

## ADMISSION TO DOCTORAL STUDIES

Session September 2025

Field of doctoral studies: ENGINEERING AND MANAGEMENT

Doctoral supervisor: PROF UNIV DR ING NEDELICU ANISOR

## TOPICS FOR THE ADMISSION TO DOCTORAL STUDIES

### TOPIC 1: Engineering and management of technological companies in Industry 4.0

Contents / Main aspects to be considered

- projects, programs, portfolios, sub-portfolios
- the integration of AI, ML, Big Data, Blockchain in technological businesses
- financing strategies for industrial projects- private financing, public financing, public- private partnerships
- active management of portfolios- CAPM, APT models
- hedging strategies- risks and diversification architectures

Recommended bibliography:

- Acs, Z. J., Braunerhjelm, P., Audretsch, D. B., Carlsson, B. (2009), The knowledge spillover theory of entrepreneurship. *Small Business Economics*, 32(1), 15–30
- entrepreneurship. *Small Business Economics*, 32(1), 15–30.
- Acs, Z. J., Szerb, L. (2007). Entrepreneurship, economic growth and public policy. *Small business economics*, 28(2-3), 109–122
- Audretsch, D. B., Belitski, M., Caiazza, R., Lehmann, E. E. (2020), Knowledge management and entrepreneurship, *International Entrepreneurship and Management Journal*, 1–13
- Audretsch, D. B., Belitski, M., Caiazza, R., Start-ups, Innovation and Knowledge Spillovers, *The Journal of Technology Transfer* (2021)
- Brennen, M., Project flexibility, agency, and competition: New developments in the theory and application of real options, 2000
- Caiazza, R., Belitski, M., Audretsch, D. B. (2020). From latent to emergent entrepreneurship: the knowledge spillover construction circle. *The Journal of Technology Transfer*, 45(3), 694–704
- Damodaran (2001) *Investment Valuation*, Wiley
- Fabozzi, F., Nevitt, P.K., 2006. *Project financing*, London, 2010
- Shiller, R., *Irrational Exuberance*. Princeton, NJ: Princeton 2000

Prerequisites / Remarks: *to be adapted/ completed/ deleted*

## TOPIC 2: Engineering and management of resilience in high technological companies

Contents / Main aspects to be considered

- derivatives in industrial management- strategies with futures and options
- valuation of technological firms based on real options
- the integration of alternative financing Venture Capital/ Private Equity in ETFs; specific techniques of risk management
- the integration of derivatives in investment products structuring- the case of PPN (Principal Protected Notes), Derivative- based ETFs

Recommended bibliography:

Hull, J., Options, Futures, and Other Derivatives, New Jersey, 2006

Hull, J., Risk Management and Financial Institutions, New Jersey, 2010

Mun, J., Real Options Analysis: Tools and Techniques for Valuing Strategic investment decisions, Wiley 2006

Copeland, T., A real-world way to manage real options, Harvard Business Review, 2004

Damodaran (2001), Investment Valuation, Wiley

Michaud, Richard O., Efficient Asset Management: A Practical Guide to Stock Portfolio Optimization and Asset Allocation, Boston 1998

Shreve, S., Stochastic Calculus for Finance, Springer, New York, 2004

Prerequisites / Remarks: *to be adapted/ completed/ deleted*

Doctoral supervisor,

Prof. dr. ing. Nedelcu Anisor

Signature

Coordinator of the field of doctoral studies,

Prof. dr.ing. Florescu Adriana

Signature