**The Chinese University of Hong Kong**

**Faculty of Social Science**

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| **Course Code:** | **GLSD3401** |
| **Title:** | **Global Environmental Challenges** |
| **Time:** Tue 10:30AM – 1:15PM | **Location:** Chen Kou Bun Bldg 706C |

**Contact Details for Instructor**

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| **Instructor** | Prof. LEE, Fung Harry |
| **Telephone** | 3943 8478 |
| **Email** | harrylee@cuhk.edu.hk |
| **Office** | Room 225, Chen Kou Bun Building, Chung Chi College, CUHK |
| **Consultation hours** | Tue 2:30 – 6:00 PM OR by appointment through email |

**Course Description**

This course seeks to provide an in-depth understanding of the environmental challenges at the global level, focusing particularly on the inevitable tension between social development and the physical environment throughout human history. This course also discusses and explains the socio-economic, geographic, and environmental dimensions of sustainable development. It aims to offer students with the basic knowledge and analytical tools for making sense of the current global environmental challenges. It adopts a multi-disciplinary approach that integrates theories with relevant examples.

This course will first introduce the key concepts and major theoretical perspectives in studying sustainable development. It then proceeds to illustrate the evolution of the environment-human nexus in human history, in which humans were originally the passive recipients of environmental changes, and now have become the primary agents in causing environmental changes. The key is the increasing capability of humans in mastering food and energy production. Finally, this course will be concluded with the discussion of the very nature of the global environmental challenges. Students will gain deeper insights into not only the roadblocks to sustainable development but also concepts that are useful for further studies in global sustainability.

**Grade Descriptors (Overall Course)**

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| **Grade** | **Overall course** |
| A | Outstanding performance on all learning outcomes. |
| A– | Generally outstanding performance on all (or almost all) learning outcomes. |
| B | Substantial performance on all learning outcomes, OR high performance on some learning outcomes which compensates for less satisfactory performance on others, resulting in overall substantial performance. |
| C | Satisfactory performance on the majority of learning outcomes, possibly with a few weaknesses. |
| D | Barely satisfactory performance on a number of learning outcomes. |
| F | Unsatisfactory performance on a number of learning outcomes, OR failure to meet specified assessment requirements. |

**Learning Outcomes**

Upon successful completion of this course, students should be able to:

1. Trace the evolution of the environment-human nexus.
2. Understand the basis for global sustainability.
3. Realize the importance of “scale” in comprehending global sustainability.
4. Critically examine the current measures for mitigating environmental problems.

**List of Topics and Course Schedule**

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| --- | --- | --- | --- |
| Date | Lecture | Topics | Notes |
| Jan 07 | 01 | Biodiversity |  |
| Jan 14 | 02 | Sustainability |  |
| Jan 21 | 03 | Agricultural Evolution and its implications I |  |
| Jan 28 | --- | Lunar New Year Vacation |  |
| Feb 18 | 04 | Agricultural Evolution and its implications II | Briefing for Group Project |
| Feb 25 | 05 | Climatic impacts |  |
| Mar 03 | 06 | Secular cycles | In-class Quiz 1 |
| Mar 10 | 07 | Industrial Revolution and its implications |  |
| Mar 17 | 08 | Globalizing world |  |
| Mar 24 | 09 | Burning fossil fuel |  |
| Mar 31 | -- | Reading Week |  |
| Apr 07 | 10 | Global environmental challenges |  |
| Apr 14 | 11 | Roadblocks to sustainability | In-class Quiz 2 |
| Apr 21 | 12 | Group presentation  | Revision |
| Apr 28 | 13 | Exam | Course Evaluation |

**Required/Recommended Readings & Online Materials**

There is no single textbook that covers the material discussed in this course: if there was, it would be unnecessary for me to give a lecture. Students need to read *journal papers, book chapters, and online materials from different disciplines* to acquire their knowledge.

Part I: Fundamental concepts of sustainable development

The first part of this course will revolve around the fundamental concepts of sustainable development, which are important for understanding the evolution of the environment-human nexus presented in the following parts of this course.

Lecture 01: Biodiversity

* Chiras, D.D. and Reganold, J.P. (2014). Chapter 15 – Plant and animal extinction. In: D.D. Chiras and J.P. Reganold, *Natural Resource Conservation: Management for a Sustainable Future*, 10th Edition, p. 405-428. New Jersey, Pearson Education.
* Wright, R.T. and Boorse, D.F. (2014). Chapter 6 – Wild species and biodiversity. In: R.T. Wright and D.F. Boorse, *Environmental Science: Toward a Sustainable Future* (International Edition), p. 139-168. Boston, Pearson Education.

