UGFN1000 In Dialogue with Nature

Lecturer: Dr. WU Jun Vivian (吳俊)

7/F, Hui Yeung Shing Bldg, 3943-9711, junwu@cuhk.edu.hk Course homepage: http://elearn.cuhk.edu.hk/ (CU eLearn system) Common lecture: Lecturer: Dr. WU Jun Vivian

UGFN1000P Putonghua: 13:30-14:15, Wong Foo Yuan Bldg UG01

UGFN1000J Cantonese: 14:30-15:15, Wong Foo Yuan Bldg LT4

Tutorial: Attend the one that you have registered.

Group	Time	Place
UGFN1000JT01	Tue 14:30 - 16:15	Yasumoto Int'l Acad Park 509
UGFN1000JT02	Tue 16:30 - 18:15	Yasumoto Int'l Acad Park 509
UGFN1000JT03	Wed 13:30 - 15:15	Yasumoto Int'l Acad Park 509
UGFN1000JT04	Wed 16:30 - 18:15	Wu Ho Man Yuen Bldg 503
UGFN1000PT01	Thu 14:30 - 15:15	Yasumoto Int'l Acad Park 507
UGFN1000PT02	Thu 16:30 - 18:15	Yasumoto Int'l Acad Park 507

Course structure:

Humans have long been curious about Nature. In the West, ancient Greek philosophers took the lead in exploring the physical world and the world of life with reason and hence laid the foundations of modern science. Scientists discovered physical laws, the laws governing life and even ways of controlling life. Implications of these discoveries force the humankind to re-assess their understanding of human understanding. On the oriental side of the globe, Chinese philosophers developed a different view of Nature. The comparison between Western and Chinese views will contribute to our understanding of both.

This course invites students to explore how the humankind investigated, understood, and changed Nature, to study and compare the development of science in Western and Chinese cultures, and to reflect on the humans' place in Nature. Students will be required to read, discuss and write about a wide range of texts in philosophy, science and its history. Reading materials will be selected from influential literatures. Emphasis will be placed on students' capacity to respond critically to these texts in written as well as oral presentations.

Textbook: The textbook, *In Dialogue with Nature*, **<u>Revised Second Edition</u>**, is available at the campus bookstore as the semester begins. The price is \$160.

Course content and core readings:

The course is composed of 3 parts, each of which consists of several issues. Students have to read the core readings related to the issue before attending the discussion session.

Core questions/issues	Texts	Core readings
What is true and what is real?	Plato, Republic / translated by C.D.C. Reeve.	Book VII (Verses 514-517)
	Indianapolis: Hackett Publishing, 2004. (JC71 .P513	
	2004)	
	David C. Lindberg, The Beginnings of Western Science, 2nd	Chapter 2 (Para. 28-39)
	edition. The University of Chicago Press, 2007.	
	(O124 95 I 55 2007)	
How did people handle the facts	David C. Lindberg, The Beginnings of Western Science, 2nd	Chapter 3 (Para. 1-41),
/phenomena they knew?	edition. The University of Chicago Press, 2007.	Chapter 12 (Para. 1-2, 33-55)
	(Q124.95 .L55 2007)	
What is scientific understanding?	I. Bernard Cohen, The Birth of a New Physics. W. W.	Chapter 7 (Para. 1-25, 62-63)
	Norton & Company, 1985.	

Part I. Human Exploration of the Physical Universe

	UGFN1000 Course outline
Isaac Newton, The Principia / A new Translation by I.	"Definitions" 1-5, Para. 2 of p. 408, and
Bernard Cohen and Anne Whitman. University of	"Axioms, or the Laws of Motion"
California Press, 1999. (QA803 .N413 1999)	Corollary 1

Part II. Human Exploration of the World of Life

Core questions/issues	Texts	Core readings
What are the laws of life?	Charles Darwin, The Origin of Species, 1st Edition.	Chapter 4 (Para. 1-6, 9-18, 39-46,
(Natural selection)	(Full text available online: http://darwin-online.org.uk/)	50-63, 68-71)
What is the code of life? (The	James D. Watson, DNA: The Secret of Life. New York:	Chapter 1 (Para. 1-36),
discovery of DNA)	Alfred A. Knopf, 2003. (QH437 .W387 2003)	Chapter 2 (whole).
What impacts does manipulation of	Rachel Carson, Silent Spring. Boston: Houghton	Chapter 6
life bring?	Mifflin, 1962. (QH545.P4 C38 1962)	

