

Advance Network Management

Course code: 80240663

Instructor: Dan Pei

Instructor

Dan Pei

Associate Professor, Department of Computer Science and Technology, Tsinghua University

Dr. Dan Pei is an Associate Professor in Computer Science Department at Tsinghua University in Beijing, China. Before that he was a researcher at AT&T Research. He received his PhD degree from UCLA in 2005, and his Bachelor's and Master's degrees from Tsinghua University in 1997 and 2000. He is an ACM Senior Member and an IEEE Senior Member. His current research interests are autonomous IT Operations and AIOps (AI for IT Operations). His group design applied machine learning algorithms and build REAL systems that process the real IT operations data from distributed software applications, and solve their reliability, performance and security problems.

Course description

This course is a graduate course and is primarily project-oriented. It will cover three major aspects of IP network management: networks, objectives and methodologies. There will be 12 lectures given. Students are expected to form a team of two and finish a project on the THU-INM (Tsinghua University IP Network Management) platform.

Prerequisites:

C Programming, Undergraduate Network course

Course Content:

Week	Topic, Papers, Slides and Reading List	Algorithms & Techniques
1	<u>Course Introduction</u>	
2	<u>Video streaming & Web</u>	<u>Data Visualization</u> <u>Correlation, Regression, Information gain, Decision trees, Regression trees</u>
3		
4		
5		
6	<u>Anomaly detection for time</u>	<u>Time series Algorithms.</u> <u>Random Forests</u>

	series	
7	<u>Anomaly localization</u> for time series	<u>Association Mining</u>
8		<u>Occam's Razor</u>
9	<u>Dependency Discovery:</u> Event-Event, Event Sequence-TS (time series), TS-TS	<u>Neural Networks</u>
10		<u>Feature Selection</u> <u>Clustering</u> <u>Dynamic Time Warping</u>
11	<u>Fast Mitigation & Root Cause Analysis</u>	<u>Regularization</u> <u>Learning From Text</u>
12	<u>Event Prediction</u>	<u>SVM</u>
13		<u>Multi-Instance Learning</u> <u>Transfer Learning</u>
14	<u>Observational Study</u>	<u>QED Methods</u>
15	<u>Observational Study</u>	
16	Project Presentation	

Grading:

Demo of Projects (50%), Technical Reports (30%), Presentation (20%).

Fundamentals of Computer Graphics

Course code: 80240593

Instructor: Yongjin Liu

Instructor

Yongjin Liu, Professor

Department of Computer Science and Technology, Tsinghua University

Yong-Jin Liu is a tenured Full Professor with the Computer Science Department at Tsinghua University. He obtained his Ph.D. degree in 2004 from Hong Kong University of Science & Technology. His research interests focus on two aspects: (1) developing new theories and techniques in computational geometry, computer graphics, computer-aided design and pattern analysis, (2) applying these new theoretical results in real-world applications and building practical industrial-strength systems in the direction of design automation and optimization.

Course information

This course is designed for postgraduates in computer science department. The course content covers 16 weeks, every week three units, every unit is 45 minutes.

Course Description

This course gives an introduction to computer graphics, by integrating various skills in computer science such as programming, data structure and algorithm design. With the aid of new human-computer interface, students will learn these fundamental knowledge in computer science in terms of fancy graphics effects that reduce the learning load through abstract data visualization. The content of this course includes raster graphics, interactive graphics, matrix representation of 3D transformation, curve and surface design, ray tracing and visual realism, all with source code.

Prerequisites:

- C++ programming
- Linear algebra

Course Content:

1. Introduction to computer graphics (Week 1)
 - 1.1. What is computer graphics
 - 1.2. Graphics display devices
 - 1.3. Graphics input primitives and devices

Supplement (1) slides: [lecture1-introduction.pdf](#)

2. Raster graphics (Week 2)
 - 2.1. Scan conversion of line, circle and ellipse using mid-points algorithms

2.2. Filling polygonal regions

2.3. Begin to use OpenGL

Supplement (1) slides: lecture2-part 1.pdf, lecture2-part 2.pdf;

(2) homework 2 + solution

3. Modeling shape with polygonal meshes (Week 3~4)

5.1. OpenGL programming: buffer techniques

5.2. Solid modeling with polygonal meshes

5.3. Mesh approximation to smooth objects

5.4. Mesh generation and simplification

5.5. Mesh deformation and refinement

Supplement (1) slides: lecture3-part 1.pdf, lecture3-part 2.pdf, lecture3-part 3.pdf;

(2) lecture3-part3-reading material.pdf;

(3) homework 3 + solution

4. Color theory and texture mapping (Week 5)

4.1. Introduction: physiological basis for human color

4.2. CIE standard

4.3. Color space

4.4. OpenGL programming: texture mapping

Supplement (1) slides: slides: lecture4-part 1.pdf, lecture4-part 2.pdf;

(2) homework 4 + solution

5. Parametric curve and surface modeling (Week 6)

5.1. Describing curves using polynomials

5.2. Bezier curves

5.3. B-spline curves

5.4. Tensor product surfaces

Supplement (1) slides: slides: lecture5-part 1.pdf, lecture5-part 2.pdf;

(2) homework 5 + solution

6. Visual realism (Week 7)

6.1. Shading modeling

6.2. Specular reflection

6.3. Diffuse component

6.4. Ambient light

6.5. Shading in graphics pipeline

Supplement (1) slides: lecture6-part 1.pdf, lecture6-part 2.pdf, lecture6-part 3.pdf;

(2) homework 6 + solution

7. OpenGL pipeline (Week 8)

7.1. 2D/3D transformations

7.2. OpenGL lighting

7.3. Textures and shadows

7.4. Shader development

Supplement (1) slides: lecture7-part 1.pdf, lecture7-part 2.pdf;

(2) homework 7 + solution

8. Ray tracing (Week 9~10)

8.1. Overview of the ray tracing process

8.2. Intersection of a ray with an object

8.3. Antialiasing ray tracing

8.4. Acceleration in ray tracing

Supplement (1) slides: lecture8-part 1, 2, 3, 4, 5, 6.pdf

(2) homework 8 + solution

9. Radiosity (Week 11)

9.1. Application scenarios

9.2. Basic radiosity model

9.3. Substructure and hierarchy

9.4. State-of-the-art radiosity

9.5. A 3DMax tutorial

Supplement (1) slides: lecture9.pdf

(2) homework 9 + solution

10. Photon mapping (Week 12)

10.1. Application scenarios

10.2. Caustics

10.3. Rendering equation

10.4. Photon tracing

10.5. Hybrid algorithm

Supplement (1) slides: lecture10.pdf

(2) homework 10 + solution

11. Particle systems (Week 13)

11.1. Representing objects with particles

11.2. System framework

11.3. Kinematics of particles

11.4. Newton's laws

11.5. Particle rendering and simulation

Supplement (1) slides: lecture11.pdf

(2) homework 11 + solution

12. Non-photorealistic rendering (Week 14)

12.1. NPR applications

12.2. Pen-and-ink illustration

12.3. Stipple rendering

12.4. Tone shading

12.5. Cartoon rendering

Supplement (1) slides: lecture12.pdf

(2) homework 12 + solution

13. Advanced topic (Week 15)

Supplement (1) lecture13-advanced topic.pdf

(2) lecture13-reading material.pdf

14. Project presentation & summary (Week 16)

Supplement (1) slides: lecture14-summarization.pdf

Reference textbook:

F.S. Hill, JR, Stephen M. Kelley. Computer Graphics using OpenGL, 3rd, Prentice Hall.

Other reference:

OpenGL Programming Guide: The Official Guide to Learning OpenGL, Version 4.3 (8th Edition)

Grading:

Class attendance is required, Attendance/Presentations (10%), Projects (15% + 20% + 20% + 35%),

Human Computer Interaction Technology

Course code: 80240533

Instructor: Yuanchun Shi

Instructor

Yuanchun Shi, Professor.

Professor, Department of Computer Science and Technology, Tsinghua University

Yuanchun Shi is a Changjiang Distinguished Professor in the Department of Computer Science and Technology, Tsinghua University, China. She received her PhD, MSc and BSc from Tsinghua, and joined its faculty in 1993. Her research in human-computer interaction, ubiquitous computing, and multimedia has won many academic awards, including two State Science and Technology Progress Awards, Faculty Awards, and many best paper and honorable mention awards from conferences such as CHI and MobileHCI. Prof. Shi's recent HCI contributions includes user behavior modelling, intelligent interaction techniques for mobile phones, large displays, and VR/AR headsets. She has published more than one hundred top conference and journal papers (CS Ranking, HCI) including over 30 CHI, UIST, Ubicomp, TOCHI and IJHCS papers over the most recent five years alone.

