

The Wharton School, University of Pennsylvania
Department of Management
Office Hours: Tuesdays 3:30-4:30pm
and Thursdays 4:30-5:30pm or by appointment

Professor John Paul MacDuffie
3105 SH-DH, 215-898-2588
macduffie@wharton.upenn.edu

MANAGEMENT 243

Work and Technology: Choices and Outcomes

Spring 2022 Syllabus

Q3: January 13 - March 3 (Tuesday, Thursday) - 12:00-1:30pm

Q4: March 15 - April 28 (Tuesday, Thursday) - 1:45-3:15pm

(version 1.0 – October 28, 2021)

Purpose and Course Description

This half-semester (0.5 CU) course is organized in three modules. The first module “**Technology and Its Impact on Work**” starts by considering the types of technologies whose impact concerns us and probing “what’s so scary” about them. We’ll continue by considering past scares related to automation and evaluate the extent to which the “worst-case” scenarios about, for example, employment loss have or have not come to pass. A close look at the evolution of robots will provide further specificity and context. Next we probe the “skill-biased technological change” hypothesis -- how economists see the impact that new technologies have on wages, jobs, and skills – in terms of the argument and the evidence, while also taking a close look at some affected occupations. We will contrast this perspective with a “task-biased technological change” view, which arguably better fits the reality of how automation affect jobs and leaves more scope for active human choices about implementation. This module concludes by evaluating the claim that “this time it’s different”, i.e. because artificial intelligence (AI), via machine learning, can take over many more cognitive tasks performed by humans, with the potential for much higher displacement.

The second module “**Technology and Managing People**” examines how traditional practices of managing human and social capital are being transformed by new technologies that give managers new ways to enact control and new means to induce commitment. While having technology taking on a dominant role in the shaping and directing of work tasks is nothing new, the all-encompassing scope and pervasive influence of AI on customary “managing people” functions is also prompting “this time it’s different” discussions. Recruitment and hiring are processes that are more and more affected by algorithmic filtering and decision tools. The micro-monitoring of people as they work and fluid adjustment of work schedules based on customer demand are two other trends turbo-charged by new technological capabilities. Particularly in “gig economy” jobs, ranging from Uber/Lyft to TaskRabbit/Upwork, algorithms provide all functions once performed by managers and supervisors, from hiring and task/job allocation to performance appraisal and compensation. Finally, in light of how the pandemic has dramatically accelerated “work from home” – to the extent that many organizations expect permanent changes in how and where work gets done – standard HR processes like “onboarding” and performance appraisal encounter new challenges.

In the third module “**Technology and Policy**” we will examine three “hot topics” about the consequences of new technologies for work and what to do about them. First is the “ethics of algorithms and artificial intelligence.” How should we think about who is responsible to identify,

evaluate, and address potentially biased (positive or negative) consequences of algorithms and AI applications for individuals? Does the responsibility lie with the employees at tech companies who are developing the digital products and services? With the company that employs them and owns the intellectual property? How best can tech employees voice ethical and political concerns about their work without imperiling their jobs? How should employers respond to those concerns? Second, we'll consider proposals for a "universal basic income" (UBI) premised on the idea that technological change will lead to an unprecedented amount of job displacement, exacerbating income inequality. The entire class will prepare to argue both "pro" and "con" perspectives on UBI. In class, I'll assign students randomly to preparing either a "pro" or "con" argument and then the two sides will present to each other, followed by a vote. Third we'll consider the premise that "technology makes us dumber" by taking tasks away that have helped humans maintain a certain level of competence -- driving a car, reading a map, doing surgery, flying an airplane, remembering facts -- and discuss the value of a "moral crumple zone" in the form of human accountability in situations such as autonomous vehicles where 100% automation is often considered the goal.

