The Hong Kong Polytechnic University

Subject Description Form

Please read the notes at the end of the table carefully before completing the form.

Subject Code	CHC1M51M
Subject Title	**Exploring Chinese History through Generative AI and Digital Technology** 透過生成式人工智能與數位科技探索中國歷史
Credit Value	3
Level	1
Pre-requisite/ Co-requisite/ Exclusion	Nil
Objectives	China is widely renowned for having one of the world's oldest and most enduring written history traditions. Moreover, the emergence of the digital world, computers, and the internet in the late 20th century, as well as the explosive use of AI in the 21st century, have revolutionized the way information, narratives, and thinking are perceived. This course aims to interweave these traditions and trends, providing a path for exploring and learning Chinese history through interactive and immersive digital tools. By leveraging the unique capabilities of various digital solutions, such as 3D scanning of artifacts enabling close observation of museum treasures, GIS and data visualization revealing spatial analysis combined with multilayered data integration, and data analysis powered by AI, this course aims to more effectively uncover features of Chinese history in different periods, as well as enhance digital literacy by teaching the use of these digital tools, thereby further exploring ways of engaging with traditions especially the Chinese history and culture through technological means.
Intended Learning Outcomes *(Note 1)*	Upon completion of the subject, students will be able to: (a) provide an in-depth exploration of the defining characteristics and pivotal developments that have shaped the historical trajectory of China across different eras. (b) cultivate abilities in historical critical thinking and analysis (c) facilitates the development of proficiencies in recognizing and applying digital research methodologies pertinent to the field of digital humanities (d) leverage digital tools and methodologies to explore and cultivate deeper understandings of Chinese history, culture, and other traditional knowledge domains.

Subject Synopsis/ Indicative Syllabus *(Note 2)*	<u>**The Founding of the Early Chinese Empires: Establishing an Ancient Imperial Order**</u> **1. 3D Artifacts and Archaeological Sites: From Prehistory to the Shang-Zhou Civilizations** The topic is to understand the Shang and Zhou civilizations by carefully analysing 3D-scanned artifacts depicting their rituals, political order, economic production, and social life. **2. Mapping the Qin-Han Great Walls and Frontiers with Google Earth and GIS** The topic is to study the boundaries and frontiers of the Qin and Han empires using Google Earth and GIS technology to locate the remains of their military sites. **3. Distant Reading of the Shiji and Hanshu through Digital Textual Analysis: Exploring Cultural Evolution via Deep Learning** The topic is to study the two great historical classics of Chinese history, *Shiji* and *Hanshu*, through the application of digital textual analysis, and also demonstrating how to use AI with deep learning to illustrate cultural evolution. These topics can deploy LLMs (Large Language Models) such as Ollama Llama 3.2 to analyze intellectual changes. <u>**Religion and Intellectual Thought in the Medieval Era**</u> **4. Spread of Buddhism in Medieval China Using DocuGIS** The topic is to examine how Buddhist monks during the Tang dynasty facilitated the spread of Buddhism from China to Japan, as well as the transmission of Buddhist teachings and practices between China and India via the Silk Road and maritime trade routes. **5. CBDB and Social Network Analysis (1): Analyzing the Rise and Fall of Kinship Networks in the Tang Dynasty with the aid of AI** The topic is to utilize the extensive Tang dynasty epitaphs to examine the rise and fall of the Tang aristocracy, as well as the underlying elements and networks that drove these sociopolitical shifts, particularly through the application of AI to analyze the epitaphs. Various AI tools, including Claude 3.5 and GPT-4, can be used to analyze the content of historical texts and convert it into data for further analysis with these models, especially considering different factors **6. CBDB and Social Network Analysis (2): Networks of Song Literati** The topic aims to leverage the powerful data visualization and network analysis capabilities of Gephi, in conjunction with the comprehensive biographical data from the China Biographical Database (CBDB), to illuminate the intricate social networks surrounding prominent Song dynasty leaders, such as the reformist prime minister Wang Anshi. <u>**Governance and Institutions in the Early Modern Period**</u>

7. GIS: Visualizing the Distribution and Social Mobility of the Gentries in Ming-Qing
The topic aims to leverage the China Historical GIS (CHGIS) and China Biographical Database (CBDB) systems, supplemented by extensive historical materials, to investigate the patterns of social mobility among the gentry class during the Ming and Qing dynasties. By combining the spatial data from CHGIS with the biographical information contained in CBDB, researchers will be able to trace the geographical distribution and shifting fortunes of prominent gentry families over time.