Course description

This course covers the basic understanding of human perception and cognition, interaction styles development, design and evaluation of GUI, and natural human computer interface technologies. Computer output mediums will include graphics, music, and 3-D sound. Input technologies are emphasized. Multimodality about visual, acoustic and touch sense channels are introduced with new input interfaces. Signal processing, feature extraction, and mapping schemes will also be covered. Measure methods are for the efficiency of interaction. Hands-on laboratories and independent projects, which can potentially continue as further researches.

Prerequisites: Programming

Study Schedule

	Teaching focus
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Week 1	The evolution of HCI technology
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Teaching focus

Week 2 Human Information Processing Model

Week 3 Fitts' Law and UI Optimization

Week 4 Text Entry Techniques

Week 5 Gesture Interaction

Week 6 Sensing Techniques

Week 7 Accessibility / Eyes-free

Assessment

No Final Exam, Grading: Class Participation and Presentation: 20% Project/Paper & Homework 80%

Natural Language Processing

Introduction: The course introduces natural language processing (NLP), from its history to recent advances in deep learning applied to NLP. NLP is one of the most important technologies in Artificial Intelligence. NLP aims at enabling computers to understand human languages and communicate with humans. There are a large variety of tasks and machine learning methods in NLP. In this course, we plan to introduce the following subtopics:

- (1) The history and the tasks in NLP.
- (2) Basic tasks in NLP: Sequence tagging, parsing, classification and clustering.
- (3) Applications in NLP: machine translation, question answering, etc.
- (4) Recent advances in deep learning applied to NLP.
- (5) Open problems and challenges for NLP.

By learning from lectures and programming assignments, students will master necessary knowledge about NLP and engineering tricks for practical NLP problems.

Lecturer: Zhiyuan Liu

Prerequisites: basic probability theory; basic linear algebra; programming skills (C++ or Python). Knowledge of machine learning is preferred.

Grading: Class attendance is required, assignments, projects.



清華大學
Tsinghua University

College Physics I

Lectures: Monday & Wednesday 7:20 – 9:00 PM

Instructor: Assoc. Prof. BISSET MICHAEL ANDREW

Text: Physics for Scientists and Engineers, Third Edition

by Fishbane, Gasiorowicz & Thornton

Level: Undergraduate s

Credit: 4

Overview: This course is a calculus-based introduction to physics at the university level. It is the first half of a two-semester course sequence that covering all aspects of physics at an introductory level.

The first semester focuses on classical Newtonian mechanics, including kinematics and dynamics of point particles and rigid bodies, Lagrangian techniques, Newtonian gravity, harmonic motion, wave mechanics, basic fluid dynamics, solids, and classical thermodynamics and statistical mechanics. (The second semester of the sequence completes the instruction on thermal physics, and then covers electricity and magnetism, physical optics, special relativity, quantum physics, and radioactivity.)

The course is conducted in English with an English-language textbook. In addition, a mandatory discussion section provides access to more active student participation as well as assistance in Chinese. The course content is equivalent to the material taught in other Chinese-language based courses of the same title taught at Tsinghua University. Special attention is paid to the connections between techniques used to solve physics problems in different areas.

The course instructor is a foreign professor who has taught at Tsinghua University for more than two decades. He is noted for involving students in lectures.

Pre-requisites: None

Grading: Score is given based on discussion section / midterm exam / final exam.

Contact hours inside class : 64

Contact hours outside class: 40

Selected Topics of History of Modern Chinese Architecture and Urbanism

Course code: 80001261

Instructor: Yishi Liu

Instructor

Yishi Liu

Associate Professor, Department of Architecture, Tsinghua University

Course Description

Modern Chinese architectural history is an essential part of the architectural historical studies, with distinct significance on today's construction and preservation based on better understandings of Chinese architectural and urban development since 1840. However, graduate-level class on this subject is largely missing. The class proposed will be the first of its kind in China, which offers opportunities for students who did not take the class before and those who will conduct historical research of any kind to systematically study the history of modern Chinese architecture and cities, with emphases on selected topics. This class is an one-unit, eight-week class, divided into 4 parts: the first is an introduction to briefly trace academic development of the field and a few essential but confusing concepts, such as Chinese (both territory and people), modern times, etc. The second part focuses on selected architectural types that consists of 3 lectures, i.e. modern campus design, the hotel, and housing planning and construction. In addition to their strong presence to transform urban landscape, they all convey unmistakable ideological messages to the audience. The third part also contains three lectures on the evolution of architectural and planning ideas, as well as historical processes of the establishment and amendment of planning mechanisms. I use the Garden City movement, the popularization of roadside tree and lawn planting as examples, and study how modern Chinese planning was institutionalized since the turn of the 20th century. They are all set under a global view for study, with a focus on the ties between the globe and China. The methodologies and research perspectives of modern Chinese architectural history deserves systematical training in class. The class is split into halves by lectures and discussions. Students are required to read designated materials before class, and actively participate in class discussion, i.e. a seminar.

Prerequisites:

Have a certain understanding of modern Chinese history.

Course Content:

Credit Hours $16 \times 1 = 16$

Credit: 1

Week	Date	Chapters	Contents of Class
1		I. Intro 1. Historiographical review of the field: Modern Chinese Architectural History and Urbanism	1.1 Basic Concepts: China/modern period/architectural history 1.2 Research object/materials/methodologies

2		II. Typological Studies	2. Modern campus designs in a global context	2.1 “New Policy” and modern Chinese higher educational institutions (including missionary schools) 2.2 Case Studies: Tsinghua campus from 1909 to 1966
3			3. The modern hotel	3.1 The hotel as an ideological carrier 3.2 From hotel to guest house: hotels in modern Shanghai, Beijing and Nanjing 3.3 Case Studies: Beijing’s Peace Hotel, Fragrance Hotel and Jianguo Hotel
4			4. Modern Housing and Housing Planning in China	4.1 Emergence of modern housing 4.2 Typical cases: alleyway houses, watchtower-like houses, and the five-foot way 4.3 Socialist housing planning and construction 4.4 Case Studies: Zuojiashuang and Chuiyangliu in Beijing in the 1960s
5			5. Planning ideas around the globe: the Garden City, Linear City and Modernist City	5.1 Howard and the genesis of Garden City idea 5.2 Garden City idea VS movement 5.3 Garden City VS Linear City VS Modernist City 5.4 Case Studies: hexagonal planning
6		III. Ideas, Conceptualization and Institution	6. Landscape in history of idea: from roadside trees to road sectional designs	6.1 The idea of the lawn and its global transmission 6.2 Transmission of roadside trees 6.3 Case Studies: design standards for road sections in modern China across 1949
7			7. Modern Chinese city planning mechanisms and practices	7.1 Introduction of the idea of modern city planning 7.2 Case Studies: Canton reformation (1914), Nanjing Reconstruction Plan (1929), and Greater Shanghai Plan (1929) 7.3 Socialist planning theoretical building and practices: Eight cities in the 1950s under Soviet impact 7.4 Case Studies: Beijing’s Chang’an Avenue Plan (1949-1964)
8		IV	8. Student presentations	
		Submission of final paper		

INTERNATIONAL MACROECONOMIC
THEORY AND POLICY
SYLLABUS
SEM Tsinghua

THIS VERSION: APRIL 27, 2020

April 27, 2020

Instructor: Tuo Chen, Weilun 446, chentuo@sem.tsinghua.edu.cn

Time: 2021 Spring

Location: TBA

TAs: TBA

Types of course: Elective course

Prerequisite: Intermediate Macroeconomics

Course Description: This course is a field course in International Macroeconomics. The course develops a theoretical framework for the analysis of the determinants of international capital movements, trade imbalances, and nominal and real exchange rates. The theoretical framework is then used as the basis for the discussion of policy issues such as the emergence of the U.S. as the largest foreign debtor, global trade imbalances, developing-country debt crises, the European financial crisis, exchange-rate-based inflation stabilization, currency unions, debt default, balance-of-payment crises, and the effect of the great recession of 2008 on the world economy.

Homework: There will be one homework for each topic. The problem sets are distributed after class, and are due at the beginning of the next class. You can and are encouraged to discuss the homework among your cohorts, but each student has to turn in his/her own copy independently. No delay is accepted unless you have good excuses.

Final Grade: 30% Homework + 30% Midterm + 40% Final

Text books:

- “International Macroeconomics,” by Stephanie Schmitt-Grohe, Martin Uribe, and Michael Woodford

1 Global Imbalances

- International Macroeconomics, Chapter 1.
- Additional Readings:
 - Milesi-Ferretti, Gian Maria, “A \$2 Trillion Question,” VOX, January 28, 2009, available online at <http://www.voxeu.org>.