Part III. Our Understanding of Human Understanding

Core questions/issues	Texts	Core readings
What are the limit of scientific method	Henri Poincaré, The Value of Science: Essential	Science and Method, Chapters I and III.
and mathematics?	Writings of Henri Poincare New York: Modern Library, 2001 (0175) P7815213 2001)	
What is human mind?	Eric R. Kandel, <i>In Search of Memory: The Emergence of a New Science of Mind</i> . New York: W. W. Norton & Company, 2006. (WZ100 .K33 2006)	Chapter 4 (Para. 1-9), Chapter 28 (whole)
What do Chinese know about Nature? (<i>Yin, Yang</i> and five elements)	Joseph Needham, <i>The Shorter Science and Civilisation</i> <i>in China</i> Vol. 1. Cambridge: Cambridge University Press, 1978.	Chapter 10 (Para. 1-3, 13-42)
What has the scientific revolution revolutionized?	Nathan Sivin, 'Why the Scientific Revolution Did Not Take Place in China – or Didn't it?' Web version: (revised 2005.8.24)	Whole paper
	http://ccat.sas.upenn.edu/~nsivin/scirev.pdf 沈括(著),胡道靜(校注),《新校正夢溪筆談》。 香港:中華書局,1975。	304 節:「棋局都數」,307 節:「活 版印刷」,357 節:「虹」,430 節:
	(English translation available in the textbook)	「海陸變遷」,437節:「指南針」
What makes the modern science so unique?	William Dunham, <i>The Mathematical Universe: An</i> <i>Alphabetical Journey Through the Great Proofs,</i> <i>Problems, and Personalities.</i> New York: Wiley & Sons, 1994. (QA21 .D785 1994)	Chapter G
	Euclid, <i>Elements /</i> translated by Thomas L. Heath. Web version: http://www.perseus.tufts.edu	Book 1:"Definitions", "Postulates", "Common Notions", and "Propositions" 1-5, 7-11, 13, 15-16, 18-20.

Intended learning outcomes:

- comprehend and discuss science-related texts.
- *identify* the essential characteristics of how human beings view Nature.
- *formulate* informed personal views on the societal implications of scientific explorations.
- *relate* the developments in natural sciences highlighted in the course to contemporary human condition.
- *evaluate* the scopes of application, achievement and limitations of highlighted scientific methods using multiple perspectives.

Assessment scheme:

Quizzes	24%
• the highest 4 out of 5	
Participation in discussion	26%
• in-class: 20%;	
• online discussion 6%, the highest 2 out of 3	
One Reflective Journals (Chinese: 900-1500 words)	15%
One Term Paper (Chinese: 1900-2700 words)	35%

Tentative schedule: See eLearn for updates.

Notes: 1. In case of clashes with public or university holidays, please refer to eLearn for announcement of class arrangement.

2. *DQ is for Discussion Question, completed through online discussion. Details and deadlines will be announced.

- 3. **RJ is for Reflective Journal.
- 4. ***TP is for Term Paper.

<u>Wk</u>	Date (M-F)	<u>Tutorial</u> Tuesday Wednesday		<u>Tutorial</u> Thursday	<u>Lecture</u> Friday	<u>Reading</u> Assignment	<u>Remark</u>
1	Jan 09-13	Introduction	Introduction	Introduction	Plato + Lindberg	Text 1a+1b	
2	Jan 16-20	Plato + Lindberg	Plato + Lindberg	Plato + Lindberg	Lindberg	Text 2	e-add/drop on CUSIS
3	Jan 23-27		Lunar New Y	Year Vacation			
4	Jan 30-Feb 03	Lindberg (Quiz 1)	Lindberg (Quiz 1)	Lindberg (Quiz 1)	Cohen + Newton	Text 3a	Special add/drop
5	Feb 06-10	Newton (DQ 1)	Newton (DQ 1)	Newton (DQ 1)	Needham	Text 9	
6	Feb 13-17	Needham	Needham	Needham	Sivin	Text 10a	Feb. 19 th , due date of RJ**01
7	Feb 20-24	Sivin (Quiz 2)	Sivin (Quiz 2)	Sivin (Quiz 2)	Dunham + Euclid	Text 11a	
8	Feb 27-Mar 03	Euclid	Euclid	Euclid	Darwin	Text 4	Mar. 5 th , due date of RJ**02
9	Mar 06-10	Reading Week					
10	Mar 13-17	Darwin (DQ 2)	Darwin (DQ 2)	Darwin (DQ 2)	Watson	Text 5	
11	Mar 20-24	Watson (Quiz 3)	Watson (Quiz 3)	Watson (Quiz 3)	Kandel	Text 8	
12	Mar 27-31	Kandel (Quiz 4)	Kandel (Quiz 4)	Kandel (Quiz 4)	Carson	Text 6	
13	Apr 03-07	TBC	Ching Ming Festival	TBC	Easter		
14	Apr 10-14	Carson (Quiz 5)	Carson (Quiz 5)	Carson (Quiz 5)	Poincaré	Text 7	
15	Apr 17-21	Poincaré (DQ 3)	Poincaré (DQ 3)	Poincaré (DQ 3)	Term Paper Consultation		
14	Apr 24-28	Term Paper Consultation					May. 3 rd , Term Paper Due date

