Title (Units): **GTSC2066 ChatGPT - The start of a new wave of Generative AI (3,1,2)**

Course Aims:

This course aims at delving into the fast-growing field of generative AI and its wide-ranging applications across various domains. The use of AI to generate innovative art, music, stories, and designs has garnered significant attention since the introduction of ChatGPT and other creator tools. We will explore both the opportunities and challenges presented by generative AI from scientific, technological, and societal perspectives.

Students will have the opportunity to gain hands-on experience with the tools such as ChatGPT and MidJourney through practical laboratory work. In addition, with group discussion and case studies, students will explore the potential ethical concerns associated with generative AI. Will AI stifle human creativity and significantly diminish the need for a large creative workforce? Will the new wave of AI technologies pose a threat to our communities?

Students will not only explore the technical aspects of the field but also recognize the importance of interdisciplinary collaboration. Generative AI would become an important tool to assist and enhance creativity and artistic expression. Communication knowledge delves into the ways in which generative AI affects storytelling, media production, and audience engagement. The societal implications and ethical considerations may arise from the integration of generative AI in different contexts. This course encourages a holistic understanding of generative AI, its applications, and its implications across a variety of domains.

Throughout the course, the instructor will provide guidance on understanding the latest developments in AI and engage students in practical laboratory exercises. Additionally, the instructor will guide students to discuss the potential political, social, and economic impacts stemming from the adoption of advanced generative AI technologies.

Prerequisite: Nil

Course Intended Learning Outcomes (CILOs):
Upon successful completion of this course, students should be able to:

No.	Course Intended Learning Outcomes (CILOs)
	Knowledge
1	Understand the fundamentals of large language model, used in Chatbot such as ChatGPT, and the broad field of generative AI, including core concepts, functionalities, and limitations of AI tools.
2	Develop practical skills in effectively using generative AI tools, including Chatbot design, prompt engineering, text-to-image generation, text-to-coding, and multimedia creation.
3	Examine the benefits and threats posed by generative AI tools, examining their relation to societal, legal, and ethical issues.
4	Explore the interdisciplinary nature of AI by applying knowledge from various disciplines to explore potential solutions for future works.

Calendar Description:

Students will immerse themselves in generative AI, focusing on creating art, music, stories, and designs, using tools like ChatGPT and MidJourney. They will gain theoretical understanding of AI and practical experience with the AI tools, engage in group discussions, and examine case studies to consider ethical questions, such as the impact of generative AI on human creativity and employment. Students will deliver a number of individual works and group works using generative AI, emphasizing the significance of interdisciplinary collaboration in communication, media, societal consideration and storytelling.

Teaching and Learning Activities (TLAs):

CILOs	Type of TLA
1, 4	Lectures: Interactive lectures will facilitate students' understanding of various issues related to generative AI from the perspective of multiple disciplines. Students will learn the core concepts, functionalities, and limitation of generative AI.
3, 4	Group Case Studies and Discussion: The instructor will lead students in a number AI-themed discussions with a number of real-life topics, such as the benefits and threats caused by generative AI. Students will evaluate and discuss the viewpoints from the perspectives of different disciplines.
2	Laboratory: The instructor will guide students to complete a number of generative AI laboratory exercises, which include building a chatbot, optimizing ChatGPT outputs using prompt, generating new images using commands and descriptions.

Assessment:

No.	Assessment Methods	Weighting	CILOs to be addressed	Description of Assessment Tasks
1	Group Project	25%	2 - 4	Students will complete an AI-enabled project from a list of choices. They will deliver one group presentation. Students will be assessed by the quality of their work, which encompasses technical implementation, creativity, innovation, presentation and documentation.
2	Group Case Studies	20%	3 - 4	Three group case study exercises will be completed. Students will be assessed based on their ability to clearly articulate real-life problems and apply interdisciplinary knowledge to solve the problems.
3	Laboratory Exercises	25%	2, 4	With the guidance of instructors, students will complete six computer laboratory exercises individually. They will be assessed by how well they complete the work and present their findings in a reasoned manner.
4	Reflective Assignments	30%	1, 3, 4	Six assignments with structural questions related to the topics will be offered to students after the lectures. They will be assessed individually by how well they capture the key concepts and provide feedback.