- Hausmann, Ricardo and Federico Sturzenegger, “U.S. and Global Imbalances: Can Dark Matter Prevent a Big Bang?,” Working Paper, CID (Center For International Development), Harvard University, 2005.
- Gourinchas, Pierre-Olivier, and Helene Rey, “From World Banker to World Venture Capitalist: U.S. External Adjustment and the Exorbitant Privilege,” in Richard H. Clarida, editor, *G7 Current Account Imbalances: Sustainability and Adjustment*, University of Chicago Press, May 2007, pp. 11-66.

2 Current Account Sustainability

- International Macroeconomics, chapter 2.

3 A Theory of Current Account Determination

- International Macroeconomics, chapters 3 and 5.

4 Uncertainty and the Current Account

- International Macroeconomics, chapter 4.

5 Current Account Determination in a Production Economy

- International Macroeconomics, chapter 5.

6 External Adjustment in Small and Large Economies

- International Macroeconomics, chapter 6.
- Additional Reading:
 - Ben S. Bernanke, “The Global Saving Glut and the U.S. Current Account Deficit,” Homer Jones Lecture, St. Louis, Missouri, April 14, 2005.

7 Twin Deficits: Fiscal Deficits and Current Account Imbalances

- International Macroeconomics, chapter 7.

8 International Capital Market Integration

- International Macroeconomics, chapter 8.
- Additional Readings:
 - Obstfeld, Maurice and Alan M. Taylor, Globalization and Capital Markets, in Michael D. Bordo, Alan M. Taylor and Jeffrey G. Williamson, Editors, Globalization in Historical Perspective, University of Chicago Press, 2003.
 - “Carry on Speculating,” The Economist Magazine, February 24, 2007, page 90.

9 The Law of One Price, Purchasing Power Parity, and Real Exchange Rates

- International Macroeconomics, chapter 9 and chapter 10.1.
- Additional Readings:
 - Taylor, Alan M. and Mark P. Taylor, “The Purchasing Power Parity Debate,” Journal of Economic Perspectives 18, Fall 2004, 135-158.

10 The Macroeconomics of External Debt

- International Macroeconomics, chapter 11.

11 Monetary Policy and Nominal Exchange Rates

- International Macroeconomics, chapter 12.
- Additional Readings:

- Schmitt-Grohe, Stephanie, and Martin Uribe, “Managing Currency Pegs,” *American Economic Review, Papers and Proceedings* 102, May 2012, 192-197.
- Schmitt-Grohe, Stephanie, and Martin Uribe, “Downward Nominal Wage Rigidity and the Case for Temporary Inflation in the Eurozone,” *Journal of Economic Perspectives* 27, Summer 2013, 193-212.

1. Course Title:

Environmental Risk Analysis

2. Course Syllabus:

The aim of this course is to review of the methods for, and application of, environmental risk assessment. It is not a technical “how to” guidance but examines the basic concepts applicable to all environmental risk assessments including human health risk assessments, ecological risk assessments and industrial applications of risk assessment. Since existing knowledge and research in this field is vast, this course aims to identify unifying concepts, discuss currently used methodologies, examine their application and give examples of risk assessment in practice, and guide the students to information sources relevant to ERA.

The arrangements are as follows:

Unit	Subject	Arrangement	Notes
1	Introduction and decision making	Lectures by teacher	Week 1-2
2	Country applications	Presentation 1 by students	Week 3-4
3	Supporting tools	Lecture and discussion	Week 5-6
4	Method of human health risk assessment	Lectures by teachers	Week 7-8
5	Models and case studies for HRA	Presentation 2 by students	Week 9-10
6	Method of ecological risk assessment	Lectures by teachers	Week 11-12
7	Models and case studies for EcoRA	Presentation 3 by students	Week 13-14
8	Industrial application and probabilistic risk assessment	Lectures by teachers and Presentation 4 by students	Week 15-16

3. Prerequisites for the Course:

No prerequisites

4. Exam and Standard for Scoring:

- (1) Attendance, 10%
- (2) Performance in class, 10%
- (3) Presentations, 3 times, with each 20%
- (4) Final course paper/presentation, 20%

5. Extra-curricular learning time:

1 hour per week

Modern Western Philosophy

近代西方哲学

Hao Tang

唐浩

Course Description:

In this course we will carefully read and discuss some of the most important philosophers in modern Western philosophy. The central topics will be in metaphysics and epistemology.

Pre-requisites:

This is an upper-level undergraduate course. Prior training in philosophy will likely be helpful, but is not strictly required.

Grades:

Grades will be determined primarily on the basis of assigned written work (two or three papers), but some consideration (no more than 5%) will be given to participation in class discussion.

Schedule

[This schedule will be largely followed, though there may be small changes to it, depending on how the course actually goes. Detailed bibliographical information about the assigned readings can be found at the end of this syllabus.]

Week 1: **Introduction to the course**

Allison, Henry E.: Excerpts from his *Benedict de Spinoza, An Introduction*, pp. 25-29.

Woolhouse, R. S.: Chapter 1 (“Introduction”) of his *Descartes, Spinoza, Leibniz*, pp. 1-13.

Week 2: **Descartes (Doubt, Certainty, Mind-Body Dualism)**

Descartes Synopsis of the *Mediations* (CSM II, pp. 9-11)

Descartes *Meditation 1 and Meditation 2* (CSM II, pp. 12-23)

Descartes *Principles of Philosophy*, Part I, §§1-12 (CSM I, pp. 193-197)

Week 3: Descartes (Causal Arguments for the Existence of God)

Descartes *Meditation 3* (CSM II, pp. 24-36)

Descartes *Principles of Philosophy*, Part I, §§17-28 (CSM I, pp. 198-203)

Week 4: Malebranche (Occasionalism)

Descartes *Treatise on Man* (excerpt, CSM I, p. 100)

Passions of the Soul, Part I, §§30-36 (CSM I, pp. 339-342)

Malebranche *The Search after Truth*, Book 6, Part 2, Chapter 3 (pp. 446-452)

Nadler, Steven “Malebranche on Causation”, in *Cambridge Companion to Malebranche* [read pp. 112-133 and skip pp. 133-136 (the final section)]

Week 5: Leibniz (Metaphysics)

Leibniz *Discourse on Metaphysics*, §§1-22 (AG, #8, pp. 35-55)

Week 6: Leibniz (Metaphysics and Epistemology)

Leibniz *Discourse on Metaphysics*, §§23-37 (AG, #8, pp. 55-68)

Leibniz *A New System* (AG, #17, pp. 138-145)

Leibniz *On Nature Itself* (AG, #21), the short editorial introduction (p. 155), §§5-6 (pp. 158-9) and §10 (pp. 160-1).

Jolley (optional) *Leibniz*, Chapter 2, “The metaphysics of substances: unity and activity”

Week 7: Leibniz (Monadology)

Leibniz *Principles of Nature and Grace* (AG, #28, pp. 204-213)

Monadology (AG, #29, pp. 213-225)

Jolley (optional) *Leibniz*, Chapter 3, “The theory of monads”

Week 8: [Holiday Break]**Week 9: Locke (Attack on Innate Ideas and Basic Statement of Empiricism)**

Locke *Essay concerning Human Understanding*

Book I, Chapters i-ii [skip the long note in I.i]

Book II, Chapter i, Sections 1-8 and 22-25 [skip Sections 9-21]

Book II, Chapters ii, iii, v, vi, vii [skip the long note in II.ii]

Lowe (optional) *The Routledge Guidebook to Locke's Essay* (2013)

Week 10: **Locke (Philosophy of Mind and Epistemology)**

Locke *Essay concerning Human Understanding*

Book II, Chapters ix-xi
 Book II, Chapter xii
 Book IV, Chapter i [skip the long note]
 Book IV, Chapter ii, Sections 1-3, 6-7, 14

Week 11: **Locke (Primary vs. Secondary Qualities and Epistemology)**

Locke *Essay concerning Human Understanding*

Book II, Chapters iv
 Book IV, Chapter viii
 Book IV, Chapter 3, Sections 1-18, 21-22, 28 [skip long note in IV.iii.6]
 Book IV, Chapter 4, Sections 1-5

Week 12: **Locke (Personal Identity)**

Locke *Essay concerning Human Understanding*

Book II, Chapter 27 [skip the long note]

Week 13: **Berkeley (Immaterialism)**

Berkeley *Principles of Human Knowledge*, Part I, §§1-7
 Berkeley *Three Dialogues between Hylas and Philonous*, The First Dialogue (pp. 154-190)

Week 14: **Berkeley (Immaterialism)**

Berkeley *Three Dialogues between Hylas and Philonous*
 The Second Dialogue (pp. 190-208), The Third Dialogue (pp. 208-230)

Week 15: **Hume (Skeptical Doubt and Skeptical Solution)**

Hume *Enquiry concerning Human Understanding*, §§1-5
 [Skim §1, read only the first three paragraphs of §3 and skip the rest of §3.
 Do concentrate on §§4-5 (skeptical doubts and skeptical solution).]

