

UGFN1000R In Dialogue with Nature 2022/23 T2 Course Outline

Course homepage:

<http://blackboard.cuhk.edu.hk> → 2022R2-UGFN1000R : In Dialogue With Nature

Lecture:

Lecture	Time	Venue
UGFN1000R (English)	Fri 1:30PM - 2:15PM	LSK LT5

Tutorial:

Tutorials	Time	Venue
UGFN1000RT01 (English)	Tue 12:30PM - 2:15PM	YIA 501
UGFN1000RT02 (English)	Tue 4:30PM - 6:15PM	FYB 106
UGFN1000RT03 (English)	Wed 12:30PM - 2:15PM	WMY 302
UGFN1000RT04 (English)	Wed 4:30PM - 6:15PM	YIA 506
UGFN1000RT05 (English)	Thu 10:30AM - 12:15PM	FYB 603
UGFN1000RT06 (English)	Thu 1:30PM - 3:15PM	YIA 506

Attendance to the tutorial is an assessment component of your in-class participation (including the first week).

Unexplained absence of tutorial could have a severe impact to your grade of this course.

Course description:

This course is an intellectual pursuit across various natural sciences including the two most fundamental ones, physical and biological sciences. Ancient Greek philosophers took the lead in exploring the physical world and the world of life with reason and hence laid the foundations of natural science. This human enquiry into Nature leads to a reflection on the human understanding of Nature and the humans' place in Nature.

From the writings and stories of great scientists selected from influential literatures, students can gain a general understanding of the concepts and methodology of science, and of how scientists relate their academic pursuit to contemporary life, thereby developing their own perspectives on scientific issues. Students will be required to read, discuss and write about a wide range of texts in philosophy, science and its history. Emphasis will be placed on students' capacity to respond critically to these texts in written as well as oral presentations. Through these learning activities, students are expected to develop a lifelong capacity and enthusiasm to continue such dialogues with science texts in the future.

The textbook:

The course is composed of 3 parts, each consists of several texts, which are excerpts from science-related classics (see the tables below). Students have to read the corresponding text before attending the tutorial sessions. These texts are published as the textbook of this course, *In Dialogue with Nature*, Revised 2nd Edition. New textbook is available at the campus bookstore at the price of HK\$160.

Part I. Human Exploration of the Physical Universe

Text	Excerpted from	Chapters/Paragraphs
1a	Plato, <i>Republic</i> / translated by C.D.C. Reeve. Indianapolis: Hackett Publishing, 2004. (JC71 .P513 2004)	Book VII (Verses 514-517)
1b	David C. Lindberg, <i>The Beginnings of Western Science</i> , 2nd edition. The University of Chicago Press, 2007. (Q124.95 .L55 2007)	Chapter 2 (Para. 28-39)
2	David C. Lindberg, <i>The Beginnings of Western Science</i> , 2nd edition. The University of Chicago Press, 2007. (Q124.95 .L55 2007)	Chapter 3 (Para. 1-41), Chapter 12 (Para. 1-2, 33-55)
3a	I. Bernard Cohen, <i>The Birth of a New Physics</i> . W. W. Norton & Company, 1985.	Chapter 7 (Para. 1-25, 62-63)
3b	Isaac Newton, <i>The Principia</i> / A new Translation by I. Bernard Cohen and Anne Whitman. University of California Press, 1999. (QA803 .N413 1999)	“Definitions” 1-5, Para. 2 of p. 408, and “Axioms, or the Laws of Motion” Corollary 1

Part II. Human Exploration of the World of Life

Text	Excerpted from	Chapters/ Paragraphs
4	Charles Darwin, <i>The Origin of Species</i> , 1st Edition. (Full text available online: http://darwin-online.org.uk/)	Chapter 4 (Para. 1-6, 9-18, 39-46, 50-63, 68-71)
5	James D. Watson, <i>DNA: The Secret of Life</i> . New York: Alfred A. Knopf, 2003. (QH437 .W387 2003)	Chapter 1 (Para. 1-36), Chapter 2 (whole).
6	Rachel Carson, <i>Silent Spring</i> . Boston: Houghton Mifflin, 1962. (QH545.P4 C38 1962)	Chapter 6

