



Figure 1: Vertical section of the main building of an [RBMK reactor](#).

ENERGY 89S: Energy & Society, Sp. 2021

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FIXED DEADLINES

#	Date	Assignment
1	Tues., Feb. 16	Annotated Bibliography
2	Thurs., Feb. 18	Oral Exam #1
3	Tues., Feb. 23	Project Pitches
4	Thurs., Mar. 25	Oral Exam #2
5	Thurs., Apr. 15	Oral Exam #3
6	Tues., Apr. 20	Slide Decks
7	Tues., Apr. 27	Memoranda

COURSE RESOURCES



[Tom J. Cing-Mars, Ph.D.](#)



[Sakai](#)



[Duke Libraries](#)



[Google Drive](#)



[Duke Energy Initiative](#)

ENERGY 89S

Energy & Society

Spring 2021

Tues. & Thurs., 1:45-3:00pm
[Zoom Meetings](#)

[Tom J. Cinq-Mars & Will Niver](#)
[Virtual Office Hours](#)

1. PURPOSE



Figure 2: Front page news four days after the [Chernobyl disaster of 1986](#)

In 1984, [Charles Perrow](#), a sociologist at Yale, published a book that revolutionized how we think about safety and risk. Entitled [Normal Accidents](#), the book reframed catastrophic failures of indispensable technologies as inevitable events. Like nets made of chains, these technologies brought together many strands or systems that not only supported each other, but also coupled together in tight groups. When one link in any chain broke apart, other chains became overburdened and separated as well, causing an entire net to come undone. This [built-in complexity](#), Perrow argued, meant that chemical factories, aircraft, and nuclear reactors would all fail eventually regardless of human intervention. Perrow's analysis proved prescient. A few months after the book went to press, a [leaky pesticide plant](#) in Bhopal, India killed nearly 3,000 people. About a year later, the [space shuttle Challenger](#) exploded. And just three months after that, Chernobyl. Normal accidents, in short, became the norm.

Perrow helped to teach the world that every technological disaster has a political, social, and cultural context – in sort, a history, one that begins long before the day of visible failure. Taking this lesson as a point of departure, this course explores relationships between one broad class of technologies, energy systems, and the human societies that create them. The exploration unfolds in three units. In the first unit, we investigate some principal energy systems of *preindustrial* societies: torches, sailing ships, and horse-drawn carriages. In the second, we look at the more complex apparatus of *industrializing* societies, or those adopting fossil fuels. And in the third, we examine the trappings of more contemporary *industrialized* societies to get a sense of what humanity's energy future might look like. Along the way, we will hone skills in critical thinking, global reading, and persuasive writing with the aim of becoming better citizens of our university, our communities, and ultimately, our entire planet. Working together, we might even help make "normal accidents" a thing of the past.

2. OBJECTIVES

#	Bloom Level	Description	Assessment(s)
1	REMEMBER	Recall the major themes, questions, and research agendas of the field of energy studies .	Annotated Bibliography
2	UNDERSTAND	Explain the three fundamental components of human energy systems and how they interact.	Annotated Bibliography
3	APPLY	Interpret local, national, and global energy system transitions in terms of universal patterns.	Longhand Notes, Class Discussions, and Oral Exams
4	ANALYZE	Draw connections between the organization of human energy systems and societies across space as well as over time.	Longhand Notes, Class Discussions, and Oral Exams
5	EVALUATE	Assess the ability of societies to regulate energy systems fairly in terms of costs and benefits across space as well as over time.	Longhand Notes, Class Discussions, and Oral Exams
6	CREATE	Craft portions of a congressional briefing on a human energy system.	Research Project
7	COLLABORATE	Work together peers to conceive, prepare, and present the same congressional briefing above.	Research Project

3. ASSESSMENTS

To meet our objectives, we will complete three assessments of several assignments each. Rubrics for specific assignments will be distributed throughout the term.

#	Assignment	% Final Grade	Occurrences
1	PARTICIPATION	40%	
	Class Discussion	10%	∞
	Longhand Notes	15%	15
	Oral Exam	15%	3
2	RESEARCH BOOT CAMP	30%	
	Annotated Bibliography	15%	1
	Project Pitch	15%	1
3	TEAM RESEARCH PROJECT	30%	
	Group Presentation	10%	1
	Slide Deck	10%	1
	Memorandum	10%	1

4. GRADING POLICY

1. Always working as a team, Tom and Will grade assignments according to specified rubrics based on a standard, 4.0 [grading scale](#).
2. They adhere to fixed deadlines and will not revisit grades after posting them.
3. However, they will also seek to accommodate, within reason, any student who provides advance notice of a need or special request on any assignment.