Week 16: **Hume (Attack on Necessary Connections, Skeptical Philosophy)**

Hume *Enquiry concerning Human Understanding*, §§7, 9, 13

Bibliography

- Allison, H. *Benedict de Spinoza, An Introduction*, pp. 25-29
- Berkeley, G. *Philosophical Writings*, edited by Desmond Clarke, Cambridge University Press, 2008
- Descartes, R. *The Philosophical Writings of Descartes*, translated by John Cottingham, Robert Stoothoff, and Dugald Murdoch, Cambridge University Press, 1985
- Hume, D. *An Enquiry Concerning Human Understanding and Other Writings*, edited by Stephen Buckle, Cambridge University Press, 2007
- Jolley, N. *Leibniz*, 2nd edition, Routledge, 2020
- Leibniz, G. W. *Philosophical Essays*, edited and translated by Roger Ariew and Daniel Garber, Hackett, 1989
- Locke, J. *An Essay Concerning Human Understanding*, 27th edition, 1836
- Lowe, E. J. *The Routledge Guidebook to Locke's Essay Concerning Human Understanding*, Routledge, 2013
- Malebranche, N. *The Search After Truth*, translated and edited by Thomas Lennon and Paul Olscamp, Cambridge University Press, 1997
- Nadler, S. "Malebranche on Causation", in *Cambridge Companion to Malebranche*, edited by Steven Nadler, Cambridge University Press, 2000, pp. 112-138
- Woolhouse, R.S. *Descartes, Spinoza, Leibniz – the concept of substance in seventeenth-century metaphysics*, Routledge, 1993

Environmental Health Issue at Global Scale

Course ID: 80960003

Course Syllabus

1. Course Description

This course has three main components: important topics, research methods, and practices in the field of environmental health. (1) Important topics: this course will introduce well-known cases in the field, including Love Canal events and soil pollution, London smog and air pollution, the impact of leaded gasoline on children's intelligence, Minamata disease and heavy metal pollution in seawater, as well as some most recent research topics in the field of environmental health, such as the impact of climate change and microplastics on human health. (2) At the same time, this course also introduces environmental health research methods, involving remote sensing, geographic information systems, and environmental epidemiology. (3) Finally, in terms of environmental health practice, this course will introduce cases of improving environmental health via domestic laws, international treaties, technological innovation, and participation of private companies.

This course combines lecture, discussion, reading, course report, homework, and peer review to let students understand the relationship between the natural environment, earth system vs. human health and human society. This course is devoted to give students a macro perspective of the earth system and associated human health issues, let students understand the relationship between environmental health and government regulations, and practice students reading scientific papers critically and conducting environmental health research.

2. Learning Outcome

At the end of the course, students are expected: (1) to know the main and latest research topics in the field of environmental health, as well as some controversial cases; (2) to have a comprehensive view of human society, human health, the external environment, and the earth system (3) to understand the research tools and research methods in the field of environmental health; to use some of them; (4) to read and criticize scientific research papers in the field of environmental health; (5) to design simple environmental health research.

3. Course Format

This course consists of traditional course lecture, as well as discussion, reading, course report, homework, and peer review. (1) Course lecture: for this part, instructor and guest speakers mainly introduce important topics of environmental health, introduce scientific research methods, environmental regulations and environmental health practices. Students are required to attend more than 80% of the course lecture. This section gives students basic knowledge. (2) Course discussion: for this part, students discuss environmental health issues under the guidance of the instructor. Students need to attend more than 80% of the course discussion and participate discuss actively. This section is aimed to develop students' ability of critical thinking. (3) Course report: students conduct environmental health

research under guided by the instructor. Research topics are selected reflecting most recent progresses in the field of environmental health. Students need to conduct research on these selected topics, write scientific papers, and presentation in groups. Students will learn how to conduct scientific research in the field of environmental health. (4) Homework and peer-review: Students will write and answer specified environmental health problems as course homework; and complete double-blind review of other students' homework. (5) Reading: students are required to complete designed reading before attending to lecture. Reading materials help students to preview course content and train reading comprehension of scientific papers. **Attention: Students are required to complete all readings.**

4. Grading Scale and Course Evaluation

The grading criteria are as follows: A = >90%; B = 80%-89%; C = 70%-79%; D = 60%-69%; F = < 60%. The full score is 100 points. The written part of course report accounts for 40 points; the oral presentation of course report accounts for 10 points; homework accounts for 20 points; course discussion accounts for 10 points; reading accounts for 10 points; and there is 10 points for attendance.

Homework and course report are evaluated and graded by peer-review process. Using peer-review not only makes scoring more objective, but also allows students to familiarize peer review process. After submitting each homework, every student will be asked to randomly review assignments from other three students. The reviewer will need to evaluate and rate (at 100-point scale) the originality, writing skill, accuracy, and overall performance of each assignment and make comments. To avoid inflation of scoring, each reviewer should not score more than 240 points in total for the assigned three homework. To ensure fairness and objectivity, the review process is double-blind. Peer-review process is part of the course.

Plagiarism is prohibited. Homework and course reports founded to be plagiarized will be graded 0 points.

5. Course Attendance

Students need to behave well during the class and mute their cell phones.

6. Course Schedule

The course consists of 16 lectures, about 10 class discussion, 3 homework, and 1 course report. The course schedule are as follows:

Lecture 1. Introduction to Environmental Health

Content. This lecture gives an overview of the entire course, and briefly introduces research objects, research methods, and some well-known events in the field of environmental health.

Outline.

Section 1. Course Overview: introduce course schedule, grading criteria, homework, course attendance; introduce the "peer-review" process.

Discussion: What is the importance of peer review? How to be a good reviewer?

Section 2. Research objectives and research methods of environmental health: definition of environment and health; examples of interaction between the two.

Section 3. Well-known environmental health events

Reading. Thacker, S.B., Stroup, D.F., Parrish, R.G. and Anderson, H.A., 1996. Surveillance in environmental public health: issues, systems, and sources. *American Journal of Public Health*, 86(5), pp.633-638.

Lecture 2. London Smog and Air Pollution

Content. This lecture introduces a landmark event in the history of environmental health, London smog, and introduces air pollution.

Outline.

Section 1. A review of the London fog incident: the background, and history of London smog incident; health and social impacts;

Section 2. Introduction to Air Pollution: Sources and formation mechanisms of air pollution; its chemical composition; briefly introduce its health threats;

Section 3. Air Pollution in Developing Countries: Introduce air pollution incidents in Los Angeles in the 1960s and recent air pollution episodes in developing countries such as India and China;

Discussion: In the U.K., the U.S. States and China, we observed a time lag between air pollution events and policy intervention. Can you propose reasons of this lag, and how to implement quick policy responses?

Reading. Anderson, H.R., 2009. Air pollution and mortality: A history. *Atmospheric Environment*, 43(1), pp.142-152.

Lecture 3. Tragedy of Love Canal and Soil Pollution

Content. This lecture mainly introduces the story of the Love Canal event and soil pollution scandal of Changzhou Foreign Language School in China; introduces cancer clusters caused by soil pollution in the United States and China and policy responses in both countries; introduces efforts to resolve soil pollution.

Outline.

Section 1. Historical background of the Love Canal event and its progress; the health hazards and social impacts; and the impact on American pop culture. The phenomenon of cancer villages in the United States is exemplified by Ashland.

Section 2. Introduction to Soil Pollution: Source and Mechanism of Soil Pollution, Focusing on Sudden Sustainability of Soil

Section 3. Changzhou Foreign Language School Poisonous Time: A comparative introduction to the poisonous land of Changzhou Foreign Language School, especially focusing on the difficulties of soil remediation and the public interest litigation

Discussion: How to balance the economic development with the environment and human health in conjunction with the Love River incident and the Changzhou Foreign Language School poisonous event? Is it difficult to avoid development and post-governance? How to deal with the environmental pollution left over from history?

Reading. Aldrich, T. and Sinks, T., 2002. Things to know and do about cancer clusters. *Cancer*

investigation, 20(5-6), pp.810-816.

U.S. EPA. The Love Canal Tragedy. <https://archive.epa.gov/epa/aboutepa/love-canal-tragedy.html>

Lecture 4. Heavy Metals & Neurological Toxicity

[Content]

This lecture will introduce leaded gasoline and mercury pollution, the neurotoxicity of heavy metals (e.g., lead and mercury), especially the neurological toxicity to the nervous system of infants and children, and briefly introduce the policy efforts to control heavy metal pollution.

[Background Reading]

Clarkson, T.W., Magos, L. and Myers, G.J., 2003. The toxicology of mercury—current exposures and clinical manifestations. *New England Journal of Medicine*, 349(18), pp.1731-1737.

