

Chinese 100 Electrifying Information in China: From oracle bones to bi-directional encoders
Coll 100

Instructor: Paul Vierthaler (pavierthaler@wm.edu)
Office: Washington Hall 234
Office Hours: Tuesdays 10-12:00 and by appointment
Washington Hall 307
Monday and Wednesday 5:00-6:20

In this class students will explore information, and the media that conveys it, by studying the development of information technology in China from the earliest recorded writing to modern machine-learning algorithms. Students will focus on how modes of storing and processing information influence contemporary culture and politics. This class will cover a variety of technologies of increasing sophistication from oracle bones, bronzes, bamboo slips, paper, and printing, to typewriters and mechanized type, telegraphs, teletype, computers, databases, and machine learning.

Students will leave this class with a stronger grasp of the complexities of information and the externalities of technology throughout Chinese history.

Students will also learn to co-produce a short video conveying an argument aimed at a general audience.

This class focuses on grappling with numerous Big Ideas.

This is a class about information and its numerous material and cultural manifestations throughout Chinese history. We begin by asking "what is information" before studying how it impacts society throughout history: How does information move through a community? How does the nature of information change depending on the media that conveys it? How does technology drive, or limit, the way information is shaped and what reciprocal influence does information have on technology? How in turn does information and communication technology influence Chinese society and the world?

Format and Expectations

Class will be primarily discussion focused. Active participation is expected, so please come to class prepared having read the materials.

Participation Policy:

Active participation in class is required and part of your grade. Attendance is required, and you can have two excuse free absences (but you will need to make up any quizzes that you miss). After that, unexcused absences will result in a grade reduction.

Content presentation/discussion leading: Once during the semester you will be asked to present a summary of the most important ideas within the day's readings and propose a set of questions for your classmates to discuss. This is meant to help you develop your skills at

condensing the information within the readings and formulating apposite questions. You should prepare a 10-minute presentation and 4 to 6 questions to guide a 10-minute discussion.

Class wiki: You will be responsible for making one entry in a class wiki and significantly expanding another written by one of your classmates. Your entries should engage with one or more of the technologies we discuss in class and reference secondary scholarship. Your first entry should be at least 500 words long (although longer entries are welcome), and you should add at least 500 words to the entry you edit.

Quizzes:

There will be four in-class quizzes throughout the semester on the reading materials. These will consist of multiple choice and short answer questions.

Projects

Much of the work in this class will be geared towards a collaborative final project that you will do with two of your fellow classmates.

Midterm project: Halfway through the semester you will produce a proposal for your final project with your group. This will consist of an outline for the final project, a bibliography of materials you plan to use, and samples of the various materials you plan to incorporate into your project. In this proposal you will discuss what your goals are with the project and what your inspiration is. Frame this as a pitch to a media company, explaining the broad relevance of your plan and why people will find it compelling

These project proposals will go through **peer review**, where you will be responsible for commenting on one other group's project. Please share where your classmates did well and where they can improve their project. Above all, be constructive!

Final Project

This will be a group produced 8-10 minute video. In pursuit of this, we will spend time in class discussing the technical process of making videos.

The final project is due during the time scheduled for the class final (**December 16th at 10pm EST**). I am happy to comment on drafts, but please send them to me at least one week before the project is due, otherwise I will be unable to provide comments.

Late work will be penalized by a 10% reduction for each 24-hour period it is late. After one calendar week, the assignment will not be accepted.

All assignments will be submitted through Blackboard

Please ensure that your papers/projects/digital files can be opened and read properly on a Mac OS X, Windows 10, or Ubuntu computer with standard software (Acrobat, Word, WordPad, etc). If you have any concerns, contact me ahead of time. Corrupted or un-openable files will be considered late.

Writing Expectations

While content is the most important component of your work, a portion of your grade on each assignment will be for style and understandability. There is a [writing resource center](#) at William & Mary. If you find yourself struggling, please feel free to avail yourself of their services! Alternatively, come speak with me and I will do what I can to help.

A Word About Plagiarism

You must document all of your source material. If you take any text or content from somebody else, you must make it clear the text is being quoted and where the text comes from. You must also cite any sources from which you obtain numbers, ideas, or other material. If you have any questions about what does or does not constitute plagiarism, ask! Plagiarism is a serious offense and will not be treated lightly. Fortunately, it is also easy to avoid and if you are the least bit careful about giving credit where credit is due you should not run into any problems (thanks to [Alfred E Guy, Jr.](#) for this statement).