Lecture 02: Sustainability

* Homer-Dixon, T.F. (1999) Chapter 3 – Two centuries of debate. In: T.F. Homer-Dixon, *Environment, Scarcity, and Violence*, p. 28-46. Princeton: Princeton University Press.
* Homer-Dixon, T.F. (1999) Chapter 4 – Environmental scarcity. In: T.F. Homer-Dixon, *Environment, Scarcity, and Violence*, p. 47-72. Princeton: Princeton University Press.

Part II: Environment ⇨ Humans

Students will be presented with some topics about how human societies were constrained by the physical environment in the pre-industrial era, which is the first phase of the environment-human nexus.

Lecture 03: Agricultural Evolution and its implications I

* Diamond, J. (1997) *Guns, Germs, and Steel: The Fates of Human Societies*. New York, Norton.
* Spier, F. (2010) Chapter 7 – Recent human history: The development of the greatest known complexity. In: F. Spier, *Big History and the Future of Humanity*, p. 138-188. Oxford: Wiley-Blackwell.

Lecture 04: Agricultural Evolution and its implications II

* Diamond, J. (1997) *Guns, Germs, and Steel: The Fates of Human Societies*. New York, Norton.
* Spier, F. (2010) Chapter 7 – Recent human history: The development of the greatest known complexity. In: F. Spier, *Big History and the Future of Humanity*, p. 138-188. Oxford: Wiley-Blackwell.

Lecture 05: Climatic impacts

* Lee, H.F. and Zhang, D.D. (2015) Chapter 14 – Quantitative analysis of climate change and human crises in history. In: M. Kwan, D. Richardson, D. Wang, and C. Zhou (eds.) *Space-Time Integration in Geography and GIScience: Research Frontiers in the US and China*, p. 235-267. Dordrecht: Springer.
* McMichael, A.J. (2012) Insights from past millennia into climatic impacts on human health and survival. *Proceedings of the National Academy of Sciences of the United States of America* 109(13): 4730-4737.

Lecture 06: Secular cycles

* Fraser, E.D.G. (2011) Can economic, land use and climatic stresses lead to famine, disease, warfare and death? Using Europe’s calamitous 14th century as a parable for the modern age. *Ecological Economics* 70(7): 1269-1279.
* Galloway, P.R. (1986) Long-term fluctuations in climate and population in the preindustrial era. *Population & Development Review* 12(1): 1-24.
* Lee, H.F. and Zhang, D.D. (2010) Changes in climate and secular population cycles in China, 1000 CE to 1911. *Climate Research* 42(3): 235-246.
* Lee, H.F. (2014) Climate-induced agricultural shrinkage and overpopulation in late imperial China. *Climate Research* 59(3): 229-242.

Part III: Environment ⬄ Humans

Students will be presented with some topics about how human beings become the ones to change the environment (and also the ones constrained by the environment) in the industrial and the post-industrial era, which is the second phase of the environment-human nexus.

Lecture 07: Industrial Revolution and its implications

* Lewis, S. and Maslin, M. (2015) Defining the Anthropocene. *Nature* 519(7542): 171-180.
* Steffen, W., Grinevald, J., Crutzen, P., and McNeill, J. (2011) The Anthropocene: Conceptual and historical perspectives. *Philosophical Transactions of the Royal Society A* 369(1938): 842-867.

Lecture 08: Globalizing world

* Fraser, E.D.G. (2007) Travelling in antique lands: Using past famines to develop an adaptability/resilience framework to identify food systems vulnerable to climate change. *Climatic Change* 83(4): 495-514.
* Pacione, M. (2009) Chapter 14 – The economy of cities. In: M. Pacione, *Urban Geography: A Global Perspective*, 3rd Edition, p. 283-307. London and New York: Routledge.

Lecture 09: Burning fossil fuel

* Easterbrook, D.J. (2011) Chapter 1 – Geologic evidence of recurring climate cycles and their implications for the cause of global climate changes – The past is the key to the future. In: D. Easterbrook, *Evidence-based Climate Science: Data Opposing CO2 Emissions as the Primary Source of Global Warming*, p. 3-51. Oxford: Elsevier.
* [Video] Durkin, M. (2007) *The Great Global Warming Swindle*. WagTV.