[Read Before-class and Answer the Following Questions]

Lanphear, B.P., Hornung, R., Khoury, J., Yolton, K., Baghurst, P., Bellinger, D.C., Canfield, R.L., Dietrich, K.N., Bornschein, R., Greene, T. and Rothenberg, S.J., 2005. Low-level environmental lead exposure and children's intellectual function: an international pooled analysis. *Environmental health perspectives*, 113(7), pp.894-899.

Question 1: What was the primary exposure of interest? Briefly explain how exposure was measured. Was this accurately measured?

Question 2: What was the major result of this study? Please provide the major quantitative result. Given that lead toxicity at the time was set at ≥ 10 ug/dL, what are the policy implications of these findings?

Question 3: To what larger population may the results of this study be generalized? Justify your restrictions (if any) to the generalization of these results.

[Outline]

Section 1. Lead and neurological toxicity: This section will introduce the toxicity of lead and associated symptoms, the effects of lead on the hippocampus, brain volume, etc., as well as the adverse health effect of low levels of blood lead.

Section 2. Mercury and neurological toxicity: This section will first introduce some basic knowledge about mercury, such as element mercury, organic mercury, etc., and then introduce the source of mercury and mercury cycle. Finally, this part will use Minamata disease and Iraq poison grain disaster as two examples to illustrate the neurological toxicity of mercury, especially the toxicity to the nervous system of infants and young children.

Section 3. Regulation: This section introduces the regulatory history of lead control in the U.S.

Paper Discussion: discuss paper Lanphear et al. (2015).

[Read After-class and Discuss]

Read Chapter 5 of the following report (page 11~12, titled "A tale of two countries") on phasing out leaded gasoline in China and U.S., and we will have a class discussion next time.

Chapter 5 of the following report ("A tale of two countries", page 11~12) Development. Environmental Health, Safety Division and United Nations Environment Programme. Division of Technology, 1999. Phasing lead out of gasoline: An examination of policy approaches in different countries. UNEP/Earthprint.

Lecture 5. Smoking and Health

[Content] This course will systematically introduce the harm of smoking to human health, and talk about tobacco control from the perspective of national policies and individual behaviors

[Outline]

Section 1. History of smoking: smoking as a history of popular culture

Section 2. Hazards of Smoking: A representative study of the dangers of smoking on various parts of the body

Section 3. Controlling Tobacco: Discussing from the perspective of government policy choices and individual behavior

Discussion: Which policy tools can be used to control tobacco?

Reading. Schane, R. E., Ling, P. M., & Glantz, S. A. (2010). Health effects of light and intermittent smoking: a review. *Circulation*, 121(13), 1518-1522.

Critchley, J. A., & Unal, B. (2003). Health effects associated with smokeless tobacco: a systematic review. *Thorax*, 58(5), 435-443.

Lecture 6. Air Pollution and Human Health

[Content] This course will systematically introduce the threat of air pollution to health from the grounds of cell experiments, animal experiments, epidemiological investigations, etc., and use this as a case to introduce environmental epidemiological methods.

[Outline]

Section 1. Cell experiment evidence and health hazards of air pollution

Section 2. Animal experiment evidence and health hazards of air pollution

Section 3. Epidemiological hazards of air pollution

Section 4. Brief introduction to environmental epidemiology: cohort study, time series data analysis

Reading. Pope, C.A., Dockery, D.W. and Schwartz, J., 1995. Review of epidemiological evidence of health effects of particulate air pollution. *Inhalation toxicology*, 7(1), pp.1-18.

Mannucci, P.M., Harari, S., Martinelli, I. and Franchini, M., 2015. Effects on health of air pollution: a narrative review. *Internal and emergency medicine*, 10(6), pp.657-662.

Lecture 7. Indoor Air Pollution

[Content] This course will talk about the causes of indoor air pollution and the harm to human health.

[Outline]

Section 1. Introduction: Definition and measurement of indoor air pollution; types of indoor air pollution; similarities and differences between indoor air pollution and outdoor air pollution.

Section 2. Health Effects: Health Effects of Indoor Air Pollution, and a Brief Introduction to Research Methods.

Section 3. Case: A famous study and related conclusions on indoor air pollution

Discussion: How to use policy tools to manage indoor air pollution?

[Reading]: Sundell, J. (2004). On the history of indoor air quality and health. *Indoor air*, 14(s 7),

51-58.

Jones, A. P. (1999). Indoor air quality and health. *Atmospheric environment*, 33(28), 4535-4564.

Lecture 8. Urban Environment and Health

[Content] This course will introduce the relationship between the influencing factors of urban environment and human health.

[Outline]

Section 1. Overview of the urban environment: What is the urban environment and what are its main aspects?

Section 2. Urban Environment and Health: Using research examples to illustrate the factors and ways in which urban health affects health, and the classification of health hazards.

Section 3. Approaches to improve urban environment and health

Reading. : Handy, S. L., Boarnet, M. G., Ewing, R., & Killingsworth, R. E. (2002). How the built environment affects physical activity: views from urban planning. *American journal of preventive medicine*, 23(2), 64-73.

Giles-Corti, B., Vernez-Moudon, A., Reis, R., Turrell, G., Dannenberg, A. L., Badland, H., ... & Owen, N. (2016). City planning and population health: a global challenge. *The lancet*, 388(10062), 2912-2924.

Lecture 9. Microplastics and human health

[Content]

This lecture will introduce the potential impact of microplastics on the ecological environment and human health.

[Background Reading]

Bouwmeester, H., P.C. Hollman, and R.J. Peters, Potential health impact of environmentally released micro- and nanoplastics in the human food production chain: experiences from nanotoxicology. *Environmental science & technology*, 2015. 49(15): p. 8932-8947.

[Read Before-class and Answer the Following Questions]

Swan, S.H., et al., Decrease in anogenital distance among male infants with prenatal phthalate exposure. *Environ Health Perspect*, 2005. 113(8): p. 1056-61.

Question 1: What is the primary outcome used in the analysis? What is the importance as a marker?

Question 2: Why do authors include Table 2? Describe a scenario in which differences between “all boys” and “boys whose mother’s prenatal urine was assayed for phthalate metabolites” would bias the analysis

Question 3: Describe what the “phthalate score” is, and why the authors used it in their analysis.

Question 4: Based on this study, discuss why studying the health effects of microplastics would be challenging.

[Outline]

Section 1. Introduction: This section mainly introduces the definition, origins, morphology and chemical composition of microplastics; in particular, this section focuses on the rapid growth of plastics usage in the past 20 years.

Section 2. Microplastics pollution in the environment: This section mainly uses examples to illustrate the current state of microplastic pollution in ecosystems; effects of microplastics on marine organisms and bioaccumulation effects; and microplastics in terrestrial ecosystems.

Section 3. Health effects of microplastics: Potential impacts on human health

Paper Discussion: discuss paper Swan S.H. et al (2005).

[Read After-class and Discuss]

Read the following reports on plastic waste and we will have a class discussion next time.

Reuters. 2018. “U.S. Asks China Not to Implement Ban on Foreign Garbage,” March 23, 2018. <https://www.reuters.com/article/us-china-environment-usa-idUSKBN1GZ2WI>.

Ellis-Petersen, Hannah, and south-east Asia correspondent. 2019. “Philippines Ships 69 Containers of Rubbish Back to Canada.” *The Guardian*, May 31, 2019, sec. World news. <https://www.theguardian.com/world/2019/may/31/philippines-puts-69-containers-of-rubbish-on-boat-back-to-canada>.

Liu Ming. “China Defends Foreign Waste Import Ban - World - Chinadaily.Com.Cn.” Accessed July 24, 2019. www.chinadaily.com.cn/a/201803/26/WS5ab8f8bba3105cdcf6514617.html.

“Plastics Pile Up as China Refuses to Take the West’s Recycling - The New York Times.” n.d. Accessed July 24, 2019. <https://www.nytimes.com/2018/01/11/world/china-recyclables-ban.html>.

Homework 2: Read the following literature, briefly summarize the research object, research population, research methods, research conclusions of the paper; and focus on its advantages and possible problems.

Allen, J.G., MacNaughton, P., Satish, U., Santanam, S., Vallarino, J. and Spengler, J.D., 2015. Associations of cognitive function scores with carbon dioxide, ventilation, and volatile organic compound exposures in office workers: a controlled exposure study of green and conventional office environments. *Environmental health perspectives*, 124(6), pp.805-812.

Lecture 10. Background of Climate Change

[Content] This course will introduce background knowledge of climate change, including carbon cycle, greenhouse effect, and climate change in geological history.

[Outline]

Section 1. Basics: This section focuses on the energy balance of the Earth's atmosphere, greenhouse gases and the greenhouse effect.

Section 2. Carbon cycle: This part starts with the greenhouse effect, talks about the earth's carbon cycle, and introduces the total amount of carbon and circulation in the atmosphere, ocean, soil, lithosphere, and biosphere.