8. Big Data Analytics (1): Exploring the Qing Dynasty Government Employee Database
The topic is to utilize the comprehensive Qing Dynasty Government Employee Database to study the functions of the bureaucratic system and the careers of officials during the Qing dynasty.

9. Big Data Analytics (2): The Qing Dynasty Grain Price Database
The topic is to utilize the Qing Dynasty Grain Price Database's vast trove of big data to study the economic production and social conditions of the Qing dynasty.

10. GenAI: Crafting a Memorial to understand Imperial Governance in Qing
The topic is to use Generative AI to compose a memorial to the Qing Emperor, adhering to the proper format and conventions of this formal mode of imperial communication. By carefully replicating the stylistic, rhetorical, and structural elements typical of such memorials, the researchers aim to gain deeper insights into how the Qing government conveyed information, expressed sentiments, and advanced agendas through these customary written submissions. Various AI tools, including Claude 3.5 and GPT-4, can be used to analyze the content, and LLM models can be applied to study the memorials through databases for deep learning.

Teaching/Learning Methodology *(Note 3)*	Lectures will provide the theoretical framework to analyze the subject matter, while tutorials will facilitate in-depth discussions of selected topics from the assigned readings and digital tools. Students, working in teams, will be required to deliver oral presentations on assigned topics, enabling them to reflect on and consolidate their learning. A midterm quiz will assess students' comprehension of the course content. A term paper will further solidify students' knowledge of the subject while cultivating their independent thinking and writing skills. Students are encouraged to leverage digital tools to enhance their presentations and term paper research and writing.

	Specific assessment methods/tasks	% weighting	Intended subject learning outcomes to be assessed (Please tick as appropriate)			
			a	b	c	d
Assessment Methods in Alignment with Intended Learning Outcomes *(Note 4)*	1. Quiz	30	✓	✓		
	2. Presentation	30	✓	✓	✓	✓
	3. Term Paper	40	✓	✓	✓	✓
	Total	100 %				

Explanation of the appropriateness of the assessment methods in assessing the intended learning outcomes:

For the tutorial sessions, the class will be given readings on designated topics. Students will work in groups to analyze and summarize the viewpoints and arguments presented, and then deliver an oral presentation. Other students in the class will be encouraged to engage in a discussion based on the materials and presentation, thereby enhancing their critical thinking and comprehensive understanding of this subject.

The quiz will include both factual and interpretive questions that challenge students to construct arguments related to ILOs (a) and (b). Students are required to submit a term paper of 1500- 2000 words with detailed footnotes and references to fulfill the coursework requirement. Students may choose to submit the term paper on a particular topic that reflects their comprehensive training in ILOs (a) to (d) and demonstrates their ability to apply that knowledge.

Student Study Effort Expected	Class contact:	
	▪ Lectures	26 Hrs.
	▪ Tutorials	13 Hrs.
	Other student study effort:	
	▪ Readings	40 Hrs.
	▪ Discussion	15 Hrs.
	▪ Writing	25 Hrs
	Total student study effort	119 Hrs.

Reading List and References

References:

Timthoy Brook ed. *History of Imperial China* (Cambridge Mass.: Harvard University Press, 2010-2013)
Frederick W. Mote. *Imperial China, 900–1800* (Cambridge Mass.: Harvard University Press, 2003)
Chen B, Campbell C, Ren Y, Lee J. Big Data for the Study of Qing Officialdom: The China Government Employee Database-

Qing (CGED-Q). *Journal of Chinese History*. 2020;4(2):431-460. doi:10.1017/jch.2020.15

Domenico Fiormonte, Sukanta Chaudhuri, and Paola Ricaurte (eds).*Global Debates in the Digital Humanities*(Minneapolis & London: University of Minnesota Press, 2022)* 6. Debating and Developing Digital Humanities in China: New or Old?

