



DEPARTMENT OF ARTS AND EDUCATION

COURSE OUTLINE – FALL 2020

SO 3500 (A2) – Sociology of Science and Technology

INSTRUCTOR: René R. Gadacz- **PHONE:** 780.539.2831
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OFFICE HOURS: Remote: Monday to Friday, from 08:30 hrs. to 18:00 hrs.

PREREQUISITE(S)/COREQUISITE(S): SO 1000 or permission of the instructor

REQUIRED TEXT(S)/RESOURCE MATERIALS: (1) Anabel Quan-Haase, 2016 2nd edition, Technology and Society: Social Networks, Power, and Inequality. Oxford; (2) Carl Frey, 2019, The Technology Trap: Capital, Labor, and Power in the Age of Automation. Princeton University Press: Princeton (NJ); (3) Mark Dodgson & David Gann, 2018, 2nd edition, Innovation: A Very Short Introduction. Oxford University Press: Oxford.

FALL 2020 DELIVERY: Remote Delivery. This course is delivered remotely. There are no face-to-face or on-site requirements. **Students must have a computer with a webcam and reliable internet connection.** Technological support is available through helpdesk@gprc.ab.ca.

CALENDAR DESCRIPTION: The sociological study of science and technology integrating technical, social, economic and political empirics and theory. Examines the fundamental assumptions of science and technology and their role in addressing and impacting social and natural world issues. An overview of the ways social structures and processes shape, and are shaped by, scientific practice, technological innovation, and knowledge-building.

CREDIT/CONTACT HOURS: 3 (3-0-0) UT 45 hours

DELIVERY MODE(S): lectures, class discussion, group work, class presentations, written tests, written projects

COURSE OBJECTIVES: To introduce students to the sociological study of science and technology to answer questions like ‘does technology control our lives’ and ‘is the idea of inevitable exponential technological progress justified’. To explore the central dichotomy between the ideal of science as rational and objective and the reality of scientific practice as social human endeavor. To examine how scientific revolutions and technological innovations have shaped economic, political and social life over the last four Industrial Revolutions. To explore issues relating to advances in IT, automation, AI, robotics, the Internet of Things, quantum computing, nano- and neuro-technology with respect to their anticipated ‘disruptive’ impact on our well-being, social relationships, quality of life, productivity, and growth.

LEARNING OUTCOMES: After taking this course, students will be able to define the basic tenets STS, SCOT, and ANT. They will also be able to identify how the processes of research, discovery, invention, innovation, and diffusion are influenced by competing knowledge claims and how scientific endeavors and technological innovations serve political and powerful commercial interests. They will be able to demonstrate how emerging ‘disruptive’ technologies have the potential to reinforce inequities and generate as-yet uncertain transformative consequences for social and cultural life.

TRANSFERABILITY: Grade of C- may not be acceptable for transfer to other post-secondary institutions. Transfers to: UA, AU, UC, UL, AF, MRU, GMU

STATEMENT ON PLAGIARISM AND CHEATING:

Please refer to the College Policy on Student Misconduct: Plagiarism and Cheating at www.gprc.ab.ca/about/administration/policies/

GRADING CRITERIA:

GRANDE PRAIRIE REGIONAL COLLEGE			
GRADING CONVERSION CHART			
Alpha Grade	4-point Equivalent	Percentage Guidelines	Designation
A⁺	4.0	91 – 100	EXCELLENT
A	4.0	86 – 90	
A⁻	3.7	81 – 85	FIRST CLASS STANDING
B⁺	3.3	77 – 80	
B	3.0	73 – 76	GOOD
B⁻	2.7	69 – 72	
C⁺	2.3	66 – 68	SATISFACTORY
C	2.0	63 – 65	
C⁻	1.7	60 – 62	
D⁺	1.3	55 – 59	MINIMAL PASS
D	1.0	50 – 54	
F	0.0	0 – 49	FAIL
WF	0.0	0	FAIL, withdrawal after the deadline

EVALUATIONS:

Mid-Term Exam (20%)..... October 21
 Final Exam (30%)..... TBA
 Google 'Teckie Talk' (5 x 2% = 10%)..... starts Sept. 11
 Book Reviews (2 x 10% = 20%)..... Oct. 7; Nov. 25
 Research Project (1 x 20%)..... December 2

STUDENT RESPONSIBILITIES:

EXAMS: The *Mid-Term Exam* may consist of multiple-choice questions and/or short definition questions (20%), as likely will the *Final Exam* (30%).

