

# PPOL 2110: SCIENCE, TECHNOLOGY AND SOCIETY IN CHINA

## - A Blended-Learning Course -

<b>Semester:</b>	Spring 2022
<b>Credits:</b>	3 units
<b>Enrol requirements:</b>	None
<b>Delivery mode:</b>	Blended learning delivery (BLD)
<b>Class Meeting Times:</b>	Mondays & Wednesdays, 12:00pm – 1:20pm
<b>Class Meeting Room:</b>	Room 5620 (Lift 31-32) or Zoom (during hybrid mode)
<b>Instructor:</b>	<b>Prof. Naubahar Sharif</b> Division of Public Policy, HKUST E-mail: <a href="mailto:sosn@ust.hk">sosn@ust.hk</a>
<b>Office Hours:</b>	By Zoom appointment, and whenever I am in my office
<b>TA:</b>	Alvin Li, PhD candidate (E-mail: <a href="mailto:aliaq@connect.ust.hk">aliaq@connect.ust.hk</a> )

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### *Course Description*

This course aims to cultivate students' systematic and critical thinking about science, technology, innovation, and society, especially in light of the transition from traditional China to contemporary China. Differing from the usual courses focusing on this subject, this course will take a social and critical approach, enabling students to understand and analyze the social, political, and cultural preconditions and impacts of scientific and technological development.

**Module 1** of the course will introduce students to some theoretical and conceptual issues that underlie our understanding of science, technology, innovation, and their relationships with society. This will lay the foundation for the rest of the course.

**Module 2** will focus on scientific and technological achievements in ancient and medieval China as well as the social, political, and cultural conditions in which these achievements took place. These include, for example, achievements in early-chemistry, which started at alchemy in ancient China.

**Module 3** will introduce the industrial revolution and its preconditions and impact, helping students critically examine the 'divergence' between China and the West regarding the development of modern science and technology—the well-known 'Needham question', namely: Why was it that the Industrial Revolution didn't take place in China?.

During **Module 4**, students will critically review scientific and technological achievements in modern and contemporary Chinese society using the innovation systems conceptual approach. For instance, what were some of the reforms that led to the take-off in Chinese science and technology?

When we have completed the above four major modules, five interactive *synchronous* (real-time) lectures will focus on the development of science, technology, and innovation policies in China since the 1980s, providing students with empirical knowledge about science, technology, and innovation in China and guiding them in applying the previously learned theoretical knowledge to real situations. We will be unpacking the question of how and why China has now risen to become a modern technological titan.

By the end of the course, students should understand the significance of the social, cultural, and political preconditions underlying scientific and technological innovations and be able to gauge the impact of those innovations. They should also be able to systematically analyze the factors that make innovation significant and use this analysis to critically examine the development of science and technology over the course of China's history.

## ***Blended Learning Arrangement***

This course will be organized in accordance with a blended-learning format: Certain parts of the class will be completed by students *asynchronously*—in their own time, at their own pace, in the form of self-directed learning. Other parts of the class will be conducted *synchronously*—in real-time. ***For the Spring 2022 semester, classes will be conducted according to University guidelines: on Zoom during online mode only, and, should the COVID-19 situation improve, face-to-face in mixed mode or offline mode.***

Over the course of the 13 weeks of the semester, students will complete the four abovementioned modules at two-week intervals, followed by five synchronous lectures.

Each of the four modules contains an ***asynchronous*** (self-directed learning) component and a ***synchronous*** (real-time) component.

The *synchronous* (real-time) component includes classes every two weeks.

Before the *synchronous* (real-time) classes for each module, students are required to view the pre-recorded videos for that module in their entirety, familiarize themselves with the basic contents of and knowledge imparted in the videos, and finish the corresponding quizzes (if any; see Course Outline, below).

All *synchronous* (real-time) classes within the modules will focus mainly on the Q&As for and discussions of the topics covered in the pre-recorded videos.

After all four modules are completed, there will be five interactive *synchronous* (real-time) lectures, together with Q&As and discussions.

As indicated in the Course Outline, below, each week students will either spend 2-4 hours viewing and absorbing pre-recorded videos *asynchronously* (self-directed learning), or 3 hours in *synchronous* (real-time) classes (in line with HKUST credit regulations).

In addition to the abovementioned *asynchronous* and *synchronous* arrangements, students are also required to conduct presentations and complete written assignments.

