COURSE UNIT (MODULE) DESCRIPTION

Course unit (module) title	Code
AI in Education: Theory, Practice, and Ethics	

Lecturer(s)	Department(s) where the course unit (module) is delivered
Coordinator: assist. prof. Jogaila Vaitekaitis **Other(s):** ***In a non-recurring way, the course will also give place to theoretical and practical interventions of foreign researchers and experts in the field.*	VU Faculty of Philosophy, Institute of Educational Sciences, Universiteto str. 9/1

Study cycle	Type of the course unit (module)
First (Bachelor)	Optional

Mode of delivery	Period when the course unit (module) is delivered	Language(s) of instruction
Blended	Autumn semester	English

Requirements for students	
Prerequisites: English language	**Additional requirements (if any):** **Intermediate computer proficiency** courses are designed for individuals who already have good understanding of technology. Participants will build upon their skills by learning how to use a variety of resources, including learning apps, Microsoft 365 apps, and photo and video editing platforms.

Course (module) volume in credits	Total student's workload	Contact hours	Self-study hours
5	130	48	82

Purpose of the course unit (module): programme competences to be developed
Module Description: This module serves as a prerequisite for educators, students or policy-makers interested in the intersection of AI and education. It explores foundational AI models, the art of prompting AI for educational outcomes, the role of AI in pedagogy, and the ethical landscape surrounding AI in education. The module also includes practical segments and encourages critical reflection on ethical

implications such as plagiarism, data privacy, and the broader societal impacts, including issues of equity and inclusivity.

Subject (Module) Objective:

The objective of this module is to equip participants with a nuanced understanding of Artificial Intelligence (AI) in educational contexts, appreciating both its transformative potential and the ethical considerations it necessitates. The module aims to foster competencies in:

1. Understanding the role and scope of AI in educational settings, particularly in terms of pedagogical applications (general competence).
2. Engaging with AI tools to enhance pedagogical practices (subject-specific competence).
3. Navigating the ethical terrain that AI in education presents, with a particular focus on issues of equity, inclusivity, and accountability (subject-specific competence).

Learning Objectives:

Upon successful completion of this module, students will be able to:

1. Articulate the impact of AI and its trajectory in education, including key generative models like ChatGPT, Bard, Bing, and Claude2.
2. Evaluate the role of AI in curriculum design, formative assessment, and fostering active learning environments.
3. Demonstrate the ability to prompt AI tools effectively to achieve specific educational outcomes and troubleshoot undesired AI behaviors.
4. Engage in critical discussions on the ethical implications of AI in education, with a particular focus on issues of plagiarism, bias, and data privacy.
5. Apply AI tools to design a sample syllabus and a low-stakes test, while taking into account ethical considerations, by the end of the module.
6. Reflect on the potential future of AI in education, considering both the opportunities for enhanced personalized learning and the challenges of ensuring equitable access and student accountability.

Learning outcomes of the course unit (module)	**Teaching objectives and learning methods**	**Assessment methods**
Subject-Specific Competences:		
AI Pedagogical Strategies	Develop and apply AI-enabled pedagogical strategies. Blended learning: Mini-workshops, Interactive online sessions, Group projects	Project activities, Preparation and presentation of submissions, Performance evaluation
Ethical Consideration in AI Education	Navigate ethical considerations of AI in education. Blended learning: Debates, Case studies, Online forums	Essay writing (human+AI), Review of essay; analysis of literature and other sources, Presentation
Practical Application of AI	Utilize AI tools for practical educational purposes. Blended learning: Practical work, Online tutorials, Interactive demonstrations	Practicality Testing, Project activities, Performance evaluation

AI for Enhanced Learning Experiences	Employ AI tools for personalized and enriched learning experiences. Blended learning: Scenario-based learning, Online forums, Mini-workshops	Projects (individual and group), Performance evaluation, Portfolio approach
Critical Evaluation of AI Tools	Critically evaluate effectiveness and ethical implications of AI tools. Blended learning: Debates, Group discussions, Problem-based learning	Essay writing, Compiling a bibliography list, Presentation
Collaborative Learning with AI	Engage in collaborative learning environments facilitated by AI. Blended learning: Group projects, Interactive online sessions, Peer learning	Group learning, Peer reviews, Preparation and presentation of submissions
General competences:		
Ability to Analyze and Systematize:	Understand the foundational principles and models of AI. Blended learning: Engaging lectures, Group discussions, Problem-based learning	Essays (Person+AI), Concept maps, Open- and closed-ended questions/tasks
Ability to Apply Knowledge in Practice:	Demonstrate practical application of AI tools in enhancing teaching and learning processes. Ability to Apply Knowledge in Practice	Practicality Testing, Performance evaluation, Project activities
Ability to Organize and Plan	Plan and organize AI-enabled educational activities. Blended learning: Mini-workshops, Group projects, Interactive online sessions	Blended learning: Mini-workshops, Group projects, Interactive online sessions
Independence	Work independently to explore, evaluate, and implement AI tools in education. Blended learning: Independent analytical essays, Online research, Self-directed learning tasks	Essay writing, Research paper, Project activities
Communication Skills:	Communicate the principles and implications of AI in education orally and in writing, both in the mother tongue and in a foreign language. Blended learning: Debates, Presentations, Online forums	Oral and written questioning, Presentation, Peer reviews
Information Processing:	Find, analyze, and synthesize information from diverse sources regarding AI in education. Blended learning: Engaging lectures, Online research, Group discussions	Testing, Concept maps, Essay writing
Ability to Adapt to New Situations:	Adapt to the evolving landscape of AI in education and its emerging tools and practices. Blended learning: Scenario-based learning, Simulation games, Online forums, Case studies.	Case studies, Review of literature and other sources, Testing
Initiative and Entrepreneurship:	Exhibit initiative in exploring new AI tools and integrating them innovatively in educational settings. Blended learning: Project-based learning, Mini-workshops, Online research	Projects (individual and group), Performance evaluation, Portfolio approach
Initiative and Entrepreneurship:	Exhibit initiative in exploring new AI tools and integrating them innovatively in educational settings. Blended learning: Debates, Group discussions, Problem-based learning	Essay writing, Compiling a bibliography list, Presentation

Use of Information Technology:	Proficiently use AI tools and other relevant information technology in educational contexts. Blended learning: Online tutorials, Interactive demonstrations, Practical work	Practicality Testing, Project activities, Performance evaluation

Content: breakdown of the topics	Contact hours							Self-study work: time and assignments	
	Lectures	Consultations	Seminars	Exercises	Laboratory work	Internship/work placement	Contact hours	Self-study hours	Assignments
1. Introduction to Generative Artificial Intelligence: Definitions, Applications, and Ethical Concerns	2		2				**4**	**2**	**Readings:** The Guidelines on Artificial Intelligence Usage at Vilnius University **Assignment**: Create a written description of your "journey" to these studies: what inspired you, what people, events, media, experiences, "influencers", etc. have led you to be here today (in these studies, on this module). Please update the road-map presented during the introductory and write a one to two page free-form essay. Watch: IATED Talks (MANY ON AI IN ED)
2. Hands on: Foundation AI Models: (1) ChatGPT; (2) Copilot; (3) Gemini; (4) Claude; Mastering the Art of Prompting AI	2		8				**10**	**12**	**Core Readings:** AI Revolution in Education 2024 (AI-Powered Solutions for Teachers AI-Powered Solutions for Students AI-Powered Solutions for Administration) World Bank Document **Additional**: Use of Artificial Intelligence in Education Delivery and Assessment (parliament.uk). **Assignment:** Experiment with models to create a simple lesson plan and/or other educational materials using (refer to readings) ChatGPT, Copilot, Gemini, and Claude." Compare the results produced by each tool, focusing on how well each AI tool assists in educational content generation.
3. Cooperation with AI: AI as Mentor: Providing Feedback AI as Tutor: Providing Direct Instruction AI as Coach: Increasing Metacognition AI as Teammate: Increasing Collaborative Intelligence AI as Student: The power of teaching others AI as Simulator: Creating Opportunities for Practice	4		8				**18**	**13**	**Readings:** Mollick, E., & Mollick, L. (2023). Assigning AI: Seven approaches for students, with prompts. *arXiv preprint arXiv:2306.10052.* **Assignment:** Reflect on the different roles AI plays in education (Mentor, Tutor, Coach, Teammate, Student, Simulator). Choose two roles and explore their pedagogical benefits and risks. Consider practical uses of these roles in your personal educational experience. **In-Class Discussion**: Share insights and discuss with peers how these roles impact learning and instruction.