Section 3. Ice Age and Interglacial Period: This section mainly introduces the cycle of ice age and interglacial period, and the driving factors; and the coupling relationship between carbon dioxide concentration change, ice cycle and atmospheric temperature.

Section 4. Climate Change in Geological History: This section is mainly to give students a macro perspective on climate change, to introduce climate change since the Cretaceous, especially the cause of the Earth's cooling in the past 70 million years; Snowball Earth Hypothesis in Geological History

Reading. : Ensor, J., & Berger, R. (2009). *Understanding climate change adaptation. Lessons from community based approaches.* Warwickshire: Practical Action Publishing.

Daniels, S., & Endfield, G. H. (2009). Narratives of climate change: introduction. *Journal of Historical Geography*, 35(2), 215-222.

Lecture 11. Climate and Human Health

[Content]

This lecture will introduce the relationship between climate and human health, from the respective of individual, economy, and society. This lecture will allow students to understand the complex relationship between climate and humans.

[Background Reading]

McMichael, A.J., R.E. Woodruff, and S. Hales, Climate change and human health: present and future risks. *The Lancet*, 2006. 367(9513): p. 859-869.

[Read Before-class and Answer the Following Questions]

Obradovich, N., Climate change may speed democratic turnover. *Climatic change*, 2017. 140(2): p. 135-147.

Question 1: What is the outcome of interest and how did the author measure it? Can you comment on this outcome?

Question 2: What indicators did the author use for climate change? Can you comment on these indicators?

Question 3: What results did the author find? And what is the possible mechanism?

Question 4: What is the conclusion? What is the policy implication?

[Outline]

Section 1. Climate and Health: this section explains the effects of temperature, especially temperature variability, on human health; effects of temperature on physical activity, cognition, DNA methylation, and human psychology.

Section 2. Climate and Economy: this section describes how climate affects international trade, agriculture, economic growth and income.

Section 3. Climate and Human Society: This section takes a macro perspective and introduce how climate affects conflicts between society and nations, and how climate shape human civilization in the long term.

Paper Discussion: discuss paper Obradovich (2017).

[Read After-class and Discuss]

Read the following reports on climate change and economic inequality, and we will have a class discussion next time.

Diffenbaugh, N.S. and Burke, M., 2019. Global warming has increased global economic inequality. *Proceedings of the National Academy of Sciences*, 116(20), pp.9808-9813.

Lecture 12. Introduction to Environmental Epidemiology (I)

[Content] This course will introduce the main methods of epidemiology, such as cohort studies, time series data analysis, etc.

[Outline]

Section 1. Cohort Study: Basic concepts, methods, and examples of cohort studies in environmental health research.

Section 2. Case-Control Study: Basic Concepts and Methods of Case Control, and Examples in Environmental Health Studies

Section 3. Time Series Data Analysis: Basic concepts and methods for time series data, and examples in environmental health research.

Discussion: What are the links and differences between the results of environmental health science research and environmental health policies? How to make environmental health science research contribute to the formulation of environmental health policies?

Reading. Song, J. W., & Chung, K. C. (2010). Observational studies: cohort and case-control studies. *Plastic and reconstructive surgery*, 126(6), 2234.

Schwartz, J., & Marcus, A. (1990). Mortality and air pollution in London: a time series analysis. *American journal of epidemiology*, 131(1), 185-194.

Lecture 13. Introduction to Environmental Epidemiology (II)

[Content] This course will introduce some specific topics in environmental epidemiology, such as measurement errors, survivor bias, etc., and their possible impact on the results of the analysis. The lecture will be carried out in conjunction with specific cases.

[Outline]

Section 1. How Measurement Errors Affect Environmental Epidemiology Research: This section will explain the impact of measurement errors from a statistical perspective by means of simulation studies, with actual cases.

Section 2. How Survivors Affect Environmental Epidemiology: This section will explain the impact of measurement errors from a statistical perspective through DAG plots, with actual cases

Reading. Applebaum, K.M., Malloy, E.J. and Eisen, E.A., 2007. Reducing healthy worker survivor bias by restricting date of hire in a cohort study of Vermont granite workers. *Occupational and environmental medicine*, 64(10), pp.681-687.

Homework 3: Read the following literature, briefly summarize the research object, research population, research methods, research conclusions of the paper; and focus on its advantages and possible problems.

Dockery, D.W., Pope, C.A., Xu, X., Spengler, J.D., Ware, J.H., Fay, M.E., Ferris Jr, B.G. and Speizer, F.E., 1993. An association between air pollution and mortality in six US cities. *New England journal of medicine*, 329(24), pp.1753-1759.

Lecture 14. Environmental Health and Remote Sensing Applications

[Content]

This lecture illustrates how to use remote sensing technology to study environmental health research questions, such as air pollution and human health, and predicting poverty level.

[Background Reading]

Hay, S.I., 2000. An overview of remote sensing and geodesy for epidemiology and public health application. *Advances in parasitology*, 47, pp.1-35.

[Read Before-class and Answer the Following Questions]

Garcia-Saenz, A., Sánchez de Miguel, A., Espinosa, A., Valentin, A., Aragonés, N., Llorca, J., Amiano, P., Martín Sánchez, V., Guevara, M., Capelo, R. and Tardón, A., 2018. Evaluating the association between artificial light-at-night exposure and breast and prostate cancer risk in Spain (MCC-Spain study). *Environmental health perspectives*, 126(4), p.047011.

Question 1: What are the health outcome and exposure in the analysis?

Question 2: Why did author excluded participants who had ever worked in night-shift?

Question 3: Most results of indoor ALAN remain insignificant. Can you propose some reasons to explain that?

[Outline]

Section 1. Introduction to remote sensing: This section mainly introduces the definition of remote sensing, the basic concepts involved, such as electromagnetic wave, spectral reflectance, etc.

Section 2. Application of remote sensing in environmental health (Example 1): using remote sensing technology to estimate the concentration of air pollution and studying the impact of air pollution on mortality.

Section 3. Application of remote sensing in environmental health (Example 2): using remote sensing technology and machine learning algorithms to predict poverty rates in African villages.

Paper Discussion: discuss paper Garcia-Saenz et al. (2018).

[Read After-class and Discuss]

Read the following paper on schistosomiasis and remote sensing and we will have a class discussion next time.

Yang, G.J., Vounatsou, P., Tanner, M., Zhou, X.N. and Utzinger, J., 2006. Remote sensing for predicting potential habitats of *Oncomelania hupensis* in Hongze, Baima and Gaoyou lakes in Jiangsu province, China. *Geospatial Health*, pp.85-92.

Lecture 15. Environmental Health and Geographic Information System Applications

[Content]

This lecture introduces another commonly used tool in the field of public health, i.e., Geographic Information System (GIS). It mainly introduces the basic concepts and methods of GIS, as well as some examples of GIS application in public health.

[Background Reading]

Fradelos, E.C., Papathanasiou, I.V., Mitsi, D., Tsaras, K., Kleisiaris, C.F. and Kourkouta, L., 2014. Health based geographic information systems (GIS) and their applications. *Acta Informatica Medica*, 22(6), p.402.

[Read Before-class and Answer the Following Questions]

Pedigo, A., & Aldrich, T. (2011). Neighborhood disparities in stroke and myocardial infarction mortality: a GIS and spatial scan statistics approach. *BMC public health*, 11(1), 644.

Question 1: What is the public health issue of interest?

Question 2: Why did the authors use GIS in this study?

Question 3: What did they find and what is the policy implication?

[Outline]

Section 1. Basics of GIS: This section focuses on the basic concepts of information systems and GIS, the main functions of GIS, including data assembly, data visualization, data storage, data manipulation and analysis, and data output. This section will be supported by example.

Section 2. GIS application: introduce one example of GIS application, the analysis of influenza outbreak.

Paper Discussion: discuss paper Fradelos et al. (2014)

[Read After-class and Discuss]

Read the following paper on GIS application on food desert and we will have a class discussion next time.

McEntee, J. and Agyeman, J., 2010. Towards the development of a GIS method for identifying rural food deserts: Geographic access in Vermont, USA. *Applied Geography*, 30(1), pp.165-176.

Lecture 16. Environmental Health and Legislation

[Content] This course focuses on how to use legislation and government regulations to control environmental pollution, as well as the pros and cons of various means of controlling pollution and applicable conditions.

[Outline]

Section 1. Policy Tools for Means of Controlling Environmental Pollution: This section focuses on policy tools such as regulations and regulations, as well as their advantages and disadvantages in controlling pollution;

Section 2. Economic Measures to Control Environmental Pollution: This section mainly introduces specific measures, advantages and disadvantages of economic and market power pollution; this section will mainly focus on pollution rights trading.

Section 3. Comparison of various means of controlling pollution

Section 4. Control pollution and safe production

Discussion: How to formulate environmental policies in case of insufficient scientific evidence?