5. EXTRA CREDIT

Those interested in earning bonus points will have opportunities to do so.

#	Opportunity	Requirements	Bonus
1	AUXILIARY NOTES	<ul style="list-style-type: none"> – On the calendar below, look for the <u>five days</u> where the words “Auxiliary Notes” appear in the Assignment column. – Prepare paper notes on the specified readings according to the longhand notes assignment guide. – Submit your notes via the course Sakai site’s Drop Box tool <u>before</u> class time. 	One point to the longhand notes grade (max. three)
2	ENERGY INITIATIVE (EI) VIRTUAL EVENTS	<ul style="list-style-type: none"> – Register for an <u>any</u> EI virtual event. – Attend the event for its duration. – Send an email to Tom <i>and</i> Will with a <u>screenshot</u> of the Zoom call or presentation showing your face. – Include a <u>three-sentence caption</u> that contains your personal reflections or a quote from a speaker. – Send the email within <u>six hours</u> of the event’s end. 	One point to the <i>Oral Exam</i> grade (max. three)
3	TEAM RESEARCH COMPETITION	<ul style="list-style-type: none"> – Earn the highest score in the on for your team’s presentation from a panel of three volunteer judges. 	Five points to the research project grade

6. REQUIRED MATERIALS

We will all participate in hands-on activities during three lessons. To prepare for these activities, please purchase the four materials below from [Eisco Labs](#). Anyone who needs assistance acquiring these materials should contact Tom and Will immediately.

#	Item & Link	Cost	Class Date
1	Raw Carbonaceous Shale Specimen	\$7.29	Tues., Mar. 2
2	Basic Beginner Circuit Kit	\$13.99	Tues., Mar. 30
3	Raw Graphite Specimen	\$7.99	Tues., Apr. 6

7. EXPECTATIONS

Throughout the term, we all promise to abide by three core policies.

1. Attendance

- 1.1. Attendance in every class along with active and respectful engagement in all class discussions are required.
- 1.2. Excessive tardiness, including arrival more than five minutes after class begins without prior notification, counts as an absence.
- 1.3. Notify Tom and Will of any absences, especially absences for health reasons, beforehand whenever possible.

2. Academic Integrity

- 2.1. All written tasks must be completed before class time on the due date unless otherwise specified or prior arrangements are made.
- 2.2. All written work must give proper credit where credit is due, enabling readers to see proper attributions to all sources mentioned, quoted, and discussed.
- 2.3. So that there is no doubt, review the university's resources on avoiding plagiarism before starting any writing assignment.
- 2.4. For useful writing tips, consult tutors virtually through the TWP Writing Studio.
- 2.5. Any concern about intellectual dishonesty will result in a formal investigation by an Academic Dean. Therefore, remember the Duke Community Standard.

3. Accommodations

- 3.1. Since all students have the right to have certain accommodations met, it's best to notify Tom and Will about any needs as soon as possible.
- 3.2. Every possible effort will be made to provide the necessary assistance in a timely and confidential manner.
- 3.3. All students requesting accommodations must be registered with Duke's Disability Management System.
- 3.4. To guard against unanticipated events, Tom and Will reserve the right to modify any part of this syllabus at any time for any reason.
- 3.5. Students will be notified of any syllabus changes as soon as possible.

8. ORGANIZATION & CALENDAR

This course is divided into three units of about seven classes each. To prepare for most classes, we will engage paired scholarly texts and primary sources. On the calendar below, scholarly texts are marked with an asterisk (*) and primary sources with a dagger (†), while assignment guides as well as readings not requiring longhand notes are left unmarked. We encourage everyone to read these materials in the order in which they are listed, i.e. starting with the *scholarly texts*. Topically and geographically, most readings focus on Eurasia, or the area now included within the Commonwealth of Independent States. During class, we will use these readings as entry points into discussions of specific technologies and related theoretical concepts. The technologies and concepts to be discussed are indicated in the **Topics** column.