The **contact hours** of the course (**39** in total) include:

- Videos to be viewed on students' own time—*asynchronous* (self-directed learning): ~12 hours
- *Synchronous* (real-time) activities based on videos: ~ 12 hours
- *Synchronous* (real-time) lectures: ~10 hours
- Other *asynchronous* / *synchronous* activities (such as course intro, course review, quizzes on Canvas, ad hoc discussion sessions): ~5 hours

Blended-learning practices are highly suitable for the content and learning outcomes of the course. While establishing some basic theories, concepts, and conceptual approaches to provide the foundation for later learning, the course will focus mainly on critical understanding, thinking, discussion, and analyses of issues related to science, technology, innovation, and societies, adopting a very broad and open-ended approach to these topics. In this sense, it would be efficient for students to conduct self-learning to acquire basic knowledge and practice critical thinking during class discussions, written assignments, and presentations.

Given this new, innovative course delivery method, we expect students to be **highly interactive and engaged** with not just the instructor and TA, but also your fellow classmates! As such, up to 20% of your final course grade can be obtained through class participation (10% for asynchronous discussions on Canvas and 10% for sharing your opinions, debating ideas, and commenting on others' remarks during the synchronous classes.) Please refer to below for the assessment rubric for class participation.

## Course Learning Outcomes (CLOs)

*CLO 1:* Critically understand the common definitions of science, technology, and innovation as well as the general relationships between science, technology, and society.

*CLO 2:* Understand the driving forces, features, and major achievements in scientific and technological development in ancient and medieval China.

*CLO 3:* Critically understand the sources, importance, and effects of the industrial revolution, especially its importance to global scientific and technological thought. Critically understand and question the ‘divergence’ between the West and China during the scientific and industrial revolutions.

*CLO 4:* Critically understand the innovation systems conceptual approach. Apply this conceptual approach to the development of science and technology in China over the last century.

## Assessment

Students will be evaluated based on a mix of: Individual activities (80%), and group activities (20%):

- *Class Participation* (20%)
- *Written Assignments @ 10% x 4* (40%)
- *Quizzes @ 5% x 4* (20%)
- *Group Presentation* (20%)

Assessment Type	Format & Rubrics
<p><b>Class Participation</b></p> <p>Individual</p> <p><b>20%</b></p>	<p><b>Rubric for Class Participation</b></p> <p>Class participation counts for 20% of your course grade, and in order to gain marks here, you are expected to actively participate in both the asynchronous discussions on Canvas, as well as during the synchronous real-time classes. Remember, participation counts the same or even more than the quizzes and group presentations, so don't lose out on the easy marks!</p> <p><b>Asynchronous</b> (Canvas) - 10%</p> <ul style="list-style-type: none"> <li>• We will publish questions and topics of discussion in the <i>Discussions</i> section of Canvas. Over the course of 13 weeks, we'd like you to submit at least <b>5 discussion posts</b> in total in different topics (150-200 words each, or more if you wish!) contributing to a variety of questions. You may also choose to post constructive <b>replies</b> to your fellow classmates' posts; try to engage with classmates who are not in the same assigned group as you.</li> <li>• Completion of the 5 posts is sufficient to gain the marks, but we also expect high quality, thoughtful and constructive comments. Make sure to connect your comments with the course materials.</li> </ul> <p><b>Synchronous</b> (real-time classes) - 10%</p> <ul style="list-style-type: none"> <li>• Building on top of the pre-recorded lectures and course readings, the instructor and TA will guide in-class discussions. The success of your learning depends on connecting your wide-ranging ideas. As such, we expect you and your fellow classmates to interact and engage enthusiastically.</li> <li>• Specifically, we will take special note of students who <b>speak up</b> and share their thoughts or constructively build on other classmates' comments. We highly welcome all sorts of comments, opinions, and questions! On Zoom, engaging in the <b>chat box</b> is welcome too, and we may invite the individual to elaborate or follow-up their comment, since we'd like to hear your voice rather than text.</li> </ul>