Reading. McCray, L.E., Oye, K.A. and Petersen, A.C., 2010. Planned adaptation in risk regulation: An initial survey of US environmental, health, and safety regulation. *Technological Forecasting and Social Change*, 77(6), pp.951-959.

Lecture 17. Group Presentation

[Content] This course is mainly to show the course report of each group.

7. Instructor

- Dr. Di, Qian, Assistant Professor
- Guest speakers

Spring 2022

Public Diplomacy: Global and Comparative Perspectives

Kejin Zhao

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This course is seminar in which provides an introduction to the conceptual and theoretical foundations for public diplomacy programs, news media public diplomacy initiatives, and how media outlets are used by international actors to influence global public opinion. The course covers issues and theories related to soft power, strategic communication, and media-based international relations. It reviews contemporary debates on Chinese public diplomacy, as well as explores cases outside of the China including other nation-states and non-state actors. This is not intended as an overview of Chinese public diplomacy, but a comprehensive inquiry into assumptions that continue to justify and define the evolving range of policies related to “public diplomacy.”

COURSE OBJECTIVES

- To understand the theoretical and historical justifications for public diplomacy programs across national contexts.
- To comprehend the influence of the media environment and information technology on public diplomacy and strategic communication initiatives
- To enable the students to contribute to the ongoing public discussion about public diplomacy, and to be able to critically assess a policy or initiative related to public diplomacy.

COURSE READINGS

Readings will be made available online via Web Learning on the website of Tsinghua University unless otherwise noted. Readings designated on the syllabus as “in RHPD” are to be found in the Routledge Handbook for Public Diplomacy – a required course textbook.

COURSE ASSIGNMENTS AND GRADE PERCENTAGES

- **Class Participation: 5%** - Students are expected to come to class prepared to discuss the readings and relevant current events. The class is not designed as a lecture course – and students will share the responsibility of dealing with the course readings, as well as questions posed by the instructor in advance of the class. So, everybody should takes actively part in the discussions and debates on the class. And that will be important for your final grade.

- **Class Presentation: 15%** - Students are required to make at least **ONE moderator, ONE presentation in 10 minutes** and active **comments** on class. As moderator, you are required to introduce the background of the topic, introduction of speakers, and to organized the comments and discussions. As a presentation, you are required to summarize the recommended book or articles and give your own views based on your readings. The instructor will make some comments in the end of each class. Base on the performance, the student will get his/her scores respectively.

- **Midterm Exam: 30%**- Students are required to take closed-book quiz at Midterm

(Week 8). It will give you 10 questions to be answered in 2 hours.

- **Final Paper: 50%** - The paper will be at least 3000 words, and will adhere to a standard style format. Students are encouraged to seek out local resources (such as embassies) to conduct original research on these programs.

SCHEDULE OF CLASSES

1. INTRODUCTION & ORIENTATION

2. DEFINITIONS OF PUBLIC DIPLOMACY

Class Description: This class introduces the key concepts at the heart of public diplomacy and considers the relationship of its practice to propaganda. Meanwhile, it will also mention the players involving PD.

References:

Nicholas Cull, "Public Diplomacy: Taxonomies and Histories", *The ANNALS of the American Academy of Political and Social Science* 2008 616: 31-54;

Eytan Gilboa, "Searching for a Theory of Public Diplomacy", *The ANNALS of the American Academy of Political and Social Science* 2008 616:55-77;

Cull, N.J. "Public Diplomacy: Lessons from the Past." *CPD Perspectives on Public Diplomacy*. USC Center on Public Diplomacy (2009).

Kejin Zhao, "The Strategic Motivation Behind China Public Diplomacy", *Chinese Journal of International Politics*, Vol.8, No.2, Summer 2015, pp.167-196;

3. THEORETICAL RESOURCES OF PD

Class Description: We will review theories in IR and diplomacy related to PD, including principles of diplomacy, debate in IR studies and other related theories.

Reference:

Bruce Gregory "Public Diplomacy: Sunrise of an Academic Field" *The ANNALS of the American Academy of Political and Social Science* 2008 616: 274-290.

Sharp, Paul. (1999) *For Diplomacy: Representation and the Study of International Relations*. *International Studies Review* 1(1): 33–57;

Neumann, Iver B. (2002) "The English School on Diplomacy" *Discussion Papers in Diplomacy*. Netherlands Institute on International Relations Clingendael: 79: 1–28.

Stuart Murray, *Reordering diplomatic theory for the twenty-first century*, 2006

Joann Keyton, *Communication Research*, McGraw Hill Press.

4. HOW TO BUILD A PSYCHOLOGICAL FRAME

Class Description: This session will explore how influence is established through "pre-persuasion" techniques, which include the framing of a debate before the debate itself begins. This class also presents and analyzes several models and cases of media framing and explains how they can be used to deal with media coverage of major events and processes.

References:

Entman, R. "Framing: Toward Clarification of a Fractured Paradigm." *Journal of*

Communication (1993) 43(4). [PDF]

Bai, M. Excerpts from “The Framing Wars.” *The New York Times* (2005). [PDF]

Entman, R. “Theorizing Mediated Public Diplomacy: The U.S. Case.” *International Journal of Press/Politics*, 13 (2008) 87-102 [PDF]

Fahmy, S., Wanta, W., and Nisbet, E. C. "Mediated Public Diplomacy: Satellite TV News in the Arab World and Perception Effects." *International Communication Gazette*, 74 (November 2012) 728-749. [PDF]

Alex Mintz and Steven B. Redd, “Framing Effects in International Relations”, *Decision Theory*, Vol. 135, No. 2, (May, 2003), pp. 193-213;

William A. Donohue and Daniel Druckman, “Message Framing Surrounding the Oslo I Accords”, *The Journal of Conflict Resolution*, Vol. 53, No. 1 (Feb., 2009), pp. 119-145

5. LISTENING, SURVEY & PUBLIC DIPLOMACY

Class Description: This class deals with the first duty of a public diplomat: to engage their target foreign public by listening to them. Questions raised include how listening relates to the evaluation of public diplomacy.

References:

Cowan, G. and Arsenault, A. “Moving from Monologue to Dialogue to Collaboration: The Three Layers of Public Diplomacy.” *The Annals of the American Academy of Political and Social Science*, 616 (March 2008) 10-30. [PDF]

Maxwell E. McCombs and Donald L. Shaw, The Agenda-Setting Function of Mass Media, *The Public Opinion Quarterly*, Issue Date: 1972 , Page: 176-187;

Vivian Walker, “Benghazi: Managing the Message”, Figueroa Press Los Angeles, April 2015;

Steffen Bay Rasmussen, “Messages and Practices of the European Union’s Public Diplomacy”, *Hague Journal of Diplomacy* 5 (2010) 263-287;

Benjamin E. Goldsmith and Yusaku Horiuchi, “Spinning the Globe? U.S. Public Diplomacy and Foreign Public Opinion”, *The Journal of Politics*, Vol. 71, No. 3, July 2009, Pp. 863–875;

Joann Keyton, *Survey and Questionnaires*, Communication Research, McGraw Hill Press.

6. ADVOCACY & PUBLIC DIPLOMACY

Class Description: This class deals with the area of public diplomacy that many states emphasize above all others: policy advocacy. It will look at particular cases of successful advocacy, and consider the pitfalls of placing too much emphasis on this function.

References:

Evans, A. and Steven, D. “Towards a Theory of Influence for Twenty-First Century Foreign Policy: Public Diplomacy in a Globalised World.” *Engagement: Public Diplomacy in a Civilised World* (2008) 44-61. [PDF]

R. Charli Carpenter, “Setting the Advocacy Agenda: Theorizing Issue Emergence and Nonemergence in Transnational Advocacy Networks”, *International Studies Quarterly*, Vol. 51, No. 1 (Mar., 2007), pp. 99-120;

Beyers Jan, Hanegraaff Marcel.- Balancing friends and foes : explaining advocacy styles at global diplomatic conferences The review of international organizations - ISSN

1559-7431 - (2016), p. 1-24;

Jan Servaes and Patchanee Malikhao, "Advocacy communication for peacebuilding", *Development in Practice*, Vol. 22, No. 2 (April 2012), pp. 229-243;

Annika Björkdahl (2008) Norm advocacy: a small state strategy to influence the EU, *Journal of European Public Policy*, 15:1, 135-154;

Fisher, A. "Four Seasons in One Day: The Crowded House of Public Diplomacy." *Routledge Handbook of Public Diplomacy*. London: Routledge (2009) 251-261. [PDF]

7. INTERNET AND DIGITAL STORYTELLING

Class Description: This class will present how to inform and share public diplomacy content through digital platforms. Increasingly, practitioners must find new and innovative ways to tell their countries' stories to foreign publics. For mobile to desktop, tools and practices in digital storytelling will be discussed.