Include credit in your video production:

Grading Rubric:

Attendance and Participation: 15 percent

Guided discussion: 10 percent

Quizzes: 20 percent

Class Wiki: 10 percent

Peer-review feedback: 5 percent

Mid-term proposal: 10 percent

Final project: 30 percent

GRADING SCALE FOR FINAL GRADES

| | | |
|--------------|--------------|--------------|
| A 93 – 100 | A- 90 – 92.9 | |
| B+ 87 – 89.9 | B 83 – 86.9 | B- 80 – 82.9 |
| C+ 77 – 79.9 | C 73 – 76.9 | C- 70 – 72.9 |
| D+ 67 – 69.9 | D 63 – 66.9 | D- 60 – 62.9 |
| F <60 | | |

A: Exceeds expectations (this is a difficult grade to get)

B: Meets expectations (if you do all the work competently, you can expect to get a B)

C: Below expectations, but represents a good-faith effort, and all work completed

D: Poor/missing work

F: Fail

Rounding policy:

I will round up if your final grade if it falls between the scores in this rubric (so an 89.9 is a B+, but an 89.91 rounds to an A-).

Required Books

All materials will be electronically distributed.

Accommodations:

Student Accessibility Services: William & Mary accommodates students with disabilities in accordance with federal laws and university policy. Any student who feels they may need an accommodation based on the impact of a learning, psychiatric, physical, or chronic health diagnosis should contact Student Accessibility Services staff at 757-221-2512 or at sas@wm.edu to determine if accommodations are warranted and to obtain an official letter of accommodation. For more information, please see www.wm.edu/sas.

Land & Slavery Acknowledgement

William & Mary occupies the ancestral lands of the Powhatan people. In 1677, near our historic campus, the Pamunkey leader, Cockacoeske, negotiated Articles of Peace, with England, on behalf of several indigenous tribes. We acknowledge the Native youths who attended the Brafferton Indian School in the eighteenth century. At present we acknowledge and honor Virginia's seven federally recognized tribes and the Commonwealth's four state-recognized tribes.

William & Mary acknowledges that it owned and exploited slave labor from its founding to the Civil War; and that it had failed to take a stand against segregation during the Jim Crow Era.

Mental and Physical Well Being

William & Mary recognizes that students have many different responsibilities and can face challenges that make learning difficult. There are many resources available at W&M to help students. Asking for help is a sign of courage and strength. Please reach out to me if you or someone you know are facing problems inside or outside the classroom, and I will do my best to guide you to appropriate resources on campus. Those resources include:

--For psychological/emotional stress, there is the W&M Counseling Center (757-221-362), 240 Gooch Dr. 2nd floor, <https://www.wm.edu/offices/wellness/counselingcenter/>). Services are free and confidential.

--For physical/medical concerns, there is the W&M Health Center (757-221-4386), 240 Gooch Drive, <https://www.wm.edu/offices/wellness/healthcenter/>

--For other additional support or resources, please contact the Dean of Students by submitting a care report (757-221-2510) or by email at deanofstudents@wm.edu
<https://www.wm.edu/offices/deanofstudents/services/caresupportservices/index.php>

Important Dates

Friday, September 10: The add/drop deadline

Oct. 11-31: Midterm grading period

Monday, November 1st: Withdrawal deadline

Food and Drink Policy

Feel free to bring any drinks you like to class, but I do ask that you keep your mask on unless actively drinking.

Ordinarily I am fine with food in the classroom, but please do not bring food to class this semester, as it would require extended periods of not wearing your mask.

Schedule (subject to change):

Week 1

September 1 (Wednesday) Class intro, discuss syllabus

Week 2

September 6 (Monday)

What is information? A quick guide to information theory

"How Claude Shannon Invented the Future"

<https://www.quantamagazine.org/how-claude-shannons-information-theory-invented-the-future-20201222/>

September 8 (Wednesday)

Early Chinese Writing (Oracle Bones)

"Chinese Oracle Bones"

<https://www.jstor.org/stable/24965178>

"Computer Matching of Oracle Bone Fragments"

<https://www.jstor.org/stable/41685293>

3D modeling oracle bones: <https://www.cam.ac.uk/research/news/world-first-as-3000-year-old-chinese-oracle-bones-go-3d>

Week 3

September 13 (Monday)

Early Chinese Writing (Zhou Bronzes)

Explore https://www.metmuseum.org/toah/hd/shzh/hd_shzh.htm

September 15 (Wednesday)

Early Chinese Writing (Bamboo Slips)