Study Support:

Mini-dictionary, reading guide and study questions:

For each text, we provide both a mini-dictionary and a reading guide. The mini-dictionary lists the English words and their corresponding Chinese translations in each paragraph of the text. The reading guide introduces the background and the basic ideas of the text. Attached with each reading guide, there is a set of study questions for you to practice. It is a great way to self-evaluate yourself and helpful for preparing the quizzes. The reading guide and the min-dictionary have been uploaded to the blackboard. Feel free to download them. (Link: <u>https://elearn.cuhk.edu.hk/)</u> If you simply want to practice the study questions, you can also use our <u>online study questions (http://www.cuhk.edu.hk/oge/gef/studyqs/nature/interactive</u>). These are identical to those in the reading guide.

Mobile App: DiaNable



An e-Learning mobile app *DiaNable* (*Version 3.0*) has been launched. The app serves as a **reading companion** for students to enhance their comprehension of the texts and self-evaluate their understanding. This <u>latest version</u> includes: **Mini-dictionary** with audio pronunciations and **paragraph outline** for **ALL** the 11 texts; as well as study questions for six texts, namely *Text 2 (Lindberg), Text 3 (Cohen-Newton), Text 4 (Darwin), Text 7 (Poincaré), Text 8 (Kandel) & Text 9 (Needham)*. Three steps to download the mobile app:

- 1. Enter https://campusapps.itsc.cuhk.edu.hk/store/ (or search for 'cuhk app store')
- 2. Input your Student ID and CWEM Password
- 3. Install DiaNable on your mobile device (Android Version and *iPhone/iPod/iPad Versions are available)

Micro-modules website – supplementary materials for UGFN:

Micro-modules are supplementary courseware for "In Dialogue with Nature" that you can found on our dedicated website on KEEP. There are two main aims for these micro-modules. One is to explain the key concepts in our texts more thoroughly. Another, is to deepen and broaden the horizons of the core issues raised in the texts. You can access the micro-modules by: Page 3/5

- 1) Login to KEEP at https://keep.edu.hk/using your CUHK email address and CWEM password.
- 2) Search for "UGFN" or enter this link: https://moodle.keep.edu.hk/course/view.php?id=113
- 3) Self-enrol into the course for the first time with this self-enrolment key: ugfn1000



UGFN-animated

The 5-min whiteboard animations make learning UGFN fun! They enable step-by-step illustrations with voice-over narration to explain complicated and abstract ideas in an attractive and enjoyable way. Playlist: https://www.youtube.com/playlist?list=PLzNn5Usq5oAIauG7Nx4bJUw4w9 L9 UMf

PASS (Peer Assisted Study Sessions):

PASS consists of weekly one-hour, voluntary study sessions led by "PASS Leaders", students who excelled in the same course and also understand the struggles faced by students. In PASS, students work together in a relaxed and supportive learning environment to improve understanding of the texts, develop effective reading strategies, and prepare better for tutorials, quizzes and assignments. For the timetable of PASS sessions, please visit http://pass.oge.cuhk.edu.hk.

For our class, namely UGFN1000P, we have PASS leaders following our specific teaching schedules to assist students' learning in this course. The name of your PASS leaders and the corresponding arrangement are listed as follows:

- UGFN1000J: LEE Wing Tung, Helen李穎彤, Fri. 15:30-16:30, ELB 401, Cantonese.
- UGFN1000P: WANG Jiazimeng, Sian王家梓萌, Fri. 14:30-15:30, SB_239, Putonghua.
- UGFN1000Q: AI Yueshan, Fiona 艾月杉, Fri. 15:30-16:30, MMW_715, Putonghua.

Reflective Journal and Term Paper Writing Workshops & Micro-modules

To help students of UGFN and UGFH preparing for writing reflective journals and term paper, the Independent Learning Centre (ILC) will launch a series of writing workshops. The workshops cover many aspects ranging from the academic writing style, argumentation structure, idea development to practical MLA citation tips. It demonstrates student how to develop one's own idea systemically into an academic paper.