<p><b>Written Assignments</b></p> <p>Individual</p> <p>10% each × 4 = <b>40%</b></p>	<p>Each student will finish four written assignments, one per module.</p> <ul style="list-style-type: none"> <li>• Students will be asked to write on a topic that is directly relevant to the topic of the associated module. These written assignments assess course components that are more closely related to critical thinking, analysis, research, and application.</li> <li>• The length of each assignment should be around <b>800 words</b> (not including references).</li> <li>• Each written assignment will be due around the time of the release of the next module (typically 2 weeks after the release of the corresponding module).</li> <li>• The written assignments will be graded by the teaching assistant according to a rubric (see ‘Written Assignments Grading Rubric’ at the end of this syllabus), who will also provide short comments and/or suggestions about the assignments.</li> <li>• Students should follow <b>academic writing style</b>. The use of academic references to credible sources is highly valued, as it demonstrates your research skills and ability to consolidate various sources of information. No Wikipedia!</li> <li>• Specific written assignment <b>submission requirements</b> are as follows: <ul style="list-style-type: none"> <li>- File format in .docx only</li> <li>- Display your [SURNAME Firstname] as file name and at the top of document</li> <li>- State the written assignment number and questions on top (or throughout parts) of the essay.</li> <li>- Display word count at the top of essay</li> <li>- Font: Times New Romans, size 11, spacing 1.2, wide alignment</li> <li>- Referencing style: APA</li> <li>- Proofread your work with free Grammarly software.</li> </ul> </li> </ul>
<p><b>Quizzes</b></p> <p>Individual</p> <p>5% each × 4 = <b>20%</b></p>	<p>Four quizzes will be conducted <i>asynchronously</i> (on Canvas).</p> <ul style="list-style-type: none"> <li>• The quizzes are intended to test students’ knowledge of the conceptual, definitional and theoretical issues regarding science, technology, innovation, and the innovation systems conceptual approach, as covered in pre-recorded videos.</li> <li>• Quizzes are attached to the pre-recorded learning videos of Modules 1, 2, 3, and 4.</li> <li>• Each quiz contains <b>10 multiple-choice</b> (MC) questions to be completed independently in no more than 15 minutes, while adhering to the integrity honor code (with the exception of Quiz 1, with 20 minutes instead of 15).</li> <li>• The marks for the quizzes will be automatically calculated by the system.</li> <li>• The answers for the quizzes will be released within 2 weeks of its completion.</li> </ul>

<p><b>Group Presentation</b></p> <p>Group 20%</p>	<p>Students will form groups of 3-4 (yielding around 10 groups given the size of the class) to conduct group presentations starting in week 10.</p> <ul style="list-style-type: none"> <li>• Brief: Choose a <b>pre-modern</b> (before the industrial revolution) or <b>modern</b> scientific achievement or technology, focusing mainly on the social, cultural, and political factors that are significant to its development, and its social, cultural, and political influence. Choosing a premodern example allows you to apply more closely the concepts that you've learned during the lectures. Choosing a modern example allows you to explore a scientific achievement or technology that is relatable and relevant to you and your classmates, and this may be more challenging as you will need to apply the concepts learned in this course. The only rule is you cannot choose an achievement already selected for written assignment 3.</li> <li>• Group presentations will last 20 minutes: 12 minutes presenting + 8 minutes of Q&amp;A.</li> <li>• Students will form the groups by themselves on Canvas; the teaching assistant will provide help to students who prefer to be allocated into a group; group formation should be completed before the class of week 8. The student groups, once formed, will remain in place for the entire semester.</li> <li>• The presentation order will be determined by lucky draw, and presentations will be spaced out according to the schedule in the course outline (Section 5).</li> </ul> <p><b>Rubric for Group Presentations</b></p> <ul style="list-style-type: none"> <li>• The format of presentation will be PowerPoint slides or other suitable presentation softwares (e.g Canva.com). If conducted over Zoom, we would expect you to present by sharing your screen.</li> <li>• Students are expected to attend every group's presentations. Unlike the quizzes and written assignments which test personal abilities, this group assignment emphasises the importance of teamwork, rehearsal, and workload distribution. Some of the best presentations are evidently well rehearsed, coherent, and balanced.</li> <li>• The group presentations will be assessed on: <ul style="list-style-type: none"> <li>○ 10% <b>Content</b> (Depth of analysis, connection with course material, and Q&amp;A responses)</li> <li>○ 5% <b>Structure</b> (Coherence and logic of the presentation and arguments, time management)</li> <li>○ 5% <b>Presentation and Style</b> (Verbal presentation, graphic design of slides)</li> </ul> </li> </ul>
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## [COURSE OUTLINE]

