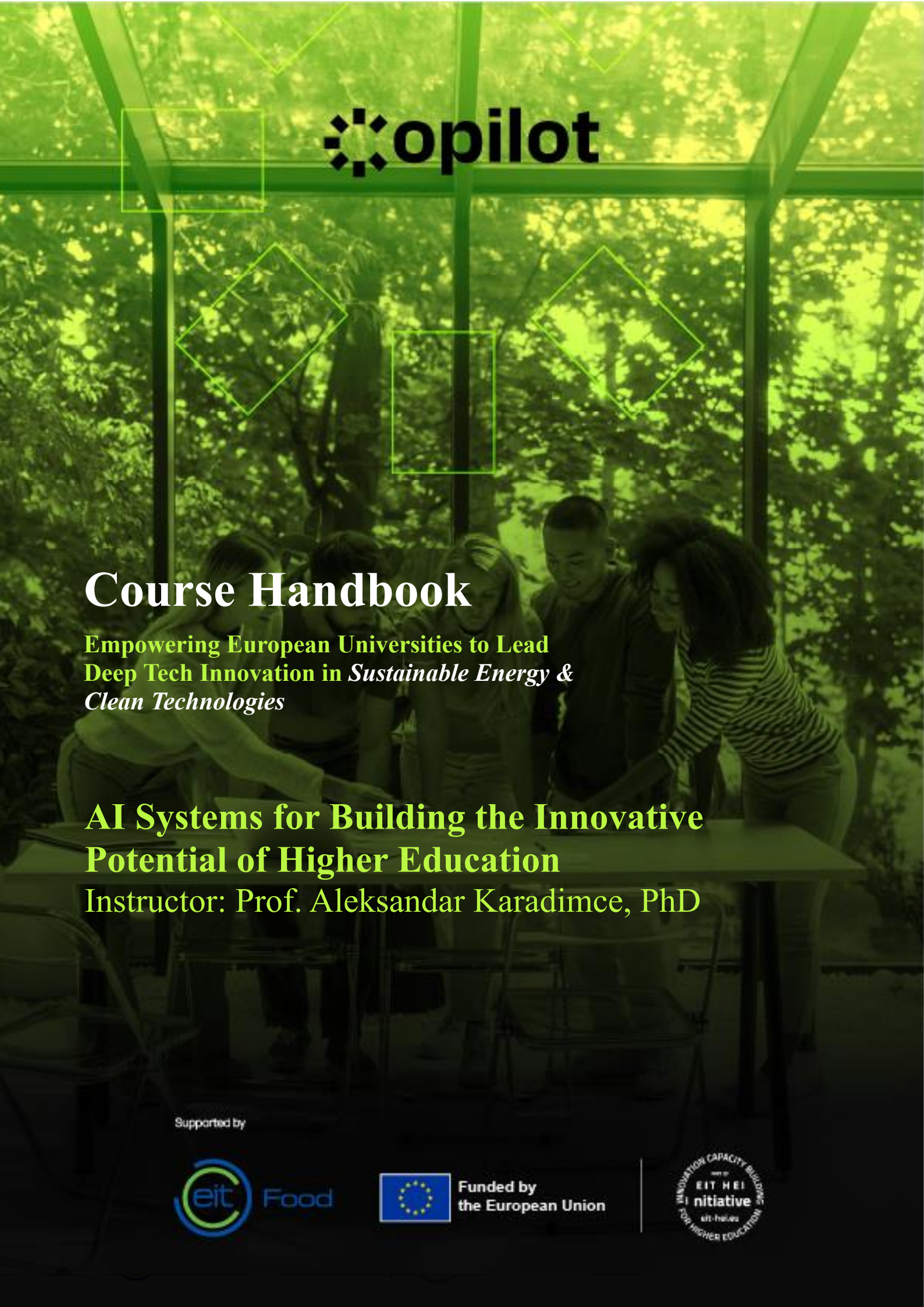


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Course Handbook

Empowering European Universities to Lead Deep Tech Innovation in *Sustainable Energy & Clean Technologies*

AI Systems for Building the Innovative Potential of Higher Education

Instructor: Prof. Aleksandar Karadimce, PhD

Supported by

eit Food

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EIT HEI initiative

Innovation Capacity Building for Higher Education

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Course Information

Title: ***AI Systems for Building the Innovative Potential of Higher Education***

Instructor(s): Prof. Aleksandar Karadimce, PhD

ECTS credits: 2

Course structure: *5 sessions, 2 lectures + 2 tutorials per session*

Mode of delivery: *online*

Course Summary

This course provides participants with extensive knowledge and hands-on skills in Artificial Intelligence (AI) systems to strengthen the innovation capacity of Higher Education Institutions (HEIs) across Europe. Grounded in the CoPilot project goals, it advances deep tech entrepreneurship through inclusive, cross-border collaboration.

Participants explore how AI technologies — machine learning, NLP, generative AI, and intelligent automation — serve as catalysts for opportunity identification, tech scouting, startup ideation, technology transfer, and scaling. Special emphasis is placed on human-centred approaches, ethical use, personalised learning, administrative efficiency, and EU AI Act compliance.

Through real-world case studies (USAHS, European CoPilot examples), free AI tool demonstrations, and a major project, participants develop a strategic AI Innovation Roadmap or Deep Tech Startup Concept.

Course Participants

The course DeepTech Entrepreneurship is designed for a diverse audience of students, researchers, academic and non-academic professionals, and aspiring entrepreneurs interested in transforming scientific and technological innovations into viable business ventures.

