TUTORIAL COURSE FORM

2023-2024 ACADEMIC YEAR

Name of the tutorial course (incoming Erasmus/exchange students)	Practical Applications of AI in Business
Name of the professor	Sabina-Cristiana Necula
Email of the professor	sabina.necula@uaic.ro
Office of the professor Consultation hours	B301/ Tuesday (9-11 AM)
Semester(s) in which the tutorial course is available	2
No. of ECTS credits	3
Level of study (bachelor/master/PhD)	bachelor
Short description/Contents	1. Introduction to AI and Business Basic concepts of artificial intelligence and business Overview of the intersection of AI and finance Python Practice: Introduction to Python for Finance 2. Predictive Analysis in Finance Introduction to predictive analysis techniques Practical applications of predictive analysis in finance, such as forecasting stock prices and credit risk modelling Python Practice: Building a Simple Stock Price Predictor 3. Machine Learning for Financial Data Understanding different types of machine learning algorithms (supervised, unsupervised, reinforcement learning) Applications of machine learning in analysing financial data Python Practice: Implementing Machine Learning Algorithms on Financial Data 4. AI in Trading Understanding how AI is used in algorithmic trading Case studies of AI-driven trading strategies 5. AI in Personal Finance Overview of how AI is transforming personal finance (e.g., robo-advisors, budgeting apps)

	Discussion of the benefits and challenges of AI in personal finance 6. AI in Fraud Detection How AI is used in fraud detection and prevention Case studies of AI in identifying and preventing financial fraud 7. Ethical Considerations in AI and Finance Discussion of ethical issues in using AI in finance, such as data privacy and algorithmic bias Strategies for addressing these ethical concerns 8. Future of AI in Finance Exploring emerging trends and future applications of AI in finance Discussion of the skills needed to succeed in the AI-driven finance industry
Assessment/Evaluation	Assignments (50%): 2 Practical assignments where students will apply AI techniques to solve problems related to finance. For instance, students can be asked to use machine learning algorithms on financial datasets. Final Project (50%): develop a more comprehensive AI application for a finance-related problem (predictive model for stock prices) or conduct a thorough case study on the use of AI in a specific area of finance. This should be accompanied by a report detailing their methods, results, and insights.
Bibliography	1. Aldhyani, T. H., & Alzahrani, A. (2022). Framework for predicting and modeling stock market prices based on deep learning algorithms. *Electronics*, *11*(19), 3149. 2. Ali, A., Abd Razak, S., Othman, S. H., Eisa, T. A. E., Al-Dhaqm, A., Nasser, M., ... & Saif, A. (2022). Financial fraud detection based on machine learning: a systematic literature review. *Applied Sciences*, *12*(19), 9637. 3. Belhaj, M., & Hachaïchi, Y. Artificial Intelligence, Machine Learning and Big Data in Finance Opportunities, Challenges, and Implications for Policy Makers. [Artificial Intelligence, Machine Learning and Big Data in Finance: Opportunities, Challenges, and Implications for Policy Makers (oecd.org)](oecd.org) 4. Boukherouaa, E. B., Shabsigh, M. G., AlAjmi, K., Deodoro, J., Farias, A.,

Iskender, E. S., ... & Ravikumar, R. (2021). *Powering the Digital Economy: Opportunities and Risks of Artificial Intelligence in Finance*. International Monetary Fund, [Powering the Digital Economy: Opportunities and Risks of Artificial Intelligence in Finance in: Departmental Papers Volume 2021 Issue 024 (2021) (imf.org)](#)

5. Fintelics, AI in Financial Services: Streamlining Processes and Enhancing Customer Experiences for Profitability, [AI in Financial Services: Streamlining Processes and Enhancing Customer Experiences for Profitability | by Fintelics | Medium](#)

6. Li, A. W., & Bastos, G. S. (2020). Stock market forecasting using deep learning and technical analysis: a systematic review. *IEEE access*, *8*, 185232-185242.

7. Li, Y., & Pan, Y. (2022). A novel ensemble deep learning model for stock prediction based on stock prices and news. *International Journal of Data Science and Analytics*, 1-11.

8. Necula, S. C. (2023). Exploring the Impact of Time Spent Reading Product Information on E-Commerce Websites: A Machine Learning Approach to Analyze Consumer Behavior. *Behavioral Sciences*, *13*(6), 439.

9. Necula, S. C., & Păvăloaia, V. D. (2023). AI-Driven Recommendations: A Systematic Review of the State of the Art in E-Commerce. *Applied Sciences*, *13*(9), 5531.

10. Păvăloaia, V. D., & Necula, S. C. (2023). Artificial intelligence as a disruptive technology—a systematic literature review. *Electronics*, *12*(5), 1102.

11. Paweł Stężycki, Using AI in Finance? Consider These Four Ethical Challenges, [Using AI in Finance? Consider These Four Ethical Challenges (netguru.com)](#)

12. Rudra Tiwari, The Application of AI And Machine Learning in the Financial Industry and its Effects on Risk Management and Fraud Detection Introduction, [(11) (PDF) The Application of AI And Machine Learning in the Financial Industry and its Effects on Risk Management and Fraud Detection Introduction (researchgate.net)](#)

	13. Zhu, Y., Xie, C., Wang, G. J., & Yan, X. G. (2016). Predicting China's SME credit risk in supply chain finance based on machine learning methods. *Entropy*, *18*(5), 195.
Observations	