### Week 1: Introduction and Orientation

Week 1 Reading: Course Syllabus

Learning Objectives	Learning Activities and Sequence	Assessments and Important Days
<p><i>Understand</i> the purpose and arrangement of the blended-learning approach</p> <p><i>Clarify</i> the goals, arrangements and assessment of the course</p>	<p><b><u>Week 1 - Synchronous</u></b> (~3hrs)</p> <ul style="list-style-type: none"> <li>✓ Course overview (20:00)</li> <li>✓ Introduction to the blended-learning approach (30:00)</li> <li>✓ Introduction to the goals, arrangements and assessment of the course (30:00)</li> <li>✓ Q&amp;A about the course overview (30:00)</li> <li>✓ Meet-and-greet with each other (30:00)</li> <li>✓ Discussion: interesting topics about science and technology in China in which each student is interested (40:00)</li> </ul>	<p style="text-align: center;">N/A</p>

## [MODULE 1]

### Weeks 2 & 3: Definitional Issues

Module 1 Reading: Sismondo, Sergio. 2004. *An Introduction to Science and Technology Studies*, Chapter 1, The Prehistory of Science and Technology Studies, pages 1–11.

Learning Objectives	Learning Activities and Sequence	Assessments and Important Days
<p><i>List and discuss</i> viable definitions of ‘science’, ‘technology’, and ‘innovation’</p> <p><i>Explain</i> the relationship between science and technology and society</p>	<p><b><u>Week 2 - Asynchronous</u></b> (~1hr, 51mins)</p> <ul style="list-style-type: none"> <li>✓ 1.1: Let’s Talk about Science: Science as the Scientific Method (12:37);</li> <li>✓ 1.2: Problems with the Idea of Falsificationism (8:54)</li> <li>✓ 1.3: Let’s Talk about Science (Again): Science is What Scientists Do! (3:23)</li> <li>✓ 1.4: Kuhn’s Major Ideas (17:13)</li> <li>✓ 1.5: Introducing Technology (19:43)</li> <li>✓ 1.6: Introducing Innovation (12:07)</li> <li>✓ 1.7: Examining Innovation (14:51)</li> <li>✓ 1.8: Relationship Between Science and Technology (9:09)</li> </ul>	<p>✓ <b>Quiz 1:</b> About the definitions and schools of thoughts mentioned in the videos</p>
	<p><b><u>Week 3 - Synchronous</u></b> (~3hrs)</p> <ul style="list-style-type: none"> <li>✓ Q&amp;A about class videos (40:00). The Q&amp;A will focus on: a. quiz questions that students answered incorrectly, b. knowledge-application activity based on the quiz topics most commonly answered incorrectly by students</li> <li>✓ Discussion: What is wrong with defining science as the ‘scientific method’? In other words, what does this definition of science miss? (40:00)</li> <li>✓ Discussion: What are everyday examples of science according to Popper’s and Kuhn’s definitions? In these examples, what relationships exist between science, potentially relevant technologies, and society? (40:00)</li> <li>✓ Guide for, and Q&amp;A to, writing assignments (40:00)</li> </ul>	<p>✓ <b>Quiz 1 due before class</b></p> <p>✓ <b>Written Assignment 1:</b></p> <p>Discuss definitions of ‘science’, ‘technology’, and ‘innovation’ mentioned in the class videos: What are they? What are the key points? What are the pros and cons of the various definitions?</p> <p>Explain the relationship between technology, and society: What are their relationships to each other, especially reflected in various definitions of and thoughts about science and technology?</p>

## [MODULE 2]

### Weeks 4 & 5: A Look Back into the Distance—Science and Technology in Ancient and Medieval China

Module 2 Readings: 1) Joseph Needham, China Scholar From Britain, Dies at 94, by Sarah Lyall, published on 27 Mar 1995 (available from: <https://www.nytimes.com/1995/03/27/obituaries/joseph-needham-china-scholar-from-britain-dies-at-94.html>)  
 2) The China the West knew nothing about, by Jonathan Spence, published on 18 April 1982 (available from: <https://www.nytimes.com/1982/04/18/books/the-china-the-west-knew-nothing-about.html>)