This course fits into the "Technology/Innovation/Analytics" category of Flex Fundamentals of the new undergraduate curriculum. The topics of this course are highly complementary to topics in other Wharton undergraduate courses in Legal Studies, Management, and OIDD but with little overlap. We hope to attract both students prioritizing the study of organizational/HR topics who want to know more about technology and operations strategies as well as those primarily studying technology and operations who want to understand more about work and employment practices, and the impact on economic and social outcomes for individuals, firms, and societies.

Because the issues related to technology and work are fast-changing and wide-ranging, I reserve the right to make changes in the content of this syllabus up to shortly before the course begins. In spring 2022, this course is offered twice – in Q3, from 12noon to 1:30pm and in Q4, from 1:45-3:15pm. In this version of the syllabus, both sets of dates are listed. I'll issue two updated syllabi, specific to the Q3 and Q4 courses, shortly before the first day of class.

Prerequisites: For Wharton students, it is advantageous to have taken the first-year required Wharton 101 course before taking this elective. Taking the core MGMT 101 class, either before or together with this elective, will also be helpful in understanding how organizations function in their environment and the context within which firms make strategic decisions. **The course is open to non-Wharton students.** Please email me at macduffie@wharton.upenn.edu to let me know why you are interested in taking the course.

Course Requirements

Students will be evaluated on class participation (25%), a group assignment (25%), an individual paper (25%) and in-class quizzes (25%)

- **The group assignment is due, posted on Canvas, at 11:59pm on Sunday February 6th (Q3) or Sunday April 3rd (Q4).**
- **The individual paper is due, posted on Canvas, at 11:59pm on Sunday February 20th (Q3) or Sunday April 17th (Q4).**
- **Quizzes are distributed in 12 of the 14 classes; there is no quiz for Session #1 (Introduction) or Session #13 (Debate on Universal Basic Income).**

Class Participation (25% of your grade)

This course requires a great deal of student involvement. Regular, on-time attendance is the foundation of a strong participation grade. Each class period will include discussion of the topics and issues at hand, both in full (plenary) sessions and in small group breakouts. Students will be graded on the quality of their comments in class, defined as adding substantively to class discussions and linking effectively to others' comments in the class. (Quantity is also measured but quality is weighted more heavily.) Contributions to discussion can take multiple forms, e.g., speaking up in class after raising one's hand, responding to a "cold" or "warm" call, or linking to another student's comment to move the discussion constructively forward. Polls and in-class exercises also count towards participation. In-class participation, across all types, constitutes 25% of your grade.

Group Assignment (25% of your grade)

In Hindsight is a small-group assignment in which you research a past technology, report on the hopes and fears accompanying its introduction into the workplace or the economy more generally, and assess (with the benefit of 20/20 vision looking back) the extent to which those hopes and fears were borne out – and, in addition, what unanticipated surprises occurred, for better or worse. You will be assigned randomly to groups with 2-3 members.

Your report will take the form of a PechaKucha – a format developed to encourage new ways of sharing content and stimulating conversation. PechaKucha's 20x20 presentation format consists of 20 chosen images, each shown for 20 seconds. In other words, you've got 400 seconds (6 minutes and 40 seconds) to tell your story, with visuals guiding the way. (PechaKucha means "chit chat" in Japanese.) I will provide further guidance on the assignment and the PechaKucha format, both in class and on Canvas. Technologically, a PechaKucha can be put together quite simply; think of a PowerPoint presentation with timed slide advances and pre-recorded voice-over narration. Ample online resources are available; I will steer you to them. **The PechaKucha is due at 11:59pm on Sunday February 6th (Q3) or Sunday April 3rd (Q4), on Canvas.**

Individual Paper (26% of your grade)

You will write an individual paper linked to the first two modules of the course, worth 26% of your final grade.