4. EU AI ACT regulation implications for education	2		2				**4**	**4**	**Core Reading:** EU Artificial Intelligence Act: Texts adopted - Artificial Intelligence Act - Wednesday, 13 March 2024 (europa.eu) **Additional**: EU AI Act: first regulation on artificial intelligence | Topics | European Parliament (europa.eu) "Generative AI, like ChatGPT, will not be classified as high-risk" **Assignment:** Evaluate the capabilities of different AI models in scanning and summarizing the key sections of the EU AI Act relevant to education. **Write a 700-word report** discussing which model generated the most reliable summary and why. Include reflections on the **strengths and weaknesses.**
5. UNESCO AI competency framework: Human-centred mindset UNESCO AI competency framework: Ethics of AI UNESCO AI competency framework: AI foundations and applications UNESCO AI competency framework: AI Pedagogy	4		8				**12**	**13**	**Readings**: **Core Reading**: *UNESCO AI Competency Framework for Teachers; AI Competency Framework for Students;* The Guidelines on Artificial Intelligence Usage at Vilnius University **Additional**: *Use Cases for Generative AI in Education* (publishing.service.gov.uk). **Assignment:** Write a 1-2 page proposal (400-600 words) recommending a small-scale update to the VU guidelines on AI usage in education, addressing one specific issue such as bias, data privacy, or inclusivity. Your proposal should offer a brief analysis and practical recommendations for improvement. Prepare for a group presentation on your proposal.
Individual project								**38**	Develop an **individual project-workshop** where you assume the role of school-based AI coordinator tasked with providing training to fellow teachers on ethics/application/theory of AI in educational settings.
Final student individual project presentation			6						Conducting of individual project with feedback sessions
Total	**14**		**34**				**48**	**82**	

Final assessment strategy	**Weight,%**	**Deadline**	**Assessment criteria**
Seminar Participation Assessment	(40% of total grade)	Evaluated throughout the semester	**Quality of contributions (10%)** Insightful comments Relevant remarks **Literature-based responses (10%)** Ability to support answers with academic sources **Discussion facilitation (20%)** Skill in posing thought-provoking questions
Case Study Presentation	(10% of total grade)	Throughout semester	Brief presentation (maximum 10 minutes; One or two students per session) Topic: Practical case study related to session's reading material and/or theme

			Assessment Criteria: 1. Presentation Quality (5%) o Clarity, organization, and delivery 2. Q&A Performance (5%) o Ability to respond effectively to questions about the presented case
Final Individual Project	(50% of total grade)	End of semester	**Project Requirements:** • **Workshop Format**: You will conduct a **45-60 minute** workshop or session. • **Content**: 1. **Introduction**: Start with a brief overview of your chosen theme (AI ethics, applications, or theory). 2. **Interactive Session**: Engage your audience (classmates/teachers) with activities, discussions, or demonstrations using real-world AI tools. 3. **Training Focus**: Teach fellow "teachers" how to integrate AI tools in education while addressing key challenges like bias, privacy, or how AI enhances pedagogy. 4. **Conclusion**: End with a summary of key takeaways and how participants can apply what they've learned in educational contexts. --- **Workshop Deliverables:** • **Session Plan**: A detailed outline of your workshop, including learning objectives, activities, and materials (slides, handouts, etc.). • **Instructional Materials**: Design materials such as case studies, examples, and guides to help teachers better understand and apply AI. • **Interactive Component**: Include group activities, live demos, or discussions to actively involve participants. --- **Presentation:** • **Workshop Presentation**: Conduct the live workshop for your classmates and instructor, as if they were fellow teachers. The session should be engaging and interactive. • **Peer Feedback**: After your workshop, you will receive feedback from your peers to reflect on your facilitation skills and content delivery. --- **Assessment Criteria:** 1. **Workshop Design** (30%): How well the session is structured, including clarity of objectives and the

			quality of instructional materials. 2. **Engagement and Interaction** (30%): How effectively you engage participants with interactive elements. 3. **Content and Knowledge** (30%): Depth of your knowledge on the topic and how well it is conveyed. 4. **Peer Feedback Reflection** (10%): Reflection on the peer feedback you receive after your session and how you can improve.

Author	Year of publication	Title	Issue of a periodical or volume of a publication	Publishing place and house or web link
Compulsory reading				

Newest readings:

1. **UNESCO AI Competency Framework for Teachers**
2. **UNESCO AI Competency Framework for Students**
3. UNESCO resources on AI in education: Artificial intelligence in education | UNESCO
4. **Use Cases for Generative AI in Education: User Research Report (publishing.service.gov.uk)**
5. **Use of artificial intelligence in education delivery and assessment POST-PN-0712.pdf (parliament.uk)**
6. **AI Revolution in Education 2024 (AI-Powered Solutions for Teachers AI-Powered Solutions for Students AI-Powered Solutions for Administration) World Bank Document**
7. **Is education ready for artificial intelligence? | Cambridge Assessment Insights**
8. **The Guidelines on Artificial Intelligence Usage at Vilnius University**
9. **EU Artificial Intelligence Act: Texts adopted - Artificial Intelligence Act - Wednesday, 13 March 2024 (europa.eu)**
10. **Mollick, E., & Mollick, L. (2023). Assigning AI: Seven approaches for students, with prompts. *arXiv preprint arXiv:2306.10052*.**
11. **Generative AI and the future of education** UNESCO. Assistant Director-General for Education, 2018- (Giannini, Stefania) [19]
12. AI Index Report 2023 – Artificial Intelligence Index (stanford.edu)
13. K-12 AI curricula A mapping of government-endorsed AI curricula ED-2022/FLI-ICT/K-12 K-12 AI curricula: a mapping of government-endorsed AI curricula - UNESCO Digital Library
14. Unlocking the power of generative AI models and systems such as GPT-4 and ChatGPT for higher education: A guide for students and lecturers (econstor.eu)
15. Escalante, J., Pack, A., & Barrett, A. (2023). AI-generated feedback on writing: insights into efficacy and ENL student preference. International Journal of Educational Technology in Higher Education, 20(1), 1-20.