Learning Objectives	Learning Activities and Sequence	Assessments and Important Days
<p><i>Identify</i> the driving forces of scientific and technological development in ancient and medieval China</p> <p><i>Describe</i> the characteristics and timeframe of scientific and technological development in the areas of mathematics, astronomy, and alchemy in ancient and medieval China</p>	<p><b><u>Week 4 - Asynchronous</u></b> (~1hr, 25mins)</p> <ul style="list-style-type: none"> <li>✓ 2.1: History of Scientific Thought in China (17:01)</li> <li>✓ 2.2: Philosophy of Chinese Science (7:25)</li> <li>✓ 2.3: The Rise of Chinese Mathematics (15:59)</li> <li>✓ 2.4: Development of Chinese Mathematics after the Golden Age (12:42)</li> <li>✓ 2.5: Development of Chinese Astronomy: Calendars and Astrology (17:01);</li> <li>✓ 2.6: The Advance of Chinese Astronomy: External Influences and the Golden Age (11:29);</li> <li>✓ 2.7: The Rise of Chinese Alchemy (19:48)</li> <li>✓ 2.8: The Decline of Chinese Alchemy (9:11)</li> </ul>	<ul style="list-style-type: none"> <li>✓ <b>Quiz 2:</b> About key facts related to the scientific and technological developments in ancient and medieval China.</li> </ul>
	<p><b><u>Week 5 - Synchronous</u></b> (~3hrs)</p> <ul style="list-style-type: none"> <li>✓ Q&amp;A about class videos (40:00). The Q&amp;A will focus on: a. quiz questions that students answered incorrectly, b. knowledge-application activity based on the quiz topics most commonly answered incorrectly by students</li> <li>✓ Discussion: To what extent do you think the scientific and/or technological achievements fit the definitions of science and technology discussed in week 2? (40:00)</li> <li>✓ Discussion: One of the ideas covered in this module has been the extent to which there was considerable external influence on Chinese astronomy. <b>To what extent do you think external* factors actually positively influence innovative activity?</b> (40:00)</li> </ul> <p>*‘External’ factors can include influences from overseas, influences from outside a particular system/organization (such as a business unit) or from an ‘external’ group member (i.e. someone outside a social group such as the government).</p> <ul style="list-style-type: none"> <li>✓ Brief guidance and Q&amp;A about group presentations (40:00)</li> </ul>	<ul style="list-style-type: none"> <li>✓ <b>Quiz 2</b> due before class</li> <li>✓ Presentation group finalized before class</li> <li>✓ Presentation lucky draw at the beginning of the class</li> <li>✓ <b>Written Assignment 1</b> due before class</li> <li>✓ <b>Written Assignment 2:</b></li> </ul> <p>Select one scientific and/or technological achievement in ancient and medieval China (in mathematics, calendars, astrology, alchemy, or any other field)</p> <p>Briefly introduce the achievement and its development</p> <p>Discuss whether the achievement and its development can be defined as a science, and/or a technology, and/or an innovation, and discuss the relationship between the achievement and society.</p>



## [MODULE 3]

### Weeks 6 & 7: The Industrial Revolution in the West, and the Historical Trajectories of Scientific and Technological Development in China and the West

Module 3 Reading: [To be confirmed]