For this paper, you will interview a relative, friend, or other person that you encounter frequently in your life at Penn, asking about a job that person has had (current or past) which has been significantly affected by technology of some kind (old or new; mechanical or digital; hardware or software; in the workplace or when working remotely). I will provide you with a general interview protocol, tips on how to select an interview subject, and training on how to approach the interview, which should last no less than 30 minutes and no more than 60 minutes. I will also provide guidance on how to structure the paper in which you write up what you learn during this interview. For a top score, you will draw upon the topics, themes, and concepts of the first two course modules in writing up your observations and reflections. **This paper is due at 11:59pm on Sunday February 20th (Q3) or Sunday April 17th (Q4), posted on Canvas.**

In-class Quizzes (24% of your grade)

In 12 classes (out of 14), you will take an in-class quiz to assess your absorption and comprehension of the materials assigned for that day (readings, videos, lecture slides). Each quiz will consist of 4 questions and will contribute 2% of your final grade. Questions will be multiple choice; you will take the quiz on Canvas during a designated portion of class time; and your scores will be returned via Canvas. **There is no quiz for Session #1 (Introduction) or Session #13 (Debate on Universal Basic Income).**

Required Readings and Media

PENN COURSE RESERVE is the source for all readings in this course; there is no Study.Net coursepack. These readings include short articles from professional and academic journals, long-form journalism, and chapters from books.

We will use Canvas for courseware support. Many of the short articles, videos, and podcasts in the syllabus will be accessed directly from links provided within Canvas. You will also access the readings made available by Penn Course Reserve through Canvas. The syllabus, course slides, detailed assignment descriptions, and class session recordings will be posted there too. You will turn in assignments (individual and team) by uploading your papers to Canvas, and I will return grades and comments to you electronically. Teams will be created randomly; you will find your team assignment on Canvas at the “People” tab. Finally, I will post relevant articles or web links that come to my attention during the course, on Canvas discussion boards, and I encourage you to do the same.

Academic Integrity

Please read and familiarize yourself with Penn’s Code of Student Conduct and Code of Academic Integrity: <https://catalog.upenn.edu/pennbook/>. Regarding academic dishonesty, please note that plagiarism is not limited to copying an entire paper. Using quotes without properly citing them or using ideas without acknowledging their source also constitute plagiarism. Any form of cheating or plagiarism will result in disciplinary action.

Student Disabilities Services and Accommodations for Students with Disabilities

The University of Pennsylvania provides reasonable accommodations to students with disabilities who have self-identified and been approved by the office of Student Disabilities Services (SDS): <https://www.vpul.upenn.edu/lrc/sds/>. Please make an appointment to meet with me as soon as possible in order to discuss your needs and accommodations. If you would like to request accommodations or have questions, you can make an appointment by calling (215) 573-9235. The office is located in the Weingarten Learning Resources Center at Stouffer Commons 3702 Spruce Street, Suite 300. All services are confidential.

Other Accommodations

Student athletes, parents and caregivers, and others whose commitments might affect their ability to attend class or complete assignments on time should also speak with me at the beginning of the semester about potential conflicts. You should also speak with me as soon as possible if religious holidays that occur during the semester will require you to miss class. If you unexpectedly experience a life event that presents you with academic difficulties, I can refer you to CaseNet to ensure that you get the support you need: <https://www.college.upenn.edu/casenet>.

Academic Resources

Penn students are extremely fortunate to have access to an extensive network of academic resources. A majority of Penn students take advantage of one or more of these resources during their college careers, and I strongly encourage you to do so as well. The Office of Learning Resources provides professional consultation services in university relevant skills such as academic reading, writing, study strategies, and time management. PENNCAP supports the success of a diverse group of academically-talented students, many from low-income and first-generation backgrounds. The Tutoring Center offers Penn undergraduate students free, accessible, and convenient options to supplement their academic experience. For more information, visit <https://www.upenn.edu/programs/acadsupport>.