Part III. Our Understanding of Human Understanding

Text	Excerpted from	Chapters/ Paragraphs
7	Henri Poincaré, <i>The Value of Science: Essential Writings of Henri Poincaré</i> New York: Modern Library, 2001. (Q175 .P7815213 2001)	<i>Science and Method</i> , Chapters I and III.
8	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)
9	Joseph Needham, <i>The Shorter Science and Civilisation in China</i> Vol. 1. Cambridge: Cambridge University Press, 1978.	Chapter 10 (Para. 1-3, 13-42)
10a	Nathan Sivin, ‘Why the Scientific Revolution Did Not Take Place in China – or Didn’t it?’ Web version: (revised 2005.8.24) http://ccat.sas.upenn.edu/~nsivin/scirev.pdf	Whole paper
10b	沈括 (著), 胡道靜 (校注), 《新校正夢溪筆談》。香港: 中華書局, 1975。(English translation available in the textbook)	304 節:「棋局都數」, 307 節:「活版印刷」, 357 節:「虹」, 430 節:「海陸變遷」, 437 節:「指南針」
11a	William Dunham, <i>The Mathematical Universe: An Alphabetical Journey Through the Great Proofs, Problems, and Personalities</i> . New York: Wiley & Sons, 1994. (QA21 .D785 1994)	Chapter G
11b	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.

Tentative teaching schedule: See UGFN1000-Schedule-2223T2.

Expected learning outcomes:

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

Grade Descriptors:

A / A-	<p>Introspective performance: Outstanding performance on all (or almost all) learning outcomes. Students demonstrate:</p> <ul style="list-style-type: none"> -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-	<p>General performance: Substantial performance on some learning outcomes which compensates for less satisfactory performance on others. Students demonstrate:</p> <ul style="list-style-type: none"> -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-	<p>Inconsistent performance: Satisfactory performance on some learning outcomes with a few weaknesses. Students demonstrate:</p> <ul style="list-style-type: none"> -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; -tentative reflections on issues concerned
D+ / D	<p>Incompetent performance: Barely satisfactory performance on a number of learning outcomes. Students demonstrate:</p> <ul style="list-style-type: none"> -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	<p>Failed performance: Unsatisfactory performance on the majority of learning outcomes, OR failure to meet specified assessment requirement. Students demonstrate:</p> <ul style="list-style-type: none"> -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

Assessment scheme:

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|---|-----|
| • Quizzes (Count only the highest 4 out of 5) | 24% |
| • In-class participation (include attendance and discussion components) | 16% |
| • Outside class activities. Choose one of the following: | 10% |
| - Online Discussion (OD) or | |
| - Play <i>Civilization</i> (Game) | |
| • Reflective Journal (RJ) (English 600-800 words) | 15% |
| • Term Paper (TP) (English 1300-1600 words) | 35% |

Results and comments of all assessments, where applicable, will generally be returned to students in no more than 4 weeks. More details about the assessments, including their rubrics, are available on Blackboard.

Academic honesty and plagiarism:

All written assignments (RJ and TP) are to be submitted through Veriguide. 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. Veriguide's website:

https://academic.veriguide.org/academic/login_CUHK.jsp.

Reading Guide and Extended Readings:

There are reading guides and suggested extended readings attached on Blackboard, together with Lecture and tutorial ppts.

Micro-modules on KEEP:

Micro-modules are supplementary courseware for "In Dialogue with Nature" that can be found on a dedicated course page on KEEP. There are two main aims for these micro-modules. One is to explain the key concepts in each of our course readings more thoroughly. Another, is to deepen and broaden the horizons of the core issues raised in these readings. To access the micro-modules:

- 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**

Peer Assisted Study Sessions (PASS):

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. Time and location are to be announced on Blackboard (or visit <http://pass.oge.cuhk.edu.hk>) when available.

Reflective Journal and Term Paper Writing Workshops:

To help students on writing, there are writing workshops conducted by ILC during the semester. These workshops are tailored for UGFH/UGFN students. More info about the workshops will be announced on Blackboard when available.