Learning Objectives	Learning Activities and Sequence	Assessments and Important Days
<p><i>Explain</i> the importance of the industrial revolution to global scientific and technological thought</p> <p><i>Critically question</i> the industrial revolution in terms of its sources, impact, and its effects</p> <p><i>Analyze</i> the ‘divergence’ between the West and China during the scientific and industrial revolutions</p> <p><i>Deconstruct</i> the ‘Needham Question’ in greater depth</p> <p><i>Describe</i> the role of the bureaucracy as a technology and its role in the divergent paths of the West and China</p>	<p><b><u>Week 6 – Asynchronous</u></b> (~3hrs 34mins):</p> <ul style="list-style-type: none"> <li>✓ 3.1: Pre-Industrial Period: Context of the Changes of the Industrial Revolution (15:21)</li> <li>✓ 3.2: The Industrial Revolution (19:56)</li> <li>✓ 3.3: Industrial Revolution or Evolution? Impact of the Changes (15:10)</li> <li>✓ 3.4: Industrial Revolution in the United States: The Rise of Science-Based Industry (11:47)</li> <li>✓ 3.5: Industrial Revolution in the United States: Development of Technical Education and Professional Engineer (14:32)</li> <li>✓ 3.6: Industrial Revolution in Britain: Critical Overview (18:30)</li> <li>✓ 3.7: Spread of the Industrial Revolution: Critical Overview (14:11)</li> <li>✓ 3.8: The Needham Question: In-depth Analysis (24:05)</li> <li>✓ 3.9: Deconstructing the “Needham Question” (17:18)</li> <li>✓ 3.10: Did the Scientific Revolution Not Take Place in China? (9:55)</li> <li>✓ 3.11: Bureaucracy as Technology I: The Case of China (11:56)</li> <li>✓ 3.12: Bureaucracy as Technology II: The Case of China (12:06)</li> <li>✓ 3.13: Effects of Bureaucracy and its Contribution to the ‘Divergence’ (12:51)</li> <li>✓ 3.14: The Flip Side of the Divergence and More Recent Chinese Passivity (8:29)</li> <li>✓ 3.15: Inability to Narrow the ‘Great Divergence’ (1820–1949) (7:20)</li> </ul>	<p>✓ <b>Quiz 3:</b></p> <p>About key knowledge related to the industrial revolution and the divergence of scientific and technological developments in China and the West.</p>

	<p><b><u>Week 7 - Synchronous</u></b> (~3hrs):</p> <ul style="list-style-type: none"> <li>✓ Q&amp;A about class videos (30:00);</li> <li>✓ Discussion: It is clear that the trajectory of the industrial revolution is very different in Great Britain and the United States. What social, cultural, or political factors explain this difference? (30:00)</li> <li>✓ Discussion: Great Britain industrialized without significant amounts of inward technology transfer. Yet, much of Europe relied on technology transfer from Great Britain. Given this difference, to what extent do you think technology transfer is important for industrialization? (30:00)</li> <li>✓ Discussion: Given the important role that bureaucracy played, what opinion(s)/position(s) do you hold in terms of conceptualizing bureaucracy as a ‘technology’? (30:00)</li> <li>✓ Group presentation: 1, 2 (20:00 each)</li> </ul>	<ul style="list-style-type: none"> <li>✓ <b>Quiz 3</b> due before class</li> <li>✓ <b>Written Assignment 2</b> due before class</li> <li>✓ <b>Written Assignment 3:</b> Pick a case illustrating the development of a technology during the Industrial Revolution  Briefly introduce the development of the technology  Briefly discuss the social, cultural, and political conditions conducive to and/or stimulating the development of the technology  Briefly discuss the social, cultural, and political impacts of the technology to society in the period immediately following its development</li> </ul>
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## [MODULE 4]

### Weeks 8 & 9: Impact of Modern Science and Technology (S&T) in China, and Systems of Innovation and Innovation Policy

Module 4 Readings: 1) Needham, Joseph. 1978. Science reborn in China: Rise and fall of the anti-intellectual ‘gang’. *Nature* 274 (August 31): 832–34.

2) “The ‘system of innovation’ approach, and its relevance to developing countries,” 1 April 2005, by SciDev.Net.

Learning Objectives	Learning Activities and Sequence	Assessments and Important Days
<p><i>Explain</i> briefly how science and technology have developed in China over the various periods in the last century</p> <p><i>Describe</i> how and why science and technology policy has become increasingly important in China</p> <p><i>Demonstrate</i> the usefulness of the innovation systems conceptual approach</p> <p><i>Apply</i> the innovation systems conceptual approach to understand China’s emerging innovation system</p>	<p><b><u>Week 8 - Asynchronous</u></b> (~4hrs):</p> <ul style="list-style-type: none"> <li>✓ 4.1: Science and Technology in the Early People’s Republic of China (21:55)</li> <li>✓ 4.2: Reforms in Science and Technology in China (15:40)</li> <li>✓ 4.3: The Role of Science and Technology in China (15:24)</li> <li>✓ 4.4: The Chinese Model of Growth: Success and Challenges (17:36)</li> <li>✓ 4.5: Development of Science, Technology and Innovation Policy (19:07)</li> <li>✓ 4.6: Framework Conditions for Innovation: Education, Competition, Corporate Governance and Financing of Innovation (14:01)</li> <li>✓ 4.7: Framework Conditions for Innovation: Intellectual Property Rights, Standards and Public Procurement (15:22)</li> <li>✓ 4.8: Main Features of China’s Innovation System (10:53)</li> <li>✓ 4.9: Importance and Relationship of Research and Development to Innovation (15:00)</li> <li>✓ 4.10: Innovation Systems (11:17)</li> <li>✓ 4.11: The Innovation Systems Conceptual Approach (15:19)</li> <li>✓ 4.12: Advantages and Disadvantages of the Innovation Systems Conceptual Approach (12:09)</li> <li>✓ 4.13: Main Actors in an Innovation System (17:30)</li> <li>✓ 4.14: Importance of Linkages in Innovation Systems (15:06)</li> <li>✓ 4.15: Innovation Systems and Innovation Policy (14:20)</li> <li>✓ 4.16: Status of China’s Emerging Innovation System (17:25)</li> </ul>	<p>✓ Quiz 4: About the Innovation Systems conceptual approach</p>

