

**Learning outcomes of the programme:**

1.	<b>Field of study</b>	<b>Econophysics</b>
2.	Academic year of entry	2015/2016 (winter term)
3.	Level of qualifications/degree	second-cycle studies
4.	Degree profile	general academic

Code of the learning outcome of the programme	Learning outcomes The graduate:	Codes of the learning outcomes of the areas of education to which the learning outcome of the programme is related
<b>KNOWLEDGE</b>		
KEF_W01	has an extended knowledge of the importance of economics, physics and econophysics as an interdisciplinary science on the applications of physics methods in economics	S2A_W01, X2A_W01
KEF_W02	knows the methods and the manners of use of discrete mathematics and statistical modelling for economic calculations	X2A_W02
KEF_W03	has an in-depth knowledge of physics methods for financial markets: analysis and collection of market data, behaviour and description of financial markets, physics-inspired market models and valuation of financial instruments	S2A_W06, X2A_W03
KEF_W04	is familiar with statistical modelling methods in insurance and finance and methods for deterministic and stochastic dynamics	S2A_W06, X2A_W03, X2A_W04
KEF_W05	knows the elements of number theory, graph theory and calculation theory, and advanced computational techniques supporting the work of an econophysicist and understands their limitations	S2A_W06, X2A_W04, X2A_W05
KEF_W06	has in-depth knowledge of how game theory is applied to describe the relationship between structures and social institutions	S2A_W03, S2A_W07, X2A_W02
KEF_W07	is familiar with the numerical methods used by the applied fields (e.g. industrial technologies, management, etc.); is familiar with advanced computational techniques supporting the work of an econophysicist and understands their limitations	S2A_W06, X2A_W03
KEF_W08	knows the basics of quantum methods used in econophysics	S2A_W06, X2A_W02
KEF_W09	is familiar with the mathematical basics of information theory, theory of algorithm and cryptography and their practical applications, knows well at least one software package for analytical methods in business and one package for statistical data processing	S2A_W06, X2A_W03, X2A_W04
KEF_W10	knows the principles of health and safety at work at the sufficient level that allows independent work in the econophysics profession	X2A_W07
KEF_W11	is familiar with the functioning of financial institutions and the associated risks	S2A_W07, S2A_W11, X2A_W10
KEF_W12	has an in-depth knowledge of selected scientific methods and is familiar with the issues characteristic of the discipline of science not related to the programme	
<b>SKILLS</b>		
KEF_U01	can analyse, assess and exploit risks and uncertainties of complex phenomena and use these skills in economic activities	S2A_U02, S2A_U04, X2A_U02, X2A_U04
KEF_U02	can simulate the price movements of financial instruments, verify hypotheses regarding the behaviour of markets	S2A_U03, S2A_U04, X2A_U02
KEF_U03	can recognize and counteract the opponent's strategies, can analyse the behaviour of market partners from the point of view of game theory	S2A_U01, S2A_U02, S2A_U03, X2A_U04
KEF_U04	can select an offer on the basis of tender mechanisms	S2A_U02, S2A_U04, X2A_U01, X2A_U04
KEF_U05	can make decisions taking into account risk analysis based on the theory of probability and strategic thinking	S2A_U02, S2A_U03, S2A_U07, X2A_U02, X2A_U04
KEF_U06	can negotiate on the basis of universal principles, can apply selected negotiating strategies and has the ability to identify and counter unfair negotiating tactics	S2A_U07, S2A_U08, X2A_K03, X2A_U03, X2A_U04
KEF_U07	can simulate random phenomena, the analysis of time series and forecasting	S2A_U02, S2A_U04, X2A_U01, X2A_U04
KEF_U08	can apply basic probabilistic distributions to practical issues	S2A_U02, S2A_U04, X2A_U01, X2A_U04
KEF_U09	can use stochastic processes as a tool for modelling phenomena and analysing their evolution	S2A_U02, S2A_U04, X2A_U01
KEF_U10	can use statistical tools to estimate and test hypotheses and statistical analysis of economic and social data	S2A_U02, S2A_U04, X2A_U01, X2A_U04

KEF_U11	can work with market analysts, mathematicians, physicians in the analysis of phenomena to develop analysis and evaluation of the size and behaviour of observed phenomena and assess their impact on the company's activities	S2A_U03, S2A_U06, X2A_U06, X2A_U09
KEF_U12	can identify and develop their knowledge	X2A_U07
KEF_U13	speaks sufficient level of English (B2+ level) to comprehensively read the specialist literature	S2A_U11, X2A_U10
KEF_U14	has an in-depth ability to prepare a variety of written studies on specific issues in econophysics or cross-disciplinary issues	S2A_U09, X2A_U08
KEF_U15	has an in-depth ability to prepare and present an oral presentation on econophysics or interdisciplinary issues in Polish and English, using modern multimedia techniques	S2A_U10, X2A_U09
KEF_U16	is able to prepare the elaboration of the study results, including explanation of the aim of the study, adopted methodology, description, analysis and discussion of the results obtained and their significance compared to similar studies	X2A_U02, X2A_U03, X2A_U05
KEF_U17	can obtain information from literature, databases and other sources, can integrate and interpret the information obtained, draw conclusions and formulate and justify opinions	X2A_U03, X2A_U07
KEF_U18	has English skills at B2+ level (CEFR)	S2A_U11, X2A_U10
KEF_U19	has an in-depth ability to pose and analyse problems based on the acquired contents from the scientific discipline not related to the programme	
<b>SOCIAL COMPETENCES</b>		
KEF_K01	knows the limitations of their knowledge and understands the need for further education and can inspire other people's learning process	S2A_K01, X2A_K01, X2A_K05
KEF_K02	is able to precisely formulate questions to deepen their own understanding of a given topic or to find the missing elements of reasoning	X2A_K01, X2A_K02
KEF_K03	can work on a team, understands the need to work systematically on any projects that are long-term	S2A_K02, X2A_K02, X2A_K03
KEF_K04	understands and appreciates the importance of intellectual honesty in their own and others' actions; acts ethically	S2A_K04, X2A_K04
KEF_K05	understands the need to improve professional and personal competences	S2A_K06, X2A_K05
KEF_K06	can formulate opinions and inspire discussions on basic econophysical issues	S2A_K03
KEF_K07	can communicate using different techniques, in the professional environment of economists, financiers and the representatives of science	S2A_K02, X2A_K02
KEF_K08	is aware of the responsibility for research initiatives undertaken, understands the social aspects of the application of the acquired knowledge, skills and the related responsibility	X2A_K06
KEF_K09	knows and understands the basic principles of the functioning of financial institutions and the social risks associated with this activity	S2A_K04
KEF_K10	can think and act in terms of entrepreneurship (costs, economic effects, profit and loss account, profitability)	S2A_K07, X2A_K07
KEF_K11	understands the need for an interdisciplinary approach to solving problems, integrating knowledge from different disciplines and practising self-education to deepen the knowledge acquired	