Assessment Rubrics:

Excellent (A)

- Achieve the four CILOs, demonstrating an excellent understanding of large language models and generative AI, including the concepts, benefits and limitations.
- Obtain solid practical skills of generative AI. Able to solve business problems thoroughly using generative AI tools, including Chatbot design, prompt engineering, text-to-image generation, etc
- Able to articulate and produce high quality analysis on societal, legal, and ethical issues brought about by the development of generative AI
- Able to give an in-depth evaluation and exploration into the interdisciplinary nature of AI by applying knowledge from various disciplines

Good (B)

- Achieve the four CILOs, demonstrating a good understanding of large language models and generative AI, including the concepts, benefits and limitations.
- Obtain solid practical skills of generative AI. Able to produce works with guided instructions using generative AI tools, including Chatbot design, prompt engineering, text-to-image generation, text-to-coding, and multimedia creation
- Able to articulate and produce relevant analysis on societal, legal, and ethical issues brought about by the development of generative AI

	• Able to evaluate and explore into the interdisciplinary nature of AI by applying knowledge from various disciplines
Satisfactory (C)	• Achieve most of the four CILOs, with a basic level of understanding of large language models and generative AI, including the concepts, benefits and limitations • Obtain basic practical skills of generative AI. Able to follow instructions to use most generative AI tools, including Chatbot design, prompt engineering, text-to-image generation etc • Able to produce basic analysis on societal, legal, and ethical issues brought about by the development of generative AI • Able to explore into the interdisciplinary nature of AI by applying knowledge from various disciplines
Marginal Pass (D)	• Achieve most of the four CILOs, with a minimal level of understanding of large language models and generative AI, including the concepts, benefits and limitations • Obtain a minimal level of practical skills of generative AI. Able to follow instructions to use some generative AI tools, including Chatbot design, prompt engineering, text-to-image generation etc • Able to produce a minimum level of analysis on societal, legal, and ethical issues brought about by the development of generative AI • Demonstrate a minimally acceptable evaluation of interdisciplinary nature of AI
Fail (F)	• Achieve less than half of the four CILOs, and have little or no knowledge of large language models and generative AI, including the concepts, benefits and limitations • Unable to demonstrate a satisfactory level of practical skills of generative AI. Unable to follow instructions to use most generative AI tools, including Chatbot design, prompt engineering, text-to-image generation etc • Unable to produce a satisfactory level of analysis on societal, legal, and ethical issues brought about by the development of generative AI • Unable to demonstrate a minimally acceptable evaluation of interdisciplinary nature of AI

Course Content and CILOs Mapping:

Content		**CILO No.**
I	Fundamentals of Large Language Model (LLM) for Chatbot, such as ChatGPT	1,2,3,4
II	Chatbot and LLM-based Chatbot, such as ChatGPT	1,2,3,4
III	LLM Essentials: Prompt Engineering	1,2,3,4
IV	AI Evolution and Generative AI	1,2
V	Learn and Play with Artificial Intelligence	1,2
VI	Generative AI, Privacy, and Identity	1,2
VII	AI and Project Management	2,3,4
VIII	AI and Productivity Enhancement	2,3,4
IX	Image Creation Using Generative AI	2,3,4
X	Multimedia Creation Using Generative AI	2,3,4
XI	Generative AI and Society	3,4

References:

• Sanderson, K. (2023). GPT-4 is here: what scientists think. Nature, 615(7954), 773.
• Radford, A., Wu, J., Child, R., Luan, D., Amodei, D., & Sutskever, I. (2019). Language Models are Unsupervised Multitask Learners. OpenAI website.
• Ethan Mollick (2022). ChatGPT Is a Tipping Point for AI. Harvard Business Review.
• Reid Blackman (2023). How to Avoid the Ethical Nightmares of Emerging Technology. Harvard Business Review.
• Dorie Clark (2023). 5 Ways to Future-Proof Your Career in the Age of AI. Harvard Business Review.
• David De Cremer (2022). How Generative AI could disrupt creative work. Harvard Business Review. 2022 December.
• Müller, V. C. (Ed.) (2016). Risks of General Artificial Intelligence. Journal of Experimental & Theoretical Artificial Intelligence, 28(5). 2016.

• Bostrom, N., & Yudkowsky, E. (2014). The ethics of artificial intelligence. The Cambridge handbook of artificial intelligence, 1, 316-334. 2014.

Course Content:

Topic

I. Fundamentals of Large Language Model (LLM) for Chatbot, such as ChatGPT

II. Chatbot and LLM-based Chatbot, such as ChatGPT

III. LLM Essentials: Prompt Engineering

IV. AI Evolution and Generative AI

V. Learn and Play with Artificial Intelligence

VI. Generative AI, Privacy, and Identity

VII. AI and Project Management

VIII. AI and Productivity Enhancement

IX. Image Creation Using Generative AI

X. Multimedia Creation Using Generative AI

XI. Generative AI and Society