9. UNIT I: PREINDUSTRIAL SOCIETY

#	Date	Topics	Readings	Assignment
1	Thurs., Jan. 21	Introduction: Normal Accidents	N/A	N/A
2	Tues., Jan. 26	The Torch & “The Pristine Myth”	<ul style="list-style-type: none"> – * Michael Williams, <i>Deforesting the Earth: From Prehistory to Global Crisis, An Abridgement</i> (Chicago: University of Chicago Press, 2006), Chapter Two. – † James Cook, <i>A Voyage Towards the South Pole and Round the World, Vol. 1</i> (London: W. Strahan and T. Cadell in the Strand, 1777), 107–14. – Assignment Guide #1: Longhand Notes 	Longhand Notes #1
3	Thurs., Jan. 28	The Wooden Board & Legibility	<ul style="list-style-type: none"> – * Stephen Brain, <i>Song of the Forest: Russian Forestry and Stalinist Environmentalism, 1905-1953</i> (Pittsburgh, Penn.: University of Pittsburgh Press, 2011), Chapter One. – † William Tooke, “Book X, Section VII: Forest-Culture,” in <i>View of the Russian Empire... Vol. 1</i>, 2nd ed. (London: A. Strahan, 1800), 251–71. – Assignment Guide #2: Oral Exams 	Longhand Notes #2
4	Tues., Feb. 2	The Sail, The Cannon, & Promethean Discourse	<ul style="list-style-type: none"> – * Maria Di Salvo, “About Peter the Great’s Ship Predestinatsiia,” in <i>Word and Image in Russian History...</i>, edited by Maria Di Salvo et al (Boston: Academic Studies Press, 2015), 43–54. – † Cyprian A. G. Bridge, ed., <i>History of the Russian Fleet during the Reign of Peter the Great by a Contemporary Englishmen, 1724</i> (London: Navy Records Society, 1885), vii–x, 1–18. 	Longhand Notes #3

9. UNIT I: PREINDUSTRIAL SOCIETY, CONTINUED

#	Date	Topics	Readings	Assignment
5	Thurs., Feb. 4	The Bit, The Bridle, & Coevolution	<ul style="list-style-type: none"> – * Anthony W. Davis, <i>The Horse, the Wheel, and Language: How Bronze-Age Riders from the Eurasian Steppes Shaped the Modern World</i> (Princeton, N.J.: Princeton University Press), Chapter Ten. – † Thomas G. Winner, <i>The Oral Art and Literature of the Kazakhs of Russian Central Asia</i> (Durham, NC: Duke University Press, 1958), 71–85. – ‡ Assignment Guide #3: Annotated Bibliographies 	Longhand Notes #4
6	Tues., Feb. 9	The Slave & Scientific Management	<ul style="list-style-type: none"> – * S. D. Purlevskii, <i>A Life Under Russian Serfdom: The Memoirs of Savva Dmitrievich Purlevskii, 1800-1868</i>, edited by Boris B. Gorshkov (New York: Central European University Press, 2005), Introduction – † Ibid, Chapter Eight. – ‡ Assignment Guide #4: Project Pitches 	Longhand Notes #5
7	Thurs., Feb. 11	Research Tips, Part I	<ul style="list-style-type: none"> – * Jim Cullen, <i>Essaying the Past: How to Read, Write and Think about History</i>, 2nd ed. (Maldon, Mass.: Wiley, 2012), Chapter Three. – † Wayne C. Booth et al, <i>The Craft of Research</i>, 3rd ed. (Chicago: University of Chicago Press, 2008), Chapter Three. 	Auxiliary Notes #1
8	Tues., Feb. 16	Writing Habits, Part I	<ul style="list-style-type: none"> – Anne Lamott, “Shitty First Drafts,” in <i>Language Awareness: Readings for College Writers</i>, 9th ed., edited by Paul Eschholz et al (Boston: Bedford/St. Martin’s, 2005): 93-96. – William Zinsser, <i>On Writing Well: An Informal Guide to Writing Nonfiction</i>, 2nd ed. (New York: Harper & Row, 1980), 3-18. 	Auxiliary Notes #2; Annotated Bibliography
9	Thurs., Feb. 18	Unit I Review	N/A	Oral Exam #1

