ISDN 4000S – Applied Generative AI for Interdisciplinary Projects

School:	**School of Engineering**
Subject Area:	**Integrative Systems and Design**
Course Credit:	**3**
Instructor:	**LEUNG Jac Ka Lok**
Pre-requisite/co-requisite:	**Nil**

Notes:

- The syllabi provided here is for reference only and may be subject to changes and adjustments as determined by the course instructors.

The Hong Kong University of Science and Technology

UG Course Syllabus

Applied Generative AI for Interdisciplinary Projects

ISDN4000S

No. of Credits: 3

Any pre-/co-requisites: nil

Name: Jac Ka Lok Leung

Email: egjac@ust.hk

Office Hours: By appointment. Room 6530

Course Description

As industries demand a new generation of professionals who can collaborate across disciplinary lines, challenges arise in search of latest innovations which can facilitate interdisciplinary learning, collaboration, and effective project management in cross-discipline teams. This course will introduce the utilities of generative AI tools (e.g., ChatGPT) in both learning and project management. Students will work in team projects and tackle real design challenges presented by experts in fields such as EduTech, ArtTech, SportsTech, MarineTech, PropertyTech. This special topic aims to let students experiment on leveraging Generative AI to enhance work processes in design thinking and project management. Topics covered will include AI-enhanced design thinking, knowledge sharing principles, agile project management, collaborative learning, and AI in education.

Intended Learning Outcomes (ILOs)

By the end of this course, students should be able to:

1. Demonstrate an understanding of the principles and challenges of interdisciplinary projects
2. Identify appropriate Gen-AI tools for specific project requirements in interdisciplinary contexts
3. Utilize Gen-AI techniques to create personas, generate ideas and prototype solutions
4. Apply Gen-AI tools to enhance project planning, scheduling, resource allocation, and risk assessment
5. Reflect on personal growth and interdisciplinary learning journey
6. Collaborate effectively in interdisciplinary teams

Assessment and Grading

This course will be assessed using criterion-referencing and grades will not be assigned using a curve. Detailed rubrics for each assignment are provided below, outlining the criteria used for evaluation.

Assessments:

Assessment Task	Contribution to Overall Course grade (%)	Due date
Attendance	10%	Last session
Peer Teaching	5%	~Session 4-6

Reading reflections and discussion	10% (5% each)	~Session 1-3
Design Thinking using Gen-AI	25%	~Session 7-9
Project Plan / Mgt using Gen-AI	15%	~Session 10-12
Project Presentation	30%	Last session
Peer Evaluation	5%	Last session

* Assessment marks for individual assessed tasks will be released within two weeks of the due date.

Mapping of Course ILOs to Assessment Tasks

Assessed Task	Mapped ILOs	Explanation
Peer teaching	ILO-2, ILO-5	Peer teaching enables students to collaboratively identify appropriate Gen-AI tools for specific project requirements (ILO 2) by sharing insights and experiences, while also reflecting on their personal growth and interdisciplinary learning journey (ILO 5).
Reading reflections and discussion	ILO-1, ILO-2, ILO-5	This task encourages critical evaluation of interdisciplinary project principles (ILO 1) and the identification of suitable Gen-AI tools (ILO 2), while promoting reflective thinking on personal learning experiences (ILO 5) through structured discussions.
Design Thinking using Gen-AI	ILO-1, ILO-2, ILO-3	In this task, students apply Gen-AI techniques to create personas and generate ideas, demonstrating their understanding of interdisciplinary challenges (ILO 1) and tool identification (ILO 2), thereby enhancing their creative problem-solving skills (ILO 3).
Project Plan / Mgt using Gen-AI	ILO-1, ILO-2, ILO-4	Students utilize Gen-AI tools to enhance project planning and risk assessment, showcasing their grasp of interdisciplinary principles (ILO 1) and tool identification (ILO 2), while applying these skills to improve project management effectiveness (ILO 4).
Project Presentation	ILO-1, ILO-2, ILO-3, ILO-4, ILO-6	The project presentation assesses students' understanding of interdisciplinary principles (ILO 1), their ability to select appropriate Gen-AI tools (ILO 2), and their application of these tools in real projects (ILOs 3 and 4), alongside demonstrating effective teamwork (ILO 6).
Peer Evaluation	ILO-6	This task evaluates students' collaboration skills in interdisciplinary teams (ILO 6) through constructive feedback, fostering accountability and enhancing the overall learning experience within group projects.

Grading Rubrics

Peer Teaching		
Criteria	**Weight**	**Supplementary info**
Preparedness to teach	3%	Exemplary work demonstrates thorough research, clear objectives, and well-structured content that effectively addresses the learning needs of peers, incorporating relevant Gen-AI tools and examples.
Present to class	1%	
Instructor rating	1%	

Reading reflections and discussion		
Criteria	**Weight**	**Supplementary info**

Clarity of conveying concepts	2%	Exemplary work demonstrates precise language, logical organization, and the ability to explain complex ideas simply
Engagement in presentation	2%	Exemplary work includes interactive elements, such as thought-provoking questions or activities
Transfer of knowledge to practice	1%	

Design Thinking using Gen-AI		
Criteria	**Weight**	**Supplementary info**
Multi-persona journey map	10%	Exemplary work features detailed personas that reflect diverse user perspectives, clearly illustrating their needs, pain points, and interactions with the design. The map should effectively guide the design process by highlighting critical touchpoints and areas for improvement
Ideation process and summary	5%	Exemplary work demonstrates a rich array of ideas generated through brainstorming sessions, showcasing innovative thinking. The summary should clearly document the ideation process, including the rationale behind selected ideas and how they align with user needs identified in the journey map
Problem Identification Presentation	10%	Exemplary work articulates clear, well-defined problems that are grounded in user needs and insights.

