

ECON 490

Technology and the Future of Work

Course Syllabus

Semester: Fall 2019

Meeting Times: Tuesdays and Thursdays, 9:30-10:50 AM, on Zoom

Zoom Registration Link:



Instructor: Professor Andrew Garin

Email: agarin@illinois.edu

Office Location: DKH 101D

Office Drop-in Hours: Thursday 2:30-4:00PM on Zoom

, or by appointment

Changes to office hours will be announced to students during the class meeting time before, by email, and/or on the course website. It is always a good idea to indicate via email or in-person your intention to visit office hours as I may have appointments with other students during that time. If your class schedule does not allow you visit office hours during this time, please discuss with me as we may schedule another time to meet. I reserve the right to change the office hours schedule if there is sufficient demand, and this will be announced to students.

Course Description

This course examines how new technologies are changing the nature of and returns to work. We will investigate how the labor market has been impacted by computerization, automation, the gig economy, outsourcing, artificial intelligence, among others. We will combine microeconomic models of the labor market and empirical methods to assess how the rise new technologies drive trends in earnings growth, job growth, and gender pay disparities, and to analyze how policy responses might prepare for the future of work.

Prerequisites:

ECON 202; ECON 302 or ECON 303; MATH 220 or MATH 221 or other Calculus course. **RECOMMENDED:** Basic knowledge of econometrics and any statistical software. R/Excel/ Stata will be used in a few classes.

Course Goals

- **Familiarize students with recent developments in the labor market and labor policy debates**
- **Model-based reasoