language of instruction			Polish		
Semester of study	5	ECTS credits			4.0		
Learning profile	general academic profile	Assessment form			assessment		
Conducting unit	Department of Intelligent Interactive Systems -> Faculty of Electronics Telecommunications and Informatics -> Faculties of Gdańsk University of Technology						
Name and surname of lecturer (lecturers)	Subject supervisor	prof. dr hab. inż. Bogdan Wiszniewski					
	Teachers	prof. dr hab. inż. Bogdan Wiszniewski dr inż. Jerzy Dembski					
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	15.0	0.0	0.0	30
	E-learning hours included: 0.0						
Learning activity and number of study hours	Learning activity	Participation in didactic classes included in study plan	Participation in consultation hours		Self-study		SUM
	Number of study hours	30	4.0		66.0		100
Subject objectives	<ol style="list-style-type: none">1. Introduce non-algorithmic computation models supporting collaborative work in a distributed environment.2. Indicate new classes of applications supporting the growth of information society.3. Demonstrate in practice basic classes of distributed interactive systems.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
Subject contents	Course content – lecture <ol style="list-style-type: none">1. Space sharing techniques2. Distributed interactive simulation3. Algorithmic vs. interactive model of computations4. Closed and open agent systems.5. Implementability of negotiations, agent rationality.6. Distributive and integrative bargaining7. Classes of coordination tasks.8. Classes of negotiation strategies.9. Regressive out-guessing problem.10. Socially inspired solution patterns.11. Game state space.12. Bounded rationality of agents13. Coordination problems in game theory14. Pareto optimality and Nash equilibrium15. Prospect theory vs. utility theory16. Networked virtual environments17. Object-event architectures (SIMNET, DIS)18. State prediction: dead-reckoning, ghost-objects19. High Level Architecture standard: federation, federates, RTI20. Generations of network games.21. State sharing techniques22. Dead reckoning protocols23. State convergence techniques						
Prerequisites and co-requisites							

Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Final test	50.0%	40.0%
	Project assignments	50.0%	60.0%
Recommended reading	Basic literature	<p>Wegner, P.: Why interaction is more powerful than algorithms. Communications of the ACM, May 1997, Vol. 40, No. 5, str. 80-91. Defense Modeling and Simulation Office (DMSO): https://www.dmsomil/public/</p> <p>Sandeep Singhal, S., Zyda, M.: Networked Virtual Environments: Design and Implementation, Addison-Wesley Professional, 1999</p> <p>John Ashcroft, J., Daniels, D.J., Hart, S.V.: Crisis Information Management Software (CIMS) - Feature Comparison Report, http://www.ojp.usdoj.gov/terrorism/whats_new.htm</p>	
	Supplementary literature	No requirements	
	eResources addresses		
Example issues/ example questions/ tasks being completed	<ul style="list-style-type: none"> • Extrapolation, filtration and smoothing in a distributed system. • Extrapolation with time synchronization in the presence of delays. • Negotiation and collaboration of agents in a virtual scene. • Autonomous objects - machine learning and control mechanisms. • Optimization of load of the network and nodes in a virtual reality system. 		
Practical activities within the subject	Not applicable		

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