Additional Writing Resources

The Marks Family Writing Center operates under the assumption that all writers, regardless of their experience and abilities, benefit from informed, individualized, and personal feedback on their writing. The program’s professional staff and trained peer specialists work with writers engaged in any stage of the writing process—from brainstorming paper topics, to formulating and organizing arguments, to developing editing skills. Appointments and drop-in hours are available. For more information, visit <http://writing.upenn.edu/critical/wc/>. (You will find navigation options when you mouse over the “Marks Family Writing Center” heading on the menu bar at the top of the page.)

Well-Being, Stress Management, & Mental Health

If you (or someone you know) are experiencing personal, academic, or relationship problems and would like someone to talk to, reach out to Counseling and Psychological Services (CAPS) on campus. For more information about CAPS services, visit: <https://www.vpul.upenn.edu/caps/about.php>.

**MANAGEMENT 243: WORK AND TECHNOLOGY
SPRING 2022
COURSE OUTLINE**

MODULE 1: Technology and Its Impact on Work

Q3: Tuesday, January 18

Q4: Tuesday, March 15

Session 1: Introduction

“Applying science to the organization of work”: Taylorism, then and now; the conflicts spurred by new technologies, e.g. facial recognition. Course design, assignments, participation modes and norms.

Readings and Media:

1. Kanigel, Robert, “Prologue”, from *The One Best Way: Frederick Winslow Taylor and the Enigma of Efficiency*, ” 1997, pp. 1-19.
2. [“Digital Taylorism,”](#) *The Economist*, Sept 10, 2015
3. Davide Castelvecchi, [“Is facial recognition too biased to be let loose?”](#) *Nature*, Nov. 18, 2020.

Q3: Thursday, January 20

Q4: Thursday, March 17

Session 2: What Types of Technology Are We Considering? Why Fear Their Impact?

Is the latest wave of automation and ubiquitous computing going to free individuals to be more creative at work and able to experience new and more fulfilling jobs? Or will these technologies make work worse – more routinized, less autonomous, less creative – whenever they aren’t actually putting people out of work by eliminating jobs?

TECH VIGNETTE: The Luddites

1. [Almanac: The Luddites](#), March 11, 2010, CBS News [1:30]
2. [“When Robots Take All of Our Jobs, Remember the Luddites,”](#) Clive Thompson, *Smithsonian Magazine*, January 2017.

Was the Luddites’ fight idiotic, ill-informed, ill-advised? Or was it sensible? Would you have sided with them or with those against whom they were striking? Have you observed or sensed Luddite-like thoughts or actions “closer to home” in time and space?

Readings and Media:

1. [Talk by Martin Ford](#), author of “Rise of the Robots” [17:52], October 27, 2015
2. [“Robots have been about to take all the jobs for more than 200 years,”](#) Timeline.com, May 16, 2016

Q3: Tuesday, January 25

Q4: Tuesday, March 15

Session 3: Haven't We Gone Through These Anxieties about Automation in the Past?

What makes the latest wave of technologies similar to or different from supposedly big technological breakthroughs of earlier eras? What are past patterns of technological change – and the diffusion of those changes – that could suggest how present-day new technologies might affect workers and the workplace?

Readings and Media:

1. [*The Second Machine Age: Work, Progress, and Prosperity in a Time of Brilliant Technologies* \(2014\) as discussed by authors Erik Brynjolfsson and Andrew McAfee at Google](#) on January 27th, 2014. [Watch 24 minutes of presentation; optional to watch Q&A (38 minutes)]
2. “Labor market impacts from past innovations” and “Implications of past changes” from *Preparing U.S. Workers and Employers for an Autonomous Vehicle Future*, Erica Groshen, John Paul MacDuffie, Susan Helper, report for Securing America’s Future Energy, June 2018, pp. 13-25.
3. [“Why Are There Still So Many Jobs? The History and Future of Workplace Automation and Anxiety.”](#) David Autor, MIT Initiative on the Digital Economy Research Brief, May 2017

Q3: Thursday, January 27

Q4: Thursday, March 24

Session 4: Technology, Skills, and Wages Part 1 - Skill-Biased Technological Change

A dominant hypothesis in recent decades on the different rates of earnings increase for individuals doing different types of work is skill-biased technological change (SBTC), i.e. that jobs affected by automation that can replace low-skilled workers are fewer in number and lower paid whereas jobs affected by automation that complements higher-skilled workers have grown in number and are higher paid. While there is certainly some evidence supporting this hypothesis, many other factors affect the relationship between technology, skills, and wages. We do a deep dive into the occupation of truck driver.