SEMESTER WORK: Here's the basic breakdown:

- (1) Google 'Teckie Talk' (x 5) – choose a link from Google and discuss the article or item *in the context of our textbook, lectures, and related readings* (10 mins; submit printed story with your name). *A short introductory list of website links will be provided. You take it from there!*
- (2) Book reviews (x 2) – choose **two** of the books listed in my **Beginners Guide to Cool Technology Books** and hunt down and summarize, in your own words, published reviews of the books – from academic, popular, print, and electronic media sources. Were the reviews critical? Positive or negative? What did the reviewers argue about? Relate to our course material (e.g. definitions, theories, genres, and issues in science and technology studies).
- (3) Research Project (x 1) – choose an image from René's **Gadgets & Gizmos Foto File!** The **File** contains images and photos of technology items and/or fragments of items from the Four Industrial Revolutions. *Instructions and details as the course progresses!*

What the semester course work entails will be discussed in more detail as classes get underway and as the course progresses. You will be provided with other instructions and more relevant information in class/on BrightSpace with plenty of lead time regarding the Google 'Teckie Talk' presentations, the book reviews, and the Research Project.

PLEASE NOTE:

A missed exam unfortunately cannot be accommodated - *unless* the situation is an unexpected personal or family emergency.

Any late work will result in an automatic loss of 5 percent (of the value of the work) PER DAY INCLUDING WEEKENDS, up to and including the day of a late submission, unless prior arrangements based on extenuating circumstances have been made. Documented personal or family emergencies will be accommodated. Example: if an

assignment is valued at 10%, one day late makes it 5%. Forgetfulness and/or poor planning won't be accommodated.

COURSE SCHEDULE/TIMELINE (Fall, 2020)

Please note that the topic sequence below is tentative and that topics and subject matter related to the main text (Quan-Haase 2016) are subject to change. Also note that chapter topics in Q-H will be heavily supplemented by material from many other sources (see my 'Beginners Guide to Cool Technology Books' posted for this course).

September 2, 4 – Course outlines and discussion of course requirements; meet-and-greet... background: science vs. nonscience; the scientific attitude; start reading **Q-H**, Chapter 1...

September 9, **11** – **Q-H**, Chapter 1, continued; science, technology, and the sociological imagination; socio-cultural evolution and complexity; models of social evolution (L. Morgan, K. Marx, L. White); technology and economics, production and growth (Rostow, Kuznets, Schumpeter, Kurzweil) **11th - Google 'Teckie Talks' start!**

September 16, 18 – Cont'd; **Q-H**, Chapter 2: history of technology; in-depth definitions of technology; brief survey of genres in technology studies - STS (science and technology studies), SCOT (social construction of technology), ANT (actor-network theory), and CDS (critical discourse studies)

September 23, 25 – Cont'd; **Q-H**, Chapter 3: theories of technology and society; determinism; instrumentalism; social constructionism; dependency; beliefs in progress

September 30, October 2 – Cont'd; over-view of the contributions of the 'originals' – M. McLuhan, H. Marcuse, J. Ellul, M. Heidegger

October 7, 9 – Cont'd; introduction to the four industrial revolutions; the 1st (mechanization, steam power, water power); the 2nd (electricity, assembly line, mass production, analog)

October 14, 16 – No classes this week – Fall Break

October **21**, 23 – Cont'd; the 3rd (automation, digitalization, computers, the internet); the 4th (robotics, AI, quantum computing, internet of things, autonomous vehicles, fifth generation wireless, nanotechnology) **Mid-Term Exam on the 21st**

October 28, 30 – Cont'd; **Q-H**, Chapter 5 & 6: technological design; technopoles; fundamental science; research & development; processes of discovery, invention, development, innovation, diffusion

November 4, 6 – Cont'd; **Q-H**, Chapter 7: contextual issues – manufacture of needs; struggles with technology and the effects on labor, the labor force, and the idea of work – changes over time through the 4 industrial revolutions

November **11**, 13 – Cont'd; **Q-H**, Chapter 4 & 8: gender and technology; technology and inequality; the 'digital divide'; technology and values, stakeholders, human rights – changes over time through the 4 industrial revolutions **No class on the 11th**

November 18, 20 – Cont'd; **Q-H**, Chapter 9 & 10: the impact of technology on social relationships; the pace of technological change and its consequences – technological 'disruptions' and changes over time through the 4 industrial revolutions

November 25, 27 – Cont'd; **Q-H**, Chapter 11: science and technology as power; technology, surveillance and social control; the political economy of science and technology

December 2, 4 – Cont'd; **Q-H**, Chapter 12: ethical and moral dimensions of science and technological development; controversies; technological 'fixes'; 'big science' and 'big data'; pseudoscience; denialists and the war on science

December 9 – Cont'd; carry-over & unfinished business; wrap-up; final exam preparations

[Classes end December 9, 2020 – Final exams December 11-19, 2020]

Six Ways To Make This Course More Valuable:

- 1. Participate, to engage your learning**
- 2. Question, to enhance your learning**
- 3. Read, to expand your learning**
- 4. Reflect, to measure your learning**
- 5. Apply, to transfer your learning**
- 6. Innovate, to adapt your learning**