Introduction to Generative AI (G-GENAI-I)

16. Ask a Techspert: What is generative AI? https://blog.google/inside-google/googlers/ask-a-techspert/what-is-generative-ai/
17. Build new generative AI powered search & conversational experiences with Gen App Builder: https://cloud.google.com/blog/products/ai-machine-learning/create-generative-apps-inminutes-with-gen-app-builder
18. What is generative AI? https://www.mckinsey.com/featured-insights/mckinsey-explainers/what-is-generative-ai
19. Google Research, 2022 & beyond: Generative models:

https://ai.googleblog.com/2023/01/google-research-2022-beyond-language.html#Gener ativeModels

20. Building the most open and innovative AI ecosystem: https://cloud.google.com/blog/products/ai-machine-learning/building-an-open-generativ e-ai-partner-ecosystem
21. Generative AI is here. Who Should Control It? https://www.nytimes.com/2022/10/21/podcasts/hard-fork-generative-artificial-intelligen ce.html
22. Stanford U & Google's Generative Agents Produce Believable Proxies of Human Behaviors: https://syncedreview.com/2023/04/12/stanford-u-googles-generative-agents-produce-b elievable-proxies-of-human-behaviours/
23. Generative AI: Perspectives from Stanford HAI: https://hai.stanford.edu/sites/default/files/2023-03/Generative_AI_HAI_Perspectives
24. Generative AI at Work: https://www.nber.org/system/files/working_papers/w31161/w31161.pdf
25. The future of generative AI is niche, not generalized: https://www.technologyreview.com/2023/04/27/1072102/the-future-of-generative-ai-isniche-not-generalized/
26. The implications of Generative AI for businesses: https://www2.deloitte.com/us/en/pages/consulting/articles/generative-artificial-intellig ence.html
27. How Generative AI Is Changing Creative Work: https://hbr.org/2022/11/how-generative-ai-is-changing-creative-work

Readings on large language models:

28. NLP's ImageNet moment has arrived: https://thegradient.pub/nlp-imagenet/
29. LaMDA: our breakthrough conversation technology: https://blog.google/technology/ai/lamda/
30. Language Models are Few-Shot Learners: https://proceedings.neurips.cc/paper/2020/file/1457c0d6bfcb4967418bfb8ac142f64aPaper.pdf
31. PaLM-E: An embodied multimodal language model: https://ai.googleblog.com/2023/03/palm-e-embodied-multimodal-language.html
32. PaLM API & MakerSuite: an approachable way to start prototyping and building generative AI applications: https://developers.googleblog.com/2023/03/announcing-palm-api-and-makersuite.html
33. The Power of Scale for Parameter-Efficient Prompt Tuning: https://arxiv.org/pdf/2104.08691.pdf ● Google Research, 2022 & beyond: Language models: https://ai.googleblog.com/2023/01/google-research-2022-beyond-language.html/Langu ageModels
34. Solving a machine-learning mystery: https://news.mit.edu/2023/large-language-models-in-context-learning-0207

Optional reading

1. Attention is All You Need: https://research.google/pubs/pub46201/
2. Transformer: A Novel Neural Network Architecture for Language Understanding: https://ai.googleblog.com/2017/08/transformer-novel-neural-network.html
3. Transformer on Wikipedia: https://en.wikipedia.org/wiki/Transformer_(machine_learning_model)#:~:text=Transfor mers%20were%20introduced%20in%202017,allowing%20training%20on%20larger%20da tasets.
4. What is Temperature in NLP? https://lukesalamone.github.io/posts/what-is-temperature/
5. Model Garden: https://cloud.google.com/model-garden
6. Auto-generated Summaries in Google Docs: https://ai.googleblog.com/2022/03/auto-generated-

summaries-in-google-docs.html

AI Usage Declaration:
This syllabus was developed with the assistance of AI tools, including ChatGPT, which contributed to brainstorming, structuring course content, refining assignment ideas, and enhancing language clarity. All content was thoroughly researched, conceptualized, and verified by the course coordinator to ensure accuracy, relevance, and alignment with educational goals.