TECH VIGNETTE: Trucking: Driverless, Automated, etc.

- Why is the automation of this one particular job—the truck driver—so momentous?
- Is the phenomenon of the automation of truck driving an example of skill-biased technological change? Why or why not?
- In the video, truck driver Scott Spendola comments, “Automation outside the terminal...I don’t believe would work. You need a human being to deal with some of the problems...”. To what extent do you agree with him?
- To the extent that some aspects of trucking remain difficult to automate, how has technological change influenced even these aspects of a truck driver’s job?

Readings and Media:

1. [“The Future of Work Looks Like a UPS Truck.”](#) Planet Money, May 2, 2014. [13:54]
2. [“Could the Rise of Artificial Intelligence Put Truckers’ Jobs in Peril?”](#) Frontline, November 4, 2019. [7:19]
3. [“Automation and the Future of Trucking.”](#) (excerpt) [Start: 9:13; End: 31:52] Webinar w/ UPenn sociologist Steve Viscelli, from UC Berkeley report, 2018.

Q3: Tuesday, February 1

Q4: Tuesday, March 29

Session 5: Technology, Skills, and Wages Part 2 - Task-Biased Technological Change

A competing hypothesis to skill-biased technological change (SBTC) is “task-biased technological change” (TBTC) that shifts the focus from the supply of skills provided by workers to jobs and the skills that they demand. Jobs bundle tasks together and can have varied designs based on different combinations of tasks. Automation rarely affects an entire job, rather it affects tasks within jobs; it may completely replace humans for some tasks while only partially affecting other tasks, requiring a continued, complementary human role. Proponents of TBTC argue that it captures the actual process of automation more accurately than SBTC – plus it highlights choice points for engineers and managers in where and how to automate tasks within the context of a job that combines human and automated inputs. We do a deep dive into how automation affected two types of job in a large bank to sort out these two hypotheses.

Readings and Media:

1. “The Work of the Future: Shaping Technology and Institutions.” [David Autor talk at UBS Center](#), December 2, 2019
2. “Upstairs, Downstairs: Computers and Skills on Two Floors of a Large Bank.” David Autor, Frank Levy, and Richard J. Murnane. 2002. *Industrial and Labor Relations Review* 55(3): 432-447.
3. [“Technical Potential for Automation by Sector in the U.S.”](#), graphic from McKinsey Quarterly project, 2017.

Q3: Thursday, February 3

Q4: Thursday, March 31

Session 6: “This Time It’s Different”: What Distinguishes Artificial Intelligence (AI) and Machine Learning (ML) and Their Potential Impact on Work from Past Technologies?

Benedict Evans: “Machine learning lets us find patterns or structures in data that are implicit and probabilistic (hence ‘inferred’) rather than explicit, that previously only people and not computers could find. They address a class of questions that were previously ‘hard for computers and easy for people’, or, perhaps more usefully, ‘hard for people to describe to computers’.

[We don’t] yet have a settled sense of quite what machine learning means ... for tech companies or the broader economy, how to think structurally about what new things it could enable, what it means for the rest of us, and what important problems it might actually be able to solve.”

TECH VIGNETTE: Wordsmith: [“explainer”](#); [real estate](#); [news stories](#); [website](#)

Based on what this technology does well, do you expect professional jobs will disappear, or do you expect they will evolve? If you expect them to evolve, consider precisely in what ways they might do so.