References:

Brian Hocking and Jan Melissen, *Diplomacy in the Digital Age*, Netherlands Institute of International Relations Clingendael, July 2015;

Nicholas Westcott, "Digital Diplomacy: The Impact of the Internet on International Relations", Oxford Internet Institute, Research Report 16, July 2008;

Corneliu Bjola and Lu Jiang, Analysis of the Digital Diplomatic Strategies of the EU, U.S. and Japan in China, in Corneliu Bjola and Marcus Holmes (eds.) (2015) *Digital Diplomacy: Theory and Practice*, London and New York: Routledge

Nissin Otmazgin "Contesting soft power: Japanese popular culture in East and Southeast Asia" *International Relations of the Asia-Pacific* 2008 8: 73-101;

8. MID-TERM EVALUATIONS

Please take a moment to provide us with your feedback on the forms provided about the classes.

During this session, everybody should present his/her public diplomacy strategies based on the assignments given by instructor.

9. CULTURAL DIPLOMACY

Class Description: This course will examine institutions, methods and big issues in cultural diplomacy. It will mix a historical perspective with the study of contemporary applications, and compare U.S. examples with approaches of other nations. Key concepts will include culture, popular culture, public diplomacy, propaganda, exchange and mutuality.

References:

Zamorano, Mariano Martín: "Reframing Cultural Diplomacy: The Instrumentalization of Culture under the Soft Power Theory", *Culture Unbound*, Volume 8, 2016: 166–186.

Ien Ang, Yudhishtir Raj Isar & Phillip Mar (2015) Cultural diplomacy: beyond the national interest?, *International Journal of Cultural Policy*, 21:4, 365-381;

Mark A. Breckenridge (2013) Willis Conover's International Jazz Diplomacy through Fandom: The Friends of Music USA Newsletter (1964–1969), *Jazz Perspectives*, 7:2, 91-109;

Cull, N. J. "Gregory Burke's Black Watch: Theatre as Cultural Diplomacy." USC Center on Public Diplomacy and British Council (Aug 2007). [PDF]

10. EXCHANGE DIPLOMACY

Class Description: This class will examine key issues and challenges that inhere to any consideration of international exchanges as a core Public Diplomacy activity. Issues to be considered will include the role of exchanges in foreign policy, the impact of connective technologies, and emerging new forms of exchange.

References:

Margaret C. Ayers, "Promoting Public and Private Reinvestment in Cultural Exchange-Based Diplomacy", Robert Sterling Clark Foundation Series on International Cultural Engagement, 2010;

Liping Bu, "Educational Exchange and Cultural Diplomacy in the Cold War, *Journal of American Studies*, Vol. 33, No. 3, Part 1: Women in America (Dec., 1999), pp. 393-415;

Katrina Trost and Matthew Wallin, *Academic Exchange: A Pillar of American Public Diplomacy*, August 2013;

J.C.C. Rupp, *American Models Transforming European Universities. The Fulbright Program in the Netherlands, 1950-1990*, Het Fulbright Programma Nederland, Work in Progress, Nr 54, Amsterdam School for Social-Science Research, University of Amsterdam (Oude Hoogstraat 24, 1012 CE Amsterdam), February 1996;

Joshua Walker and Daniel Gaynor, "Smarter Diplomacy: Doubling Down on People-to-People, *The Diplomat*, March 14, 2014. [LINK]

11. NATION/PLACE BRANDING

Class Description: This course provides an overview of the concept of branding (nation and place), and discusses its relevance to national image communication and management.

References:

Van Ham, P. "The Rise of the Brand State." *Foreign Affairs* (September/October 2011). [PDF]

Editorial, Definitions of place branding – Working towards a resolution, *Place Branding and Public Diplomacy* (2010) 6, 1–10. doi:10.1057/pb.2010.3

NADIA KANEVA, "Nation Branding: Toward an Agenda for Critical Research", *International Journal of Communication* 5 (2011), 117–141;

Keith Dinnie, *Nation Branding Concepts, Issues, Practice*, 2008 Elsevier Ltd.

Charles Skuba, "Branding America", *Georgetown Journal of International Affairs*, Vol. 3, No. 2 (Summer/Fall 2002), pp. 105-114;

Peter van Ham, "Place Branding: The State of the Art", *The Annals of the American Academy of Political and Social Science*, Vol. 616, *Public Diplomacy in a Changing World* (Mar., 2008), pp. 126-149

Anholt, S. "Foreward." *Brand Management* (2002) 229-239. [PDF]

Govers, R. "Editorial: Why Place Branding is Not About Logos and Slogans." *Place Branding and Public Diplomacy* (2013) 9, 71–75. [PDF]

12. DIASPORAS AND PUBLIC DIPLOMACY

Class Description: This class examines the potential use of Diasporas for public diplomacy purposes. It demonstrates how their special characteristics and interests are incorporated in the public diplomacy strategies of home and host countries.

References:

Ding, S. "Digital Diaspora and National Image Building: A New Perspective on Chinese Diaspora Study in the Age of China's Rise in Pacific Affairs." (2007). [PDF]

Gonzalez, J.J. "Diaspora diplomacy: Influences from Philippine migrants." *Public Diplomacy Magazine* (May, 2014). [LINK]

Xharra, B., and Waehlich, M. "Beyond Remittances: Public Diplomacy and Kosovo's Diaspora." Pristina: Foreign Policy Club (July, 2012). [PDF]

Laguerre, M. "Homeland Political Crisis, the Virtual Diasporic Public Sphere, and Diasporic Politics," *Journal of Latin American Anthropology*, Vol. 10 (2005), 206–225. [PDF]

SHELLY CHAN, "The Case for Diaspora: A Temporal Approach to the Chinese Experience", *The Journal of Asian Studies*, Vol. 74, No. 1 (FEBRUARY 2015), pp. 107-128.

13. STRATEGIC COMMUNICATION

Class Description: This session will identify key drivers of successful communication, based on research techniques including surveys, content evaluation, and social media. Participants will determine which instruments to utilize to evaluate project success and selection of media resources in strategic plans. In addition, we will analyze and evaluate case studies based on current public diplomacy project.

Reference:

Kirk Hallahan , Derina Holtzhausen , Betteke van Ruler , Dejan Verčič & Krishnamurthy Sriramesh (2007) *Defining Strategic Communication*, *International Journal of Strategic Communication*, 1:1, 3-35, DOI: 10.1080/15531180701285244

Paul Cornish, Julian Lindley-French and Claire Yorke, *Strategic Communications and National Strategy*, A Chatham House Report, September 2011;

Brian E. Carlson, "Who Tells America's Story Abroad? State's Public Diplomacy or DoD's Strategic Communication?", in Gordon Adams, Shoon Murray eds., *Mission Creep: The Militarization of US Foreign Policy*, Georgetown University Press. (2014)

Cristian E. Guerrero-Castro, "Strategic Communication for Security & National Defense: Proposal for an Interdisciplinary Approach", *Connections* , Vol. 12, No. 2 (Spring 2013), pp. 27-52;

Walker, V, "Benghazi: Managing the Message." *CPD Perspectives on Public Diplomacy*, Paper 3, 2015 (April) [PDF]

14. TEAM WORKS: PRACTICE OF PUBLIC DIPLOMACY

Class Description: This class will provide an in-depth examination of historical, political, economic, and cultural factors that influence the US and Chinese public diplomacy efforts and other middle and small powers.

Reference:

"China and Public Diplomacy: A CPD Reader." (2012) [PDF & LINK]

Kristin Lord, *Voices of America: U.S. Public Diplomacy for the 21st Century*. Brookings Institute, November 2008. (Excerpts)

Bruce Gregory, "Public Diplomacy and National Security: Lessons from the U.S. Experience," *Small Wars Journal*, Posted August 14, 2008;

Robert Entman – Theorizing Mediated Public Diplomacy: the U.S. Case, *The International Journal of Press/Politics* 13 (2008) 87 – 102;

Christopher Ross, Public Diplomacy Comes of Age, *The Washington Quarterly*, Vol. 25:2, Spring, 2002,

Hans N. Tuch, *Communicating With the World* (St. Martin's Press, New York), 1990.

Yiwei Wang, Public Diplomacy and the Rise of Chinese Soft Power, *The ANNALS of the American Academy of Political and Social Science* 2008 616: 257-273;

Rumi Aoyama "China's Public Diplomacy" Waseda University, 2007.

Ingrid d'Hooghe, *The Rise of China's Public Diplomacy*, Netherlands Institute of International Relations, July, 2007.

Bates Gill and Yanzhong Huang "Sources and Limits of Chinese 'soft power'" *Survival*, Volume 48, Issue 2 June 2006 , pages 17 – 36

15. Governance and Public Diplomacy.

Models of PD

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Governing PD