Uniwersytet Ekonomiczny w Katowicach

AI FOR TRUST: HOW TECHNOLOGY IMPROVES CONTROL AND TRANSPARENCY

Syllabus

Basic information

Field of study Electives	**Didactic cycle** 2025/26
Speciality -	**Subject code** EKOPSWS.L8.3713.25
Organizational unit School of Undergraduate and Graduate Studies	**Lecture languages** English
Study level undergraduate studies	**Mandatory** Elective
Study form full-time	**Block** Free choice electives
Education profile general academic/practical	**Department responsible for the subject** Department of Accounting
	Subject related to scientific research No
	Subject shaping practical skills No

Coordinator	Anna Karmańska
Teacher	Anna Karmańska

Period	**Form of teaching, number of hours and method of examination**	**Number of ECTS points**
Semester 4	• lecture: 14, Credit with grade	3

Sustainable Development Goals	ESG / (Environmental, Social, Governance); non-financial; integrated reporting

Goals

Code	Goal
C1	The objective of the course is to familiarize students with how artificial intelligence (AI) and advanced digital technologies enhance control, transparency, and trust in financial reporting, auditing, and corporate governance.
C2	The objective of the course is to equip students with an understanding of how AI-based tools support internal control systems, risk management, fraud detection, assurance services, and ESG reporting.
C3	The objective of the course is to emphasize the importance of explainability, accountability, and the ethical use of AI in financial decision-making.

Recommended requirements

Fundamentals of Finance & Accounting

Subject's learning outcomes

Code	Outcomes in terms of	Major learning outcomes for the subject	Examination methods
Knowledge:			
W1	Student defines the role of AI in improving trust, transparency, and control in finance and accounting.	DFI.M_W01	End-of-course assessment - group presentation
W2	Student describes ethical, legal, and governance risks related to AI adoption.	DFI.M_W06	End-of-course assessment - group presentation
Skills:			
U1	The student is able to use and apply AI applications in financial reporting, auditing, and internal control systems for the identification, critical analysis, and synthesis of economic, financial, legal, and social phenomena and processes.	DFI.M_U01	End-of-course assessment - group presentation
U2	The student is able to use a foreign language at the B2+ level of the Common European Framework of Reference for Languages (CEFR), including specialized terminology characteristic of economics and finance, as well as related complementary disciplines, particularly in the context of AI applications in financial reporting, auditing, and corporate governance.	DFI.M_U04	End-of-course assessment - group presentation
Social competences:			
K1	The student is prepared to critically assess their own knowledge and the information received in the fields of finance and accounting, enriched with an interdisciplinary and international perspective, and to critically analyze the impact of AI on professional judgment and accountability.	DFI.M_K01	End-of-course assessment - group presentation

Study content

No.	Course content	Subject's learning outcomes	Activities
1.	Digital Transformation in Accounting and Audit	W1, W2, U1, U2, K1	lecture
2.	Fundamentals of Artificial Intelligence (AI)	W1, W2, U1, U2, K1	lecture
3.	Regulation of AI in Finance (AI Act, data protection)	W1, W2, U1, U2, K1	lecture
4.	Supervised and unsupervised machine learning models	W1, W2, U1, U2, K1	lecture
5.	Data quality and bias in financial datasets	W1, W2, U1, U2, K1	lecture
6.	Explainable AI (XAI) and trust (Shap and Lime)	W1, W2, U1, U2, K1	lecture
7.	AI in Internal Control Systems and Fraud Detection	W1, W2, U1, U2, K1	lecture
8.	AI in sustainability reporting	W1, W2, U1, U2, K1	lecture
9.	Ethics and Responsibility in AI Use	W1, W2, U1, U2, K1	lecture

Additional information

Activities	Methods of conducting classes
lecture	Lecture using multimedia techniques, Lecture using case studies, Lecture using activating techniques

Activities	Examination method	Percentage
lecture	End-of-course assessment - group presentation	100%

Activities	Credit conditions
lecture	Group project (AI use case analysis)