Readings and Media:

1. “AI as the New Electricity,” Chapter 2, [Rule of the Robots](#), Martin Ford, 2021, p. 11-30.
2. [“Ways to Think about Machine Learning.”](#) Benedict Evans, 2018.
3. [“How Will Machine Learning Affect Middle Class Jobs?”](#) interview with James Bessen (Technology and Policy Research Initiative at Boston University’s School of Law), Brookings Institute podcast (start: 2:00 end: 22:00)

**** Group Assignment (PechaKucha) Due
at 11:59pm on Sunday February 6th (Q3) or Sunday April 3rd (Q4) on Canvas ****

MODULE 2: Technology and Managing People

Q3: Tuesday, February 8

Q4: Tuesday, April 5

Session 7: Artificial Intelligence (AI) at Work

Applying Artificial Intelligence (AI) to the fundamental tasks of managing people in organizations (recruitment and selection; on-boarding and training; performance appraisal – rewards, promotion, retention; benefits) is increasingly common yet questions abound. What’s different about extracting algorithms for decision-making from machine learning where the data are about employees, not product purchases or page views? How to handle concerns about fairness or demands for “explainability?” How do managers react to the promise and peril of applying AI at work?

Readings and Media:

1. Cathy O’Neil, “Bomb Parts” and “Ineligible to Serve: Getting A Job,” from *Weapons of Math Destruction: How Big Data Increases Inequality and Threatens Democracy*, 2016, pp. 1-13, 105-122.
2. Prasanna Tambe and Peter Cappelli, [“Can Artificial Intelligence Help Answer HR’s Toughest Questions?”](#) *Knowledge@Wharton*, August 2019.
3. Brian Bergstein, [“What AI Still Can’t Do.”](#) *MIT Technology Review*, March/April 2020

Q3: Thursday, February 10

Q4: Thursday, April 7

Session 8: Hiring in the Age of Algorithms – Guest Speaker: George Dong, Google

Google is well-known for being an early leader in “People Analytics” – applying advanced analytics to crucial issues in managing talent (human capital) and work relationships (social capital), especially in hiring (recruiting, selection, retention) and performance management.

George Dong is a Wharton Executive MBA alum (2019). He worked as a Technical Recruiter at Google for two years; he now a Senior Program Manager for gTech Users and Products. He will share his experience and perspective about how Google approaches hiring in the “age of algorithms”. The broader question is what Google has learned to do in managing people via analytics – and where they are still exploring and need to make further progress. I will gather questions from you in advance to structure our discussion, plus we’ll have open Q&A.

Readings and Media:

1. Bock, Laszlo, “Searching for the Best,” Chapter 4 from *Work Rules!*, 2015, pp. 69-86.
2. Cappelli, Peter. [“Making the Most of Online Recruiting.”](#) *Knowledge@Wharton*, February 2001.
3. Schreiber, Noam, [“A.I. as Talent Scout: Unorthodox Hires, and Maybe Lower Pay,”](#) New York Times, December 6, 2018.

Q3: Tuesday, February 15

Q4: Tuesday, April 12

Session 9: Gig Economy and Algorithmic Management

How modern labor contracting modes are evolving in relation to changes in corporate governance. Resemblance between the new modes and pre-industrial arrangements, e.g. the “putting-out” system of piecework at home. How trends towards “flexible labor” intersect with digital platforms to yield the “gig economy”. What are the varied motivations of “gig economy” workers? How much is choice and how much is necessity? Why does that matter?

TECH VIGNETTE: [Task Rabbit](#)

- Under what circumstances would you choose to become a Tasker?
- Suppose one could develop a great reputation as a Tasker, enough so to reliably earn enough to eat, pay rent, etc. How would this bundle of tasks—performing dozens of different duties for different customers each week—differ from a conventional job?