Lecture 10: Global environmental challenges

* Carleton, T.A. and Hsiang, S.M. (2016) Social and economic impacts of climate. *Science* 353(6304): aad9837.
* Healy, K. (2017) Fuck nuance. *Sociological Theory* 35(2): 118-127.
* McMichael, A.J. (1999) Prisoners of the proximate: Loosening the constraints on epidemiology in an Age of Change. *American Journal of Epidemiology* 149(10): 887-897.
* Moore, T.G. (2000) *It is the best of climates; It will be the worst of climates?* Retrieved 03-Jan-2020, from https://web.stanford.edu/~moore/ClEffects.pdf

Lecture 11: Roadblocks to sustainability

* Beddoe, R., Costanza, R., Farley, J., Garza, E., Kent, J., Kubiszewski, I., Martinez, L., McCowen, T., Murphy, K., Myers, N., Ogden, Z., Stapleton, K., and Woodward, J. (2009) Overcoming systemic roadblocks to sustainability: The evolutionary redesign of worldviews, institutions, and technologies. *Proceedings of the National Academy of Sciences of the United States of America* 106(8): 2483-2489.
* Pradhan, P., Costa, L., Rybski, D., Lucht, W., and Kropp, J.P. (2017) A systematic study of Sustainable Development Goal (SDG) interactions. *Earth’s Future* 5(11): 1169-1179.
* [Video clip] Lomborg, B. (2007) *Global priorities bigger than climate change*. Retrieved 03-Jan-2020, from https://www.ted.com/talks/bjorn\_lomborg\_sets\_global\_priorities

Part IV: Group presentation

Students are going to apply the knowledge obtained in this course to comprehend the global environmental challenges in the future. In Lecture 12, students are required to present their ***views/forecasts about the global environmental challenges in the future, say after 20 years***, based on (1) what has been taught in this course and (2) their own research findings. This is a part of the student group project.

**Assessment Scheme**

**1. Group project (30%)**

Based on what has been taught in this course, students are required to present their views/forecasts about the future in terms of energy, food, or the environment in a group project. The group project is composed of the following parts:

Proposal (5%)

Each group (2–3 students in a group) must send me a four-page proposal (in MS Word file, including references) for the group project by **23:59h,** **03-Mar-2020 (Tue)** at the latest: this does not mean that you must restrict yourself to themes covered up to then. On the contrary: look ahead and ask for advice if you need it. This means considering the course outline very carefully, reading some of the relevant references, and following up on what you find there. The proposal must include a working title; an outline of the main ideas/themes; and a preliminary bibliography (at least six references of direct relevance).

Presentation (10%)

The oral presentation will be scheduled in **Lecture 12**. For each group, there will be 15–20 minutes for presentation together with 5 minutes for Q & A. Students from other groups should ask questions. I will also ask questions.

Final report (15%)

Every group needs to submit one written report (on a group basis). Style guide and the requirement for the written report are listed below:

1. It should be around 15 text pages in length (i.e., excluding illustrations and bibliography); spacing either 1.5 or 2.0; they must be professionally presented, with correct spelling, punctuation, and grammar.
2. It must have a clear and coherent argument (logic); it must have an informative title, and sub-headings must be used to signpost the argument. This does not mean that you need a “thesis statement,” whatever that is; it simply means there must be a purpose, direction, and development to your work.
3. Maps, diagrams, and illustrations must be incorporated into the body of the report, clearly titled, and referred to as Figure 1... etc. in the text.
4. It must refer to the relevant readings for the course: though you need not confine yourself to those readings – and those who do best will have read beyond them. All sources for direct quotations must be given. A full bibliography must appear at the end of the report.
5. Please include an appendix about the “detail division of labour” among group members in doing the group project. “Free riders” will be penalized!
6. All submissions should be made to **VeriGuide** in the way stated in Appendix B. **Deadline: 23:59h, 13-May-2020 (Wed). Please plan ahead and you are welcome to submit the report early. 10% mark reduction per day for the late submission. *Only the final version of the assignment should be submitted.***

Grading criteria for the presentation and final report are stated in the Appendix A. The submission of the final report should be made to “VeriGuide” first (with the receipt of VeriGuide attached, see ***Academic Honesty and Plagiarism*** and ***Appendix B***). Please plan ahead and you are welcome to submit the report early. 10% off per day for the late submission. Only the final version of the report should be submitted.