Literature

Obligatory

1. Karmańska, A. (2025). Explainable AI in the Attestation of Sustainability Reporting. In Explainable Artificial Intelligence for Sustainable Development (eds. Ziemba E. W., Grzenda W., Ramsza M.) (pp. 88-109). Routledge.
2. Karmańska, A. (2023). Machine learning in analytical procedures in audit. In Analytics in Finance and Risk Management (eds. Nguyen N. T. H., Agarwal S., Ziemba E. W) (pp. 232-255). CRC Press.
3. Karmańska, A. (2022). Artificial Intelligence in audit. Prace Naukowe Uniwersytetu Ekonomicznego We Wrocławiu, 66(4), 87-99.
4. Van den Broeck, G., Lykov, A., Schleich, M., & Suciu, D. (2022). On the tractability of SHAP explanations. Journal of Artificial Intelligence Research, 74, 851-886.

Optional

1. REGULATION (EU) 2024/1689 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 13 June 2024 laying down harmonised rules on artificial intelligence and amending Regulations (EC) No 300/2008, (EU) No 167/2013, (EU) No 168/2013, (EU) 2018/858, (EU) 2018/1139 and (EU) 2019/2144 and Directives 2014/90/EU, (EU) 2016/797 and (EU) 2020/1828 (Artificial Intelligence Act)
2. Wang, M., Zhang, X., & Han, X. (2025). AI Driven Systems for Improving Accounting Accuracy Fraud Detection and Financial Transparency. Frontiers in Artificial Intelligence Research, 2(3), 403-421.
3. Karmańska, A. (2023). Coding skills in the automation of accounting processes. Folia Oeconomica Stetinensia, 23(1), 107-123.
4. Kumar, S. (2024). Python for Accounting and Finance. Springer Books.
5. Dickey, G., Blanke, S., & Seaton, L. (2019). Machine learning in auditing. The CPA Journal, 89(6), 16-21.
6. Cho, S., Vasarhelyi, M. A., Sun, T., & Zhang, C. (2020). Learning from machine learning in accounting and assurance. Journal of Emerging Technologies in Accounting, 17(1), 1-10.

Calculation of ECTS points

Activity form	**Activity hours***
lecture	14
Preparation of end-of-course assessment - group presentation	30
Analysis of lecture notes	46
Student workload	**Hours** 90
Number of ECTS points	**ECTS** 3

* hour means 45 minutes

Major learning outcomes for the subject

Code	Content
DFI.M_K01	Jest gotów do krytycznej oceny własnej wiedzy oraz odbieranych treści z zakresu finansów i rachunkowości, poszerzonych o wymiar interdyscyplinarny i międzynarodowy.
DFI.M_U01	Potrafi wykorzystać nabytą, pogłębioną wiedzę do identyfikacji, krytycznej analizy i syntezy zjawisk oraz procesów gospodarczych, finansowych, prawnych, społecznych, w tym także w systemie rachunkowości, jak również potrafi formułować i rozwiązywać złożone i nietypowe problemy oraz innowacyjnie wykonywać zadania w nieprzewidywalnych warunkach w obszarze finansów i rachunkowości, poprzez dobór i właściwe zastosowanie metod i narzędzi, w tym nowoczesnych technik informacyjno-komunikacyjnych.
DFI.M_U04	Potrafi posługiwać się językiem obcym na poziomie B2+ Europejskiego Systemu Opisu Kształcenia Językowego, w tym terminologią charakterystyczną dla dyscypliny ekonomia i finanse, a także dyscyplin uzupełniających.
DFI.M_W01	Zna i rozumie w pogłębionym stopniu wybrane zjawiska oraz procesy, jak również teorie pozwalające wyjaśniać złożone zależności między nimi, stanowiące zaawansowaną wiedzę ogólną z zakresu dyscypliny ekonomia i finanse, ze szczególnym uwzględnieniem finansów i rachunkowości, a także zna i rozumie wybrane zagadnienia z zakresu dyscyplin uzupełniających: nauk prawnych, matematyki, informatyki oraz nauk o zarządzaniu i jakości.
DFI.M_W06	Zna i rozumie w pogłębionym stopniu zasady finansowe, prawne i organizacyjne podejmowania i profesjonalnego prowadzenia działalności gospodarczej, a także krajowe i międzynarodowe wymagania sprawozdawcze.