Readings and Media:

1. Davis, Gerald, [“What Might Replace the Modern Corporation? Uberization and the Web Page Enterprise.”](#) *Seattle University Law Review* 39, 2016, pp. 501-515.
2. Acquier, Aurelien, [“Uberization meets Organizational Theory: Platform capitalism and the rebirth of the putting-out system,”](#) in *Cambridge Handbook on Law and Regulation of the Sharing Economy*, 2018. (excerpt, sections 1 and 2, pp. 5-12)
3. James Manyika et al., [summary brief from “Independent Work: Choice, Necessity, and the Gig Economy,”](#) McKinsey Global Institute, 2016.

Q3: Thursday, February 17

Q4: Thursday, April 14

Session 10: Flexible Schedules and Micro-Monitoring

New management methods affecting when and how hard we work: How “morning bias” and unpredictable changes undermine advantages of flex schedules. How schedule optimization software adds to the precarity of low-wage work. When “gamification” adds fun and challenge to the work day – and when it doesn’t. How tech-enabled keystroke monitoring and process control undermine the autonomy and outcome control premises of contract work. What it means when robots become part of the monitoring scene.

Readings and Media:

1. Cathy O’Neil, “Sweating Bullets: On the Job,” from *Weapons of Math Destruction: How Big Data Increases Inequality and Threatens Democracy*, 2016, p. 123-134.
2. Yam, KC, Fehr, R, Barnes, CM, [“Morning employees are perceived as better employees.”](#) *Journal of Applied Psychology*, 99(6), 2014, pp. 1288-1299.
3. Shellenbarger, Sue. [“Work at Home? Your Employer May Be Watching.”](#) *Wall Street Journal*, July 30, 2008.
4. Dzieza, Josh, [“How Hard Will the Robots Make Us Work?”](#) *The Verge*, Feb. 27, 2020

Q3: Tuesday, February 22

Q4: Tuesday, April 19

Session 11: Dilemmas of “Work from Home” -- Performance Appraisal, Onboarding, Feeling Connected with Teammates – and Opportunities of “Work from Anywhere”

While the world has discovered how many knowledge tasks can be undertaken and completed via technology-mediation during “work from home” (including virtual classes!), certain core experiences of being an employee are challenging to re-create without the opportunity for face-to-face social interaction and one-on-one communication. We will consider how to “onboard” new employees in a Zoom world – and how to tackle performance appraisal (a complex process under the best of in-person circumstances) when you can’t directly observe an employee’s work process and have to communicate a nuanced mix of praise and constructive criticism virtually. We will also consider the dilemma of how to keep team members feeling connected with each other – and the problem of loneliness. Finally, we flip to look at the opportunities of virtual work, not just from home but from “anywhere”, i.e. the freedom to live and work where you like.

Readings and Media:

1. Julie Wood, [“How to Manage Performance Appraisals in the Work-from-Home Era,”](#) *New York Times*, December 21, 2020
2. Karen J. Bannen, [“6 Things That Worry New Employees About Virtual Onboarding,”](#) SHRM.org, June 2020.
3. Constance N. Hadley and Mark Mortensen, [“Are Your Team Members Lonely?”](#) *Sloan Management Review*, December 2020
4. Video: Pritharaj Cloudhury, [“Work from Anywhere”](#), presentation at Ashoka University, June 27, 2020 [30:

***** Individual Paper Due at 11:59pm
on Sunday February 20th (Q3) or Sunday April 17th (Q4), posted on Canvas *****

MODULE 3: Technology and Policy

Q3: Thursday, February 24

Q4: Thursday, April 21

Session 12: Ethics of Algorithms and Artificial Intelligence

TECH VIGNETTE: Amazon Prime’s Free Same-Day Delivery

<https://www.bloomberg.com/graphics/2016-amazon-same-day/>

When an algorithm or application of AI has unintended positive or negative consequences for different groups of people, constituting *de facto* bias or discrimination, how should we think about the responsibility to identify, evaluate, and address (via more transparency or changes in the algorithm/AI code) those consequences?