	<p><b><u>Week 9 - Synchronous</u></b> (3hrs):</p> <ul style="list-style-type: none"> <li>✓ Q&amp;A about class videos (30:00)</li> <li>✓ Discussion: What are the advantages or attractions of the ‘linear model of innovation’? What are its disadvantages? (30:00)</li> <li>✓ Discussion: Based on your knowledge, in what aspects of the framework conditions do you think China does or does not excel? (30:00)</li> <li>✓ Discussion: Explain in your own words why it is that some countries, such as the Scandinavian countries, Japan, the USA, etc., are willing to spend so much of their GDP on R&amp;D while other countries (which may also be relatively rich) are unwilling to do so? (30:00)</li> <li>✓ Group Presentation: 3, 4 (20:00 each)</li> </ul>	<ul style="list-style-type: none"> <li>✓ <b>Quiz 4</b> due after the class</li> <li>✓ <b>Written Assignment 3</b> due before the class</li> <li>✓ <b>Written Assignment 4:</b></li> </ul> <p>With the help of knowledge about scientific revolutions (with special attention to Thomas Kuhn’s work), briefly explain the ‘failure’ of China to develop a scientific revolution. You may also want to briefly discuss the social, cultural and political conditions that made it difficult for China to develop a scientific revolution.</p>
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## [WEEKLY TOPICAL ISSUES]

### Week 10: Technology Policy in China, 1980–2000

Week 10 Reading: Cong Cao, Ning Li, Xia Li, and Li Liu. 2013. “Reforming China’s S&T System.” *Science* 341 (2 August):460–462.

Learning Objectives	Learning Activities and Sequence	Assessments and Important Days
<p><i>Evaluate</i> the development of and changes in technology policy in China, 1980–2000</p>	<p><b><u>Week 10 - Synchronous</u></b> (~3hrs):</p> <ul style="list-style-type: none"> <li>✓ Lecture: Technology Policy in China, 1980–2000 (1hr)</li> <li>✓ Q&amp;A about the lecture (30:00)</li> <li>✓ Discussion: What aspects of China’s technology policy do you think is successful and problematic (30:00)?</li> <li>✓ Group presentation: 5, 6 (20:00 each)</li> </ul>	<ul style="list-style-type: none"> <li>✓ <b>Written Assignment 4</b> due before the class</li> <li>✓ <b>Group presentation:</b> two groups per 1.5 hours class</li> </ul>

### Week 11: Recent (post-2000) Transformation of China’s Innovation System

Week 11 Reading: Huang, Can and Naubahar Sharif. “Global Technology Leadership: The Case of China.” *Science and Public Policy* 43, no.1 (2016): 62-73.

Learning Objectives	Learning Activities and Sequence	Assessments and Important Days
<p><i>Analyze</i> the development of and changes in China’s innovation system after 2000.</p>	<p><b><u>Week 11 - Synchronous</u></b> (~3hrs):</p> <ul style="list-style-type: none"> <li>✓ Lecture: Recent (post-2000) Transformation of China’s Innovation System (1hr)</li> <li>✓ Q&amp;A about the lecture (30:00)</li> <li>✓ Discussion: What aspects of China’s technology policy after 2000 do you think show an improvement or transformation from the erroneous or underdeveloped aspects of the technology policy in the 1980–2000 period? (30:00)</li> <li>✓ Group presentation: 7, 8 (20:00 each)</li> </ul>	<ul style="list-style-type: none"> <li>✓ <b>Group presentation:</b> two groups per 1.5 hours class</li> </ul>

## Week 12: Future Prospects for China’s Technological Innovation

Week 12 Reading: Weiss, Jessica Chen. “A World Safe for Autocracy: China’s Rise and the Future of Global Politics”. *Foreign Affairs* 98 (2019): 92–109.