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| Students should form themselves into groups of 2–3 and submit the member list (with full name and university number) to me by **23:59h, 18-Feb-2020 (Tue)**. |

**2. In-class quizzes (30%)**

Students will take two short quizzes in class. The quiz is 15 minutes each, which will be held in **Lecture 6** and **Lecture 11**. Multiple-choice questions will be asked, which are easy for those students who attend and follow the lectures closely.

**3. Exam (30%)**

There is a 2-hour exam scheduled for **28-Apr-2020 (Tue)**. Students need to answer multiple-choice questions and essay questions in the exam. Details will be provided in due course.

**4. Class participation (10%)**

Up to 10% can be given to students with active, outstanding and quality participation in lectures and class discussions. Students’ participation in all occasions (including in-class and outside classroom discussion) will be assessed. Participation will also be a factor of consideration in rounding up or down students’ grades in borderline cases in other components of assessment.

**Feedback for Evaluation**

* Course and Teaching Evaluation Survey
* Internal Course Review
* Informal discussion with students

**Course Rules and Communication**

* Students are required to visit the **Blackboard** platform and check their **CUHK E-mail accounts** on a regular basis for on-going communications and instructions from the Instructor.
* Attendance requirement: students are required to attend classes. Failure to attend classes on a regular basis may result in failure of the course.

**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 may be found at <http://www.cuhk.edu.hk/policy/academichonesty/>.

With each assignment, students will be required to submit a signed declaration that they are aware of these policies, regulations, guidelines and procedures.

In the case of group projects, all students of the same group should be asked to sign the declaration, each of whom is responsible and liable to disciplinary actions should there be any plagiarized contents in the group project, irrespective of whether he/she has signed the declaration and whether he/she has contributed directly or indirectly to the plagiarized contents.

For assignments in the form of a computer-generated document that is principally text-based and submitted via VeriGuide, the statement, in the form of a receipt, will be issued by the system upon students’ uploading of the soft copy of the assignment.

Assignments without the properly signed declaration will not be graded by teachers. Only the final version of the assignment should be submitted via VeriGuide.

The submission of a piece of work, or a part of a piece of work, for more than one purpose (e.g. to satisfy the requirements in two different courses) without declaration to this effect shall be regarded as having committed undeclared multiple submission. It is common and acceptable to reuse a turn of phrase or a sentence or two from one’s own work; but wholesale reuse is problematic. In any case, agreement from the course teacher(s) concerned should be obtained prior to the submission of the piece of work.

Every assignment handed in should be accompanied by a signed declaration as below:

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| I am submitting the assignment for:□ an individual project or□ a group project on behalf of all members of the group. It is hereby confirmed that the submission is authorized by all members of the group, and all members of the group are required to sign this declaration.I/We declare that: (i) the assignment here submitted is original except for source material explicitly acknowledged; (ii) the piece of work, or a part of the piece of work has not been submitted for more than one purpose (e.g. to satisfy the requirements in two different courses) without declaration; and (iii) the submitted soft copy with details listed in the <Submission Details> is identical to the hard copy(ies), if any, which has(have) been / is(are) going to be submitted.I/We also acknowledge that I am/we are aware of University policy and regulations on honesty in academic work, and of the disciplinary guidelines and procedures applicable to breaches of such policy and regulations, as contained in the University website<http://www.cuhk.edu.hk/policy/academichonesty/>.**In the case of a group project, we are aware that each student is responsible and liable to disciplinary actions should there be any plagiarized contents/undeclared multiple****submission in the group project, irrespective of whether he/she has signed the declaration and whether he/she has contributed directly or indirectly to the problematic contents.**It is also understood that assignments without a properly signed declaration by the student concerned and in the case of a group project, by all members of the group concerned, will not be graded by the teacher(s). |
| \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Signature(s)  | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Date |
| \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Name(s)  | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Student ID(s) |
| \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Course code  | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Course title |