"The Age of the Bamboo Slip"

<http://www.china.org.cn/english/2003/Jun/66332.htm>

Week 4

September 20 (Monday)

Planned Swem visit 1

September 22 (Wednesday)

The invention of paper

"Science and Civilisation in China, Vol 5, pt 1" on *Blackboard*

Week 5

September 27 (Monday)

Printing - wood blocks

"Printing and Publishing in East Asia Through Circa 1600: An Extremely Brief Survey" Lucille Chia

https://wm-primo.hosted.exlibrisgroup.com/permalink/f/1enrbdm/TN_cdi_crossref_primary_10_1353_mdi_2020_0005

September 29 (Wednesday)

Printing - movable type

"Gutenberg Revisited from the East" Roger Chartier

<https://muse.jhu.edu/article/19489>

Week 6

October 4 (Monday)

Printing - lithography

"Metal typography, stone lithography and the dissemination of Ming-Qing popular fictions in Shanghai between 1874 and 1911" Jiangguo Pan

https://brill.com/view/journals/flsc/2/4/article-p561_3.xml

"The Dance of "Old" and "New" in Chinese Print Culture, 1860s-1955"

Cynthia Brokaw <https://pubmed.ncbi.nlm.nih.gov/29019454/>

October 6 (Wednesday)

Typewriters

"Introduction" *The Chinese Typewriter* Tom Mullaney

Week 7

October 11 (Monday)

Language Reform: From Classical to Vernacular

"Hu Shi and Chinese Language Reform" Victor Mair

<http://chinaheritage.net/journal/hu-shih-and-chinese-language-reform/>

October 13 (Wednesday)

The Telegraph
Selections from "Lightning wires: the telegraph and China's technological modernization, 1860-1890" Erik Baark

Week 8

October 18 (Monday)

Teletype and Telephones

Selections from *China's telecommunications revolution* Eric Harwit

October 20 (Wednesday)

From Traditional to Simplified Characters

Selections from *Long Story of Short Forms: The Evolution of Simplified Chinese Characters* Bökset, Roar

Week 9

October 25 (Monday)

Character encoding, fonts, and input

October 27 (Wednesday)

Computers in China

"Enter the dragon: China's computer industry" KL Kraemer, J Dedrick

Week 10

November 1 (Monday)

Databases: Visit to Swem

November 3 (Wednesday)

The Internet

Selections from *China's telecommunications revolution* Eric Harwit

Week 11

November 8 (Monday)

The Great Firewall

"Cyber China: Upgrading Propaganda, Public Opinion Work and Social Management for the Twenty-First Century" Rogier Creemers

November 10 (Wednesday)

Information Retrieval

"Boolean Retrieval" *Introduction to Information Retrieval*

<https://nlp.stanford.edu/IR-book/pdf/01bool.pdf>

Week 12

November 15 (Monday)

A brief intro to machine learning

November 17 (Wednesday)

Planned Swem Visit (Special Collections)

Week 13

November 22 (Monday)

BERT and ERNIE

"BERT: Pre-training of Deep Bidirectional Transformers for Language Understanding" (Don't worry about the math heavy sections, just skim)

Jacob Devlin, Ming-Wei Chan, Kenton Lee, and Kristina Toutanova

<https://arxiv.org/pdf/1810.04805.pdf>

"What problem does BERT hope to solve for search?"

Doug Turnbull

<https://opensourceconnections.com/blog/2019/12/18/bert-and-search-relevance-part2-dense-vs-sparse/>

Thanksgiving Break

Week 14

November 29 (Monday)

Computer Vision, Facial Recognition

"Between security and convenience: Facial recognition technology in the eyes of citizens in China, Germany, the United Kingdom, and the United States" Genia

Kostka, et al

<https://journals.sagepub.com/doi/full/10.1177/09636625211001555>

December 1 (Wednesday)

Online nationalism

"Introduction" *China's Digital Nationalism* Florian Schneider

Week 15

December 6 (Monday)

Crypto currency and the environment

"China's bitcoin mining is threatening its climate change targets"

<https://www.cnn.com/2021/04/08/chinas-bitcoin-mining-is-threatening-its-climate-change-targets.html#:~:text=Some%2075%25%20of%20the%20world's,hardware%2C%20according%20to%20the%20study.&text=This%20mining%20on%20computers%20uses,conducted%20on%20a%20large%20scale>.

December 8 (Wednesday)

Class wrap up and discussion

Your final project is due December 16th at 10pm EST. Submit it on Blackboard!