Project Plan / Mgt using Gen-AI		
Criteria	**Weight**	**Supplementary info**
Project plan	10%	Exemplary work includes clear objectives, detailed timelines, resource allocation, and risk assessment, demonstrating a thorough understanding of project management principles. The plan should effectively address potential challenges and outline strategies for successful execution.
Project plan walkthrough video	5%	Exemplary work features a well-structured narrative that highlights key components of the plan, utilizes visuals effectively. The video should clearly demonstrate the rationale behind decisions made in the project plan and how Gen-AI tools were integrated into the planning process.

Project presentation		
Criteria	**Weight**	**Supplementary info**
Presentation	20%	Exemplary work features a well-organized structure, engaging visuals, and a confident delivery that effectively communicates the project's objectives, processes, and outcomes. The presenters should connect with the audience, making complex information accessible and compelling. Acknowledge any use of AI tools in the process.
Q&A	5%	
Secret weapon	5%	Exemplary work showcases creative use of Gen-AI tools, novel ideas, or unexpected insights that differentiate the project from others.

Final Grade Descriptors:

Grades	Short Description	Elaboration on subject grading description
A	Excellent Performance	Demonstrates a comprehensive grasp of subject matter, expertise in problem-solving, and significant creativity in thinking. Exhibits a high capacity for scholarship and collaboration, going beyond core requirements to achieve learning goals.
B	Good Performance	Shows good knowledge and understanding of the main subject matter, competence in problem-solving, and the ability to analyze and evaluate issues. Displays high motivation to learn and the ability to work effectively with others.
C	Satisfactory Performance	Possesses adequate knowledge of core subject matter, competence in dealing with familiar problems, and some capacity for analysis and critical thinking. Shows persistence and effort to achieve broadly defined learning goals.
D	Marginal Pass	Has threshold knowledge of core subject matter, potential to achieve key professional skills, and the ability to make basic judgments. Benefits from the course and has the potential to develop in the discipline.
F	Fail	Demonstrates insufficient understanding of the subject matter and lacks the necessary problem-solving skills. Shows limited ability to think critically or analytically and exhibits minimal effort towards achieving learning goals. Does not meet the threshold requirements for professional practice or development in the discipline.

Course AI Policy

For the assessed items in this course, you are allowed to use generative artificial intelligence (AI) to aid you in any manner. However, you must give proper credit for any use of generative AI.

Communication and Feedback

Assessment marks for individual assessed tasks will be communicated via Canvas within two weeks of submission. Feedback on assignments will include both . Students who have further questions about the feedback including marks should consult the instructor within five working days after the feedback is received.

Resubmission Policy

N/A

Required Texts and Materials

AI and Design Thinking

Readings

- https://vincenthunt.medium.com/design-thinking-and-ai-enhancing-user-centered-design-with-chatgpt-ddd6214f03e6
- https://www.linkedin.com/pulse/powering-innovation-new-era-ai-infused-design-thinking-winston/
- https://builtin.com/design-ux/ai-design-thinking
- https://www.linkedin.com/pulse/impact-artificial-intelligence-design-thinking-arya/
- https://ts2.space/en/how-ai-is-empowering-design-thinking-to-reach-new-heights/
- https://ts2.space/en/the-rise-of-ai-enhanced-design-thinking-what-it-means-for-the-future-of-design/

Toolkits

- https://dschool.stanford.edu/resources/i-love-algorithms
- https://aixdesign.co/shop/p/cards-digital

AI and Project Management

Readings

- https://hbr.org/2023/02/how-ai-will-transform-project-management
- https://www.spiceworks.com/collaboration/project-collaboration/guest-article/how-ai-transforms-project-management/
- https://catware.io/blog/ai-powered-project-management-an-ultimate-guide/
- https://startups.co.uk/project-management-software/ai-in-project-management/
- https://moonello.com/blog/top-6-ai-powered-project-management-tools-2023/
- https://www.aidisruptor.ai/how-to-leverage-ai-tools-for-efficient-project-management/

Toolkits

- https://ayanza.com/blog/ai-project-management-tools (similar: https://clickup.com/blog/ai-project-management-tools/)

AI in EduTech

Readings

- https://www.forbes.com/sites/theyec/2023/02/21/ai-in-the-classroom-pros-cons-and-the-role-of-edtech-companies/?sh=a100f3afeb46
- https://www.financialexpress.com/business/blockchain-the-impact-of-artificial-intelligence-in-the-edtech-industry-3161299/
- https://www.edtechdigest.com/2023/05/26/the-impact-of-ai-in-edtech/
- https://www.linkedin.com/pulse/how-artificial-intelligence-disrupting-edtech-shahjahan-chaudhary/
- https://joshbersin.com/2023/04/edtech-is-going-crazy-for-ai/
- Micro learning - Learning in the Flow of Work: The Time is Now | Josh Bersin | Talent Connect 2018 https://www.youtube.com/watch?v=ZpjbiIeXEWg

Related online courses

Coursera: AI and Design Thinking for Creativity. https://www.coursera.org/specializations/creativity-ai

- HKUST CEI: https://cei.hkust.edu.hk/en-hk/education-innovation/generative-ai-education

Academic Integrity

Students are expected to adhere to the university's academic integrity policy. Students are expected to uphold HKUST's Academic Honor Code and to maintain the highest standards of academic integrity. The University has zero tolerance of academic misconduct. Please refer to Academic Integrity | HKUST – Academic Registry for the University's definition of plagiarism and ways to avoid cheating and plagiarism.