Registration: https://webapp.itsc.cuhk.edu.hk/ras/restricted/eventlist?id=14							
Content	Format	Scope	Language	Registration starts at	Date	Time	Venue
	Live Workshop	/	Putonghua	2023/01/16 00:00:00	Feb 1 (Wed)	15:30 - 17:15	LPN_LT
			English		Feb 3 (Fri)		MMW_703
			Cantonese		Feb 3 (Fri)		ELB_LT2
Reflective			Cantonese		Feb 6 (Mon)	10:30 - 12:15	CYT_209A-B
Writing	Online micro- modules AND complementary workshop*	UGFH	Cantonese	2023/01/25 00:00:00	Feb 17 (Fri)	15:30 - 17:15	CKB_108
			Putonghua		Feb 8 (Wed)		UCC_114
		UGFN	Cantonese		Feb 10 (Fri)		CKB_108
			Putonghua		Feb 15 (Wed)		UCA_312
Term Paper Writing	Live Workshop	/	Putonghua	2023/03/28 00:00:00	Apr 11 (Tue)	16:30 - 18:15	CKB_109
			English		Apr 14 (Fri)	15:30 - 17:15	MMW_703
			Cantonese		Apr 14 (Fri)		CKB_LT3
			Cantonese		Apr 17 (Mon)	10:30 - 12:15	CYT_209A-B

Registration is required for attending the workshops. 0

Registration is on a first-come, first-served basis.

Please register online at least two days in advance.

You will be asked to show your CU Link card for admission.

If you show up without your CU Link card, or without prior registration, you will be required to wait outside and may not be able to get a seat and a copy of the handouts.

Successful applicants will receive confirmation days before the workshop. 0

Academic honesty and plagiarism

Attention is drawn to University policy and regulations on honesty in academic work, and to the disciplinary guidelines and procedures applicable to breaches of such policy and regulations. Details can be found here: http://www.cuhk.edu.hk/policy/academichonesty/

Page 4/5

0

Appendix 1: UGFN1000 In Dialogue with Nature

Intended Learning Outcomes

(GE Course Proposal & Inventory System: https://cpi.itsc.cuhk.edu.hk/cpi/Public/dept_login.aspx)

By the end of the course, students should be able to:

-	comprehend and discuss science-related texts.
-	identify the essential characteristics of how human beings view Nature.
-	formulate informed personal views on the societal implications of scientific explorations.
-	relate the developments in natural sciences highlighted in the course to contemporary human condition.
-	evaluate the scopes of application, achievement and limitations of highlighted scientific methods using multiple perspectives.

Grade Descriptors

A / A-	Introspective performance: Outstanding performance on all (or almost all) learning outcomes. Students demonstrate:
	-thorough understanding and critical interpretation and application of the course material;
	-substantial evaluation of scientific ideas or theories from multiple perspectives with the support of relevant information;
	-well-informed judgment/personal views;
	-perceptive reflections on issues concerned
B+ / B / B-	General performance: Substantial performance on some learning outcomes which compensates for less satisfactory
	performance on others. Students demonstrate:
	-adequate understanding and appropriate interpretation and application of the course material;
	-good evaluation of scientific ideas or theories from multiple perspectives with the support of relevant information;
	-informed judgment/personal views;
	-unbiased reflections on issues concerned
C+ / C / C-	Inconsistent performance: Satisfactory performance on some learning outcomes with a few weaknesses. Students
	demonstrate:
	-basic understanding of the course material;
	-attempts to evaluate scientific ideas and theories but with omissions of some crucial perspectives and information;
	-inadequately supported judgment/personal views on most occasions;
	-tendentious reflections on issues concerned
D+ / D	Incompetent performance: Barely satisfactory performance on a number of learning outcomes. Students demonstrate:
	-limited evidence of comprehending the course material;
	-major difficulties in evaluating scientific ideas and theories from appropriate perspectives and identifying appropriate
	information;
	-mostly unfounded judgment/personal views;
	-superficial reflections on issues concerned
F	Failed performance: Unsatisfactory performance on the majority of learning outcomes, OR failure to meet specified
	assessment requirement. Students demonstrate:
	-confusion over or fundamental misrepresentation of the course material;
	-very little or no intention to evaluate different scientific ideas or theories;
	-very little or no attempt to formulate personal views;
	-very little or no attempt to reflect on issues concerned
* A 1	d for with the former Conde Description U. down dotted Description 22 and its

[†]Adapted and modified from "University of Surrey Grade Descriptors: Undergraduate Programmes"; website:

https://www.surrey.ac.uk/cead/resources/documents/University_of_Surrey_Grade_Descriptors.pdf [‡]Adapted and modified from "Grade Descriptors at HKU": website: <u>https://www.cetl.hku.hk/grade-descriptors</u> **References:**

1. "Guide to Grading System": <u>http://www.res.cuhk.edu.hk/en-gb/general-information/guide-to-grading-system</u>

- 2. "University of Surrey Grade Descriptors: Undergraduate Programmes";
- https://www.surrey.ac.uk/cead/resources/documents/University_of_Surrey_Grade_Descriptors.pdf
- 3. "Grade Descriptors at HKU": <u>https://www.cetl.hku.hk/grade-descriptors</u>

^{4.} Liljana, et al., "Designing descriptors of learning outcomes for Higher Education qualification", *Procedia – Social and Behavioral Sciences* 46 (2012) pp.1306-1311; website: <u>https://www.sciencedirect.com/science/article/pii/S1877042812014218</u>