Learning Objectives	Learning Activities and Sequence	Assessments and Important Days
<p><i>Define</i> the future prospects for China’s innovation system (based on past development)</p>	<p><b><i>Week 12 - Synchronous</i></b> (~3hrs):</p> <ul style="list-style-type: none"> <li>✓ Lecture: Future Prospects for China’s Technological Innovation (1hr)</li> <li>✓ Q&amp;A about the lecture (30:00)</li> <li>✓ Discussion: What aspects of China’s technology policy do you think need improvement or transformation in the recent future? (30:00)</li> <li>✓ Group presentation: 9, 10 (20:00 each)</li> </ul>	<p>✓ <b>Group presentation:</b> two groups per 1.5 hours class</p>

## Week 13: Wrap up, Review, Survey

*Asynchronous:* **Post-course Survey** (20mins)

*Synchronous:* **Wrap up and Review** (1hr, 30mins)

### Academic Integrity

Please be informed of the University’s policy on academic integrity, which can be found online. In this course, violation of academic integrity includes: (i) cheating on examinations or quizzes, (ii) copying written assignments from other students or from works by other authors without citation, and (iii) claiming credit for work that you have not done.

Special care will be given to detecting plagiarism in written assignments. A zero score will result for that written assignment if plagiarism is detected for the first time. Repeat offenders will be referred to the University for disciplinary action as prescribed under the University’s policy on academic integrity.

A useful guide to APA 6<sup>th</sup> Edition citations: <https://libguides.ust.hk/apa>.

**Grading Rubric for Written Assignments** (the three criteria are weighted evenly in grading):

<b>Grading Criteria</b>	<b>5 (Exemplary)</b>	<b>4 (Very good)</b>	<b>3 (Good)</b>	<b>2 (Satisfactory)</b>	<b>1 (Beginner)</b>
<b>Selection and Relevance of the Topic</b>	The topic is clearly identified and highly relevant to the requirement of the written assignment.	The topic is relatively clearly identified, and is overall relevant to the requirement of the written assignment.	The topic is somewhat clearly identified, and is only loosely relevant to the requirement of the written assignment.	The topic is somewhat clearly identified or the topic is loosely relevant to the requirement of the written assignment, but the two standards are not achieved simultaneously.	The topic is neither clearly identified nor relevant to the requirement of the written assignment.
<b>Argument and Evidence</b>	The piece of writing informs the argument with clear, concise, compelling, and factually correct evidence. The analysis of the evidence is comprehensive and critical. The argument is logically coherent.	The piece of writing informs the argument with clear, concise, and factually correct—although not necessarily compelling—evidence. The analysis of the evidence is comprehensive but not necessarily critical. The argument is logically coherent.	The piece of writing provides informs the argument with factually correct—although not necessarily compelling, clear, and concise—evidence. The analysis of the evidence is overall comprehensive but not necessarily critical. The argument may have minor coherence issues.	The piece of writing informs the argument with factually correct—although not necessarily compelling, clear, and concise—evidence. The analysis of the evidence is neither comprehensive nor critical. The argument may have some coherence issues.	The piece of writing shows clear factual problems and the evidence is not compelling, clear, or concise. The analysis of the evidence is neither comprehensive nor critical. The argument may have major coherence issues.
<b>Structure and Writing</b>	The piece of writing is well structured. Each part is logically connected with the others. The writing is fluent and grammatically sound.	The piece of writing is well structured. Each part is logically connected with the others. The writing is overall fluent, but there are some grammar problems.	The piece of writing is overall well structured. There may be some logical connection problems. The flow of the writing is adequate, with some grammar problems.	The structure of the piece of writing is unclear or unbalanced. The parts are logically connected to each other poorly. The flow of the writing is adequate, with frequent grammar problems.	The structure of the piece of writing is unclear or unbalanced. The parts are poorly logically connected to each other. There are major problems with grammar and sentence structure.