Readings and Materials:

1. Video: “Automating Inequality,” Interview with Virginia Eubanks, author of *Automating Inequality: How High-Tech Tools Profile, Police, and Punish the Poor*. PBS’s *The Open Mind*. Originally aired January 16, 2018. [20:25]
2. Karen Hao, “This Is How AI Bias Really Happens—and Why It’s So Hard to Fix.” *MIT Technology Review*, February 4, 2019.
3. Matthew Hutson, “Who Should Stop Unethical A.I.?” *The New Yorker*, February 16, 2021.

Q3: Tuesday, March 1

Q4: Tuesday, April 26

Session 13: Technology-Driven Inequality and Universal Basic Income (UBI)

The idea that technological change can drive mass unemployment and require governments to subsidize basic living expenses for many of its citizens is not new, arising in each era when automation scares arise. Proponents of such policies also see benefits in unlocking human creative potential when the necessities of life are met and people can pursue fuller self-development when freed from having to do demotivating, low-skill, low-pay work. Presidential candidate Andrew Yang helped bring this issue onto the national stage in the past year – and again in his NYC mayoral campaign.

We will work during class to generate “pro” and “con” presentations on UBI in real time that will then be presented. You will be assigned to “pro” and “con” positions randomly and only after arriving in class. The readings and media list will be finalized by April 19th.

Readings and Media:

1. Videos on UBI from Andrew Yang: [Why UBI?](#) ; [How to pay for UBI](#); [Isn’t it socialism?](#)

2. Heller, Nathan, [“Who Really Stands to Win from Universal Basic Income?”](#) *The New Yorker*, July 9 & 16, 2018.
3. Excerpts from books and articles by these authors: Annie Lowrey, Andy Stern, Charles Murray, Philippe Van Parijs and Yannick Venderborghts, Chris Hughes, Rutger Bregman

Q3: Thursday, March 3

Q4: Thursday, April 28

Session 14: When Technology Makes Us Worse – How We Can Make Technology Better

Technology, when partially displacing human labor, can sometimes create the conditions under which the human skills that are still needed to complement the technology are worsening over time. How should we deal with situations where technology makes us worse? Our tech vignette concerns the automation for flying airplanes, known as “fly by wire”. Nicholas Carr develops a full thesis of how “automation makes us dumb” across a wide array of technological examples. The Bernstein report on Tesla’s overuse of automation is another example of how organizations can fail on crucial performance dimensions through unwarranted faith in technology.

TECH VIGNETTE: Fly-by-Wire [AirBus 330](#) [Boeing 737 Max](#)

1. How is flight safety *enhanced* by this form of automation? In what ways does fly-by-wire *hinder* flight safety? Compare the first video, describing the “fly-by-wire” system for Airbus and the second video, probing the problems with Boeing 737 MAX at the interface of aircraft automation and pilot roles and responsibilities.
2. An hour and a half into your trans-Atlantic flight, the flight attendant comes on the loud speaker with bad news. S/he can either announce 1.) “The fly-by-wire system is completely down and will be for the remainder of the flight.” *or* 2.) “Both the pilot and the co-pilot are unconscious and will be for the remainder of the flight.” As a passenger who enjoys living, which would you prefer? Is there any additional information you would want to know before answering the question?

Readings and Media:

1. [Nicholas Carr speaking about his book](#) The Glass Cage: Automation and Us, Talks at Google, November 14, 2014 [excerpt 28:02-55:54]
2. Carr, Nicholas. 2014. [“Automation Makes Us Dumb.”](#) *Wall Street Journal*, November 21.
3. Carr, Nicholas. 2015. [“Why Robots Will Always Need Us.”](#) *New York Times*, May 20th.
4. Elish, Madeline Clare. 2019. “Moral Crumple Zones: Cautionary Tales in Human-Robot Interaction,” Engaging Science, Technology, and Society 5, pp. 40-42; 46-52.