Learning Outcomes

Upon successful completion of the course, participants will be able to:

1. Define AI systems in HE and explain their role in innovation ecosystems, including personalised experiences, admin automation, analytics, and generative content.
2. Identify key HEI innovation actors (TTOs, incubators, investors) and confidently use free/education-accessible AI tools for practical innovation tasks.

3. Apply AI-driven strategies for opportunity identification, tech scouting, and deep tech skills development in higher education contexts.

4. Critically evaluate opportunities and challenges of AI integration in HEIs, including privacy, equity, academic integrity, and EU AI Act compliance.

5. Design and develop a comprehensive AI Innovation Roadmap or Deep Tech Startup Concept for a selected HEI or clean-tech venture.

6. Demonstrate human-centered innovation teaching competencies by integrating the Double Diamond process and student-centered pedagogies into AI-enabled learning experiences.

Assessment

In order for each participant to complete the course successfully and be awarded the corresponding ECTS credits, they must pass the course assessment. The outcome of the assessment can be either Pass or Fail.

Assessment methods

- **Main Project (50%):** 10–15 page AI Innovation Roadmap or Deep Tech Startup Concept. Must use minimum 3 free AI tools with screenshots, address at least one blog benefit + one issue, include EU AI Act compliance section, implementation timeline, and metrics.
- **Oral Presentation (30%):** Presentation with a focus on tool demos and impact in 10-minute pitch + 5 min Q&A using visual storytelling
- **Active Participation (20%):** Engagement in discussions, tutorials, peer feedback, and reflective tasks.

The link between learning objectives and assessment criteria can be seen below.

Learning outcomes	Assessment examples
• Identify AI systems in HE and explain their role in innovation ecosystems. • Identify key HEI innovation actors (TTOs, incubators, investors) and confidently use free/education-accessible AI tools for practical innovation tasks. • Design and develop a comprehensive AI Innovation Roadmap or Deep Tech Startup Concept for a selected HEI or clean-tech venture.	Develop AI Innovation Roadmap or Deep Tech Startup Concept
• Apply AI-driven strategies for opportunity identification, tech scouting, and deep tech skills development in higher education contexts. • Demonstrate human-centered innovation teaching competencies by integrating the Double Diamond process and student-centered pedagogies into AI-enabled learning experiences.	Presentation with a focus on tool demos and impact on AI-enabled learning experiences.

Mentoring

In the context of the course, participants will have the opportunity to receive one-to-one mentoring in carrying out their assignment/project.

Bibliography

1. Ocen, S., Elasu, J., Aarakit, S. M., & Olupot, C. (2025). Artificial intelligence in higher education institutions: review of innovations, opportunities and challenges. *Frontiers in Education, 10, 1530247.*

Provides a comprehensive review of AI innovations in HEIs, examining opportunities for institutional transformation and challenges related to implementation, ethics, and equity.

2. Schmidt, D. A., Alboloushi, B., Thomas, A., & Magalhaes, R. (2025). Integrating artificial intelligence in higher education: perceptions, challenges, and strategies for academic innovation. *Computers and Education Open, 100274.*

Explores faculty and student perceptions of AI integration in HEIs, identifying key challenges and evidence-based strategies for fostering a culture of academic innovation.

3. Chan, C. K. Y., & Tsi, L. H. (2023). The AI Revolution in Education: Will Artificial Intelligence Transform or Eliminate Universities? *arXiv preprint arXiv:2305.04224.*

Critically examines the disruptive potential of AI on university structures, exploring scenarios for transformation versus obsolescence and implications for HEI innovation ecosystems.

4. Grassini, S. (2023). Shaping the future of education: exploring the potential and consequences of AI and ChatGPT in educational settings. *Education Sciences, 13(7), 692.*

Analyses opportunities and risks of generative AI in higher education, with a focus on entrepreneurial learning and the evolving innovation landscape within HEIs.

5. European Commission (2024). *AI in European Higher Education: Policy Frameworks and Implementation Strategies.* Publications Office of the EU.

Provides a policy overview of AI integration strategies across European HEIs, aligning with Horizon Europe, the EU AI Act, and the European Education Area strategic goals.

6. OECD (2024). *Artificial Intelligence and the Future of Skills: Implications for Higher Education and Innovation Policy.* OECD Publishing, Paris.

Analyses AI-driven skill transformation requirements in HEIs, with policy recommendations for integrating AI competencies into entrepreneurship and innovation curricula.

Other Important Information

Course evaluation: Upon successful completion of the course, participants are required to fill in the course evaluation questionnaire.

Certificate: Upon successful completion of the course, participants will be issued a certificate of achievement provided by UIST and EIT Food KIC.

Plagiarism: UIST has explicit rules concerning academic dishonesty, including plagiarism. Course participants are reminded that all work submitted as part of the requirements for any examination (including coursework) of UIST must be expressed in their own words and incorporated in their own ideas and judgements.

Course Timetable

Session	Date and Time	Instructor	Venue
1st	Tuesday 10.11.2026, 10:00 - 13:00	Aleksandar Karadimce	Online
2nd	Thursday 12.11.2026, 10:00 - 13:00	Aleksandar Karadimce	Online
3rd	Tuesday 17.11.2026, 10:00 - 13:00	Aleksandar Karadimce	Online
4th	Thursday 19.11.2026, 10:00 - 13:00	Aleksandar Karadimce	Online
5th	Tuesday 24.11.2026, 10:00 - 13:00	Aleksandar Karadimce	Online

Contact Details of Instructor(s)

Name	Email	Telephone number
Aleksandar Karadimce	aleksandar.karadimce@uist.edu.mk	+38970300787

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