10. UNIT II: INDUSTRIALIZING SOCIETY

#	Date	Topics	Readings	Assignment
10	Tues., Feb. 23	Pitch Day	<ul style="list-style-type: none"> – Chris Anderson, “How to Give a Killer Presentation,” <i>Harvard Business Review</i> 91, no. 6 (June 2013): <u>121-25</u>. – Mona Bushnell, “How to Prepare for a Presentation, Even if You’re Nervous,” <i>Business News Daily</i>, November 14, 2018. 	Auxiliary Notes #3; Project Pitches
11	Thurs., Feb. 25	Research Tips, Part II	<ul style="list-style-type: none"> – Erik Blair and Georgette Briggs, “Collaboration at a Distance: Exploring History, Communication, Trust and Socialization,” in <i>Critical Collaborative Communities: Academic Writing Partnerships, Groups, and Retreats</i>, ed. Nicola Simmons and Ann Singh (Boston: Brill, 2019), <u>29–42</u>. 	Auxiliary Notes #4
12	Tues., Mar. 2	The Market & Regulatory State	<ul style="list-style-type: none"> – * John P. McKay, “Entrepreneurship and the Emergence of the Russian Petroleum Industry, 1813-1883,” <i>Research in Economic History</i> 8 (1983): <u>47–91</u>. [Sakai] – † J. D. Henry, Baku: An Eventful History (London: Archibald Constable & Co. Ltd., 1905), <u>Chapter Three</u>. 	Longhand Notes #6
13	Thurs., Mar. 4	The Fuel Injector & Collective Invention	<ul style="list-style-type: none"> – * Nuno Luís Madureira, “Oil in the Age of Steam,” <i>Journal of Global History</i> 5, no. 1 (March 2010): <u>75–94</u>. – † Charles Marvin, The Region of Eternal Fire: An Account of a Journey to the Petroleum Region of the Caspian in 1883, 2nd ed. (London: W. H. Allen & Co., Ltd., 1891), <u>Chapter XVI</u>. 	Longhand Notes #7
14	Thurs., Mar. 11	Writing Habits, Part II	<ul style="list-style-type: none"> – Helen Sword, Stylish Academic Writing (Cambridge, Mass.: Harvard University Press, 2012), <u>Chapter One</u>. – Verlyn Klinkenborg, More Scenes from the Rural Life (New York: Princeton Architectural Press, 2012), <u>Chapter One</u>. 	Auxiliary Notes #5

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10. UNIT II: INDUSTRIALIZING SOCIETY, CONTINUED

#	Date	Topics	Readings	Assignment
15	Tues., Mar. 16	The Railroad & The Modern Enterprise	<ul style="list-style-type: none"> – * Anthony Heywood, “Spark of Revolution? Railway Disorganisation, Freight Traffic and Tsarist Russia’s War Effort, July 1914–March 1917,” <i>Europe-Asia Studies</i> 65, no. 4 (June 2013): 753–72. – † J. de Richter, “On the Question of Bookkeeping,” <i>Bulletin of the International Railway Congress</i> 19, no. 3 (1905): 1037–72. 	Longhand Notes #8
16	Thurs., Mar. 18	The Cartel & Price Rigidity	<ul style="list-style-type: none"> – * L. I. Borodkin and A. V. Dmitrieva, “Nobel Brothers Petroleum Company on the St.-Petersburg Stock Exchange: Factors of Share Prices Dynamics in the Early 20th Century,” <i>Revue Francaise d’histoire Economique</i> 7-8, no. 1 (2017): 50–70. – † V. A. Mukoseyev, “Money and Credit,” in <i>Russia: Its Trade and Commerce</i>, edited by Arthur Raffalovich (London: P. S. King & Son, Ltd., 1918), 352–417. [Excerpts] 	Longhand Notes #9
17	Tues., Mar. 23	The Empire & Energy Security	<ul style="list-style-type: none"> – * Peter Sluglett, “The Waning of Empires: The British, the Ottomans and the Russians in the Caucasus and North Iran, 1917–1921,” <i>Middle East Critique</i> 23, no. 2 (April 3, 2014): 189–208. – † Louis Fischer, “Oil Imperialism: The International Struggle for Petroleum” (New York: International Publishers, 1926), Chapter One. 	Longhand Notes #10
18	Thurs., Mar. 25	Unit II Review	N/A	Oral Exam #2

