

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	CHC1M51P
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	<p>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.</p>
Intended Learning Outcomes <i>(Note 1)</i>	<p>Upon completion of the subject, students will be able to:</p> <ul style="list-style-type: none"> (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) facilitate 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. (e) Fulfil Chinese Reading and Writing Requirements

**Subject Synopsis/
Indicative Syllabus**

(Note 2)

The Founding of the Early Chinese Empires: Establishing an Ancient Imperial Order

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.

Religion and Intellectual Thought in the Medieval Era

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

	<p>surrounding prominent Song dynasty leaders, such as the reformist prime minister Wang Anshi.</p> <p><u>Governance and Institutions in the Early Modern Period</u></p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p>
<p>Teaching/Learning Methodology <i>(Note 3)</i></p>	<p>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</p>

to leverage digital tools to enhance their presentations and term paper research and writing.

Assessment Methods in Alignment with Intended Learning Outcomes

(Note 4)

Specific assessment methods/tasks	% weighting	Intended subject learning outcomes to be assessed (Please tick as appropriate)				
		a	b	c	d	e
1. Quiz	30	✓	✓			✓
2. Presentation	30	✓	✓	✓	✓	✓
3. Term Paper (CW requirement)	40 (10% graded by the CLC and 30% by the subject instructor)	✓	✓	✓	✓	✓
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), (b) & (e). Additionally, some questions will be based on readings related to ILO (e). Students are required to submit a term paper of 2000 - 3000 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.

The Term Paper will serve as the writing requirement, and will be assessed as part of the overall performance evaluation for the subject. To pass the subject, students must achieve a grade of D or above on the Writing Requirement assignment to pass the subject. And students are expected to complete all the required readings on the reading list in order to fulfill the Chinese Reading requirement.

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	<p>Required readings (Total 229 pages):</p> <p>(CR)包弼德(Peter K. Bol)：〈群體、地理與中國歷史:基於CBDB和CHGIS〉，《量化歷史研究》，2017年第1期，頁213-246。</p> <p>(CR)邢義田：《Google地球與秦漢長城》（臺北：三民書局，2022），第二章〈GPS、Google地球與額濟納河的漢代烽燧、古城調查〉，頁15-50。</p> <p>(CR)邱詩雯：《遠讀史記》（台北：五南，2024），頁1-142。</p> <p>(CR)任玉雪、陳必佳、郝小雯、康文林、李中清：〈清代縉紳錄量化資料庫與官員群體研究〉，《清史研究》，2016年4期，頁61-77。</p> <p>References:</p> <p>呂思勉：《中國通史》（上海：上海古籍出版社，2009）</p> <p>錢穆：《國史大綱》（北京：商務印書館，2013）</p> <p>Timothy Brook（卜正民）主編：《哈佛中國史（套裝共6冊）》（北京：中信出版社，2016）</p> <p>Hannu Salmi 著，范純武、湯瑞弘譯：《何謂數位歷史學？》（台北：貓頭鷹，2024）</p> <p>項潔：《數位人文在歷史學研究的應用》（台北：台大出版中心，2011）</p> <p>項潔主編，《數位人文研究的新視野：基礎與想像》（台北：台灣大學出版中心，2011）</p> <p>項潔主編：《數位人文研究與技藝》（台北：台大出版中心，2014）</p> <p>林富士：《「數位人文學」白皮書》（台北：中央研究院數位文化中心，2017）</p> <p>黃一農：《清代避諱研究：e考據的學術實踐》（新竹：台灣清華大學出版社，2024）</p> <p>艾俊川：《E考據故事集：從清初到民國》（北京：中華書局，2023）</p>	

	<p>政大圖書館數位典藏組：《數位人文與近代中國知識分子》（台北：政大圖書館數位典藏組，2021）</p> <p>孫國棟：《唐宋史論叢（增訂版）》（香港：商務，2000）</p> <p>魏希德（Hilde De Weerd）著，劉雲軍譯：《宋帝國的危機與維繫：資訊、領土與人際網路》（南京：江蘇人民出版社，2021）</p> <p>何炳棣著，徐泓譯：《明清社會史論》（台北：聯經出版，2013）</p> <p>吳宣德：《明代進士的地理分佈》（香港：香港中文大學出版社，2009）</p> <p>王業鍵：《清代經濟史論文集（一）》（臺北：稻鄉出版社，2003）</p> <p>劉青峰、金觀濤：《觀念史研究：中國現代重要政治術語的形成》（北京：法律出版社，2009）</p> <p>劉建國：〈可移動文物的多視角影像三維重建〉，《考古》，2016年第12期，頁97-103。</p> <p>錢超峰、杜德斌：〈北宋官僚家族網路的空間結構及其演化：基於 CBDB 和 CHGIS 的考察〉，《歷史地理研究》，2019年第2期，頁83-94。</p> <p>劉京臣：〈大資料視閥中的明清進士家族研究——以 CBDB、中華尋根網為例〉，《北京大學學報（哲學社會科學版）》，2019年第4期，頁96-108。</p> <p>顏色、劉叢，〈18世紀中國南北方市場整合程度的比較——利用清代糧價數據的研究〉，《經濟研究》，2011年第12期，頁124-137。</p> <p>台灣大學數位人文研究中心 https://www.digital.ntu.edu.tw/index.htm 北京大學數字人文研究中心 https://nav.pkudh.org/</p>
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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.