**Appendix A: Grade Descriptors (Group Presentation/ Final Report)**

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| --- | --- | --- | --- | --- | --- |
|  | **Excellent (A)** | **Good (B)** | **Satisfactory (C)** | **Pass (D)** | **Fail (F)** |
| **Content** |
| Overall structure of presentation/ report | A carefully articulated answer to the key questions.A clear introduction outlining the structure of the report/ presentation with an explicit central statement addressing the key questions. | An effective answer to the key questions. However, some key issues may be overlooked or left out of the analysis.There is an introduction but it does not have a central statement to position the work with reference to the key issues. | Provides fragmented points to the key questions.Introduction does not provide an overview of the structure of the report/ presentation. | A poor answer to the key questions.There is no introduction to the structure of the report/ presentation and position with reference to the key issues is not stated upfront. | Not answering the question or a very poor answer not directly addressing the stated question. |
| Ability to construct a coherent framework that illustrates the relationship between physical and human interactions | Framework is carefully & logically constructed, with strong evidence and data. | Framework is presented with some solid evidence and information. | Framework is presented with some evidence and information. | No attempt to develop a framework but there are pieces of evidence of inter-relationships between physical and human developments. | No framework is presented and shows no understanding of the relationships between the physical environment and human developments. |
| Use of wider literature | Extensive use of literature that goes well beyond the reference list. | Do not go beyond the provided reference list. | Use some of the provided literature. | Shows little use of literature. | Shows no use of literature. |
| Understanding of concepts/ issues | Shows a clear and thorough understanding of concepts and issues through the development of synthesized frameworks and deliberations of clear insights. | A sound understanding of concepts/issues with little evidence of efforts to synthesize beyond lectures and cited literature in class. | Shows understanding of concepts/ issues but efforts seem to confine to making reference to lecture notes. | Insufficient, inadequate or superficial understanding of concepts and issues. | Wrong understanding of concepts. |
| Ability to criticize and evaluate arguments | Demonstrate an ability to understand issues in the wider socio-economic, institutional and policy contexts.Able to interpret gathered information with insights. | Shows some understanding of the issues in the wider socio-economic, institutional and policy contexts.Not critical in adopting factual information in developing arguments. | Shows little understanding of the issues in the wider context.Evidence of using some relevant facts in developing arguments.Arguments not convincingly developed. | Shows little efforts to understand issues in the wider context.Inadequate use of evidence in developing arguments.Arguments are not convincing. | Shows no efforts in understanding issues in the wider context.No use of evidence in developing arguments or use the wrong/ inappropriate evidence. |
| Ability to link data to analysis | Data shown in the paper are carefully analyzed and there are few gaps between data. | There are data gaps.Data are not well or fully analyzed. | Data are used but some may appear inconsistent or wrongly interpreted and analyzed. | There are many data gaps.Data are poorly analyzed. | There is a scarcity of data.Data are not analyzed. |
| **Presentation** |
| Clarity of presentation | Presentation and paragraphing are done professionally.Figures and tables are clearly numbered and presented. | Presentation and paragraphing are done clearly.Figures and tables are in order. | The paper is not properly paragraphed and laid out.Tables and figures not properly numbered. | Paragraphing is not properly done.Figures are blurred and tables are confusing. | Poor presentation. No proper paragraphing.Tables and figures are done poorly. |
| Citation & referencing | All citations and referencing are done properly and consistently. | Some citations are not done properly.Some references are missing. | Citation is NOT done properly.References are missing or not listed properly. | Citations are missing (plagiarism, when identified, could cause failure).References are arranged haphazardly. | No citation, and referencing is not properly done. |
| **English writing** |
| Spelling | No spelling mistakes. | Few spelling mistakes. | Quite a few spelling mistakes. | Clear evidence of not using spell check. | Many spelling mistakes |
| Grammar | Few, if any, grammatical mistakes. | Grammatical mistakes can be found, often due to a weak English foundation. | Quite a few grammatical mistakes. Writing style difficult to follow. | Full of grammatical mistakes. | Full of grammatical mistakes. |
| Writing style | Clear and effective writing style that facilitates understanding and communication. | Generally clear and effective writing style that serves to communicate. | Writing style that fails to communicate effectively. | Poor writing style that fails to articulate a particular point of view. | Poor readability. |

**Appendix B: Guidelines for Group Project Final Report Submission in VeriGuide**

The following information should be carefully inputted into the VeriGuide system to ensure the successful submission of the group project final report.

**NOTE: Only the final version of the report should be submitted.**

*Course Information*

* Academic Year: 2019-2020
* Term: 2
* Choose a course: GLSD-3401-- **(DO NOT choose GLSD-3401--T01)**

*Assignment Information*

* Assignment Marker: Professor LEE Fung **(this is the only option available)**
* Assignment Number: 1 **(no resubmission is possible and you cannot attempt to resubmit your work by using a different assignment number)**
* Deadline: **23:59h,** **13-May-2020 (Wed)** **(as stipulated on the course outline)**
* File: Upload your assignment (as a Word document)
* Submission Type: Group Project
* Citation format: APA