Hilde De Weerdt, "Creating, Linking, Analyzing Chinese & Korean Datasets: Digital Text Annotation in MARKUS & COMPARATIVUS," *Journal of Chinese History,* 4.2 (2020),pp.519-27.

Hilde De Weerdt, *Information, Territory, and Networks: The Crisis and Maintenance of Empire in Song China* (Cambridge, MA: Harvard University Asia Center, 2015)

Ho Ping-ti, *Studies on the Population of China, 1368–1953* (Cambridge, MA: Harvard University Press, 1959)

Ho Ping-ti, *The Ladder of Success in Imperial China : Aspects of Social Mobility, 1368-1911* (New York : Wiley 1964)

Hsü Cho-yün, *Ancient China in Transition: An Analysis of Social Mobility, 722–222 B.C.* Stanford: Stanford University Press, 1965.

Ian Gregory and Paul S. Ell*, Historical GIS: Technologies, Methodologies, and Scholarship* (Cambridge: Cambridge University Press, 2009)

Lik Hang Tsui & Hongsu Wang, "Harvesting Big Biographical Data for Chinese History: The China Biographical Database (CBDB)," *Journal of Chinese History*, 4.2 (2020): 505-511。

Nicolas Tackett, "The Digital Turn and New Modes of Historical Inquiry," *Harvard Journal of Asiatic Studies*, Vol.83,No.1(Jun.2023), pp. 153-165.

Nicolas Tackett, *The Destruction of the Medieval Chinese Aristocracy* (Cambridge, MA: Harvard University Press, 2014)

Patricia Buckley Ebrey & Paul Jakov Smith ed. *State Power in China, 900–1325* (Seattle: University of Washington Press, 2016)

Peter Bol, "From Kinship to Collegiality: Changing Literati Networks, 1100 – 1400," *Journal of Historical Network Research*. 2021;(5), pp.36-61.

Peter Bol, "How the Digital is Changing Research and Teaching on Asia," *ASIANetwork Exchange,* 25(2)(2018), pp. 7–28

Peter Bol, "The Visualization and Analysis of Historical Space," *Journal of Chinese History*. 2020;4(2):511-519. doi:10.1017/jch.2020.22

Robert M. Hartwell, "A Computer-Based Comprehensive Analysis of Medieval Chinese Social and Economic History," in *Characters and Computers*, eds. Victor H. Mair and Yongquan Liu (Amsterdam: IOS Press, 1991), pp. 89-121

	Robert M. Hartwell, "Demographic, Political, and Social Transformations of China, 750-1550," *Harvard Journal of Asiatic Studies*, 42.2 (1982), pp.365-442.
	Ruth Mostern*, The Yellow River: A Natural and Unnatural History* (New Haven, CT: Yale University Press, 2021).
	Schäfer D, Chen S, Che Q. What is Local Knowledge? Digital Humanities and Yuan Dynasty Disasters in Imperial China's Local Gazetteers. *Journal of Chinese History*. 2020;4(2):391-429. doi:10.1017/jch.2020.31
	Wen, Fangqi, Erik H Wang, and Michael Hout. "Social Mobility in the Tang Dynasty as the Imperial Examination Rose and Aristocratic Family Pedigree Declined, 618-907 CE." *Proceedings of the National Academy of Sciences* - PNAS 121.4 (2024): e2305564121–e2305564121. Web.

Note 1: Intended Learning Outcomes
Intended learning outcomes should state what students should be able to do or attain upon subject completion. Subject outcomes are expected to contribute to the attainment of the overall programme outcomes.

Note 2: Subject Synopsis/Indicative Syllabus
The syllabus should adequately address the intended learning outcomes. At the same time, overcrowding of the syllabus should be avoided.

Note 3: Teaching/Learning Methodology
This section should include a brief description of the teaching and learning methods to be employed to facilitate learning, and a justification of how the methods are aligned with the intended learning outcomes of the subject.

Note 4:   Assessment Method
This section should include the assessment method(s) to be used and its relative weighting, and indicate which of the subject intended learning outcomes that each method is intended to assess. It should also provide a brief explanation of the appropriateness of the assessment methods in assessing the intended learning outcomes.

(Form AR 140) 8.2020