11. UNIT III: INDUSTRIAL SOCIETY

#	Date	Topics	Readings	Assignment
19	Tues., Mar. 30	The Grid & The Reverse Salient	<ul style="list-style-type: none"> – * Jonathan Coopersmith, The Electrification of Russia, 1880-1926 (Ithaca: Cornell University Press, 1992), <u>Chapter Six</u>. – † Maurice Dobb, “The Significance of the Five Year Plan,” <i>Slavonic and East European Review</i> 10 (January 1, 1931): <u>81–90</u>. 	Longhand Notes #11
20	Thurs., Apr. 1	Guest Lecture: With Great Power...	<ul style="list-style-type: none"> – * John G. Kassakian et al, The Future of the Electric Grid: An Interdisciplinary MIT Study (Cambridge, Mass.: MIT, 2011), <u>Chapter One</u>. – * Ibid, <u>Appendix B</u>. 	Longhand Notes #12
21	Tues., Apr. 6	The Bomb & Utopia	<ul style="list-style-type: none"> – * Kate Brown, <i>Plutopia: Nuclear Families, Atomic Cities, and the Great Soviet and American Plutonium Disasters</i> (New York: Oxford University Press, 2013), 75-104. – † “Handwritten notes by Igor V. Kurchatov, Director of the Soviet Nuclear Program, on a Meeting with Stalin, Beria and Molotov,” January 25, 1946, History and Public Policy Program Digital Archive. – † “Notes on the Discussion between I.V. Kurchatov, Lead Scientist for the Soviet Nuclear Effort, and Stalin,” January 25, 1946, History and Public Policy Program Digital Archive. 	Longhand Notes #13
22	Thurs., Apr. 8	The Dictator & The Resource Curse	<ul style="list-style-type: none"> – * Jeronim Perović and Dunja Krempin, “The Key Is in Our Hands:’ Soviet Energy Strategy during Détente and the Global Oil Crises of the 1970s,” <i>Historical Social Research</i> 39, no. 4 (150) (2014): <u>113–44</u>. – † CIA, Intelligence Memorandum: The Impending Soviet Oil Crisis, ER-77-10147, Washington, D.C., March 1977). 	Longhand Notes #14

11. UNIT III: INDUSTRIAL SOCIETY, CONTINUED

#	Date	Topics	– Readings	Assignment
23	Tues., Apr. 13	The Platform & Peak Oil	<ul style="list-style-type: none"> – * Emma Wilson, “New Frontiers for the Oil and Gas Industry: Company-Community Relations on Sakhalin Island,” <i>Cambridge Anthropology</i> 26, no. 2 (2006): 13–33. – † Vishwas P. Gupta et al., “Case History of a Challenging Thin Oil Column Extended Reach Drilling (ERD) Development at Sakhalin” (SPE/IADC Drilling Conference, OnePetro, 2013). 	Longhand Notes #15
24	Thurs., Apr. 15	Unit III Review	– N/A	Oral Exam #3
25	Tues., Apr. 20	Symposium, Part 1	– N/A	Slide Decks
26	Thurs., April 22	Symposium, Part 2	– N/A	

12. FURTHER READING

Books

- Andrews, Thomas G. [*Killing for Coal: America's Deadliest Labor War*](#). Cambridge, Mass.: Harvard University Press, 2008.
- Bernstein, Jeremy. [*Plutonium: A History of the World's Most Dangerous Element*](#). Washington, D.C.: Joseph Henry Press, 2007.
- Coll, Steve. [*Private Empire: ExxonMobil and American Power*](#). New York: Penguin Press, 2012.
- Gustafson, Thane. [*The Bridge: Natural Gas in a Redivided Europe*](#). Cambridge, Mass.: Harvard University Press, 2020.
- Shamir, Ronen. [*Current Flow: The Electrification of Palestine*](#). Stanford, Calif.: Stanford University Press, 2013.
- David M. Turner, Daniel Blackie. [*Disability in the Industrial Revolution: Physical Impairment in British Coalmining, 1780-1880*](#). Manchester, UK: Manchester University Press, 2018.

Articles

- Barak, On. "Three Watersheds in the History of Energy." *Comparative Studies of South Asia, Africa and the Middle East* 34, no. 3 (2014): 440–53. <https://doi.org/10.1215/1089201x-2826025>.
- Calvert, Kirby, Kirsten Greer, and Margot Maddison-MacFadyen. "Theorizing Energy Landscapes for Energy Transition Management: Insights from a Socioecological History of Energy Transitions in Bermuda." *Geoforum* 102 (June 1, 2019): 191–201. <https://doi.org/10.1016/j.geoforum.2019.04.005>.
- Clark, Nigel, and Kathryn Yusoff. "Combustion and Society: A Fire-Centered History of Energy Use." *Theory, Culture & Society* 31, no. 5 (September 1, 2014): 203–26. <https://doi.org/10.1177/0263276414536929>.
- Huber, Matthew T, and James McCarthy. "Beyond the Subterranean Energy Regime? Fuel, Land Use and the Production of Space." *Transactions of the Institute of British Geographers* 42, no. 4 (December 1, 2017): 655–68. <https://doi.org/10.1111/tran.12182>.
- Mohsin, Anto. "Lighting 'Paradise': A Sociopolitical History of Electrification in Bali." *East Asian Science, Technology and Society: An International Journal* 11, no. 1 (February 17, 2017): 9–34. <https://doi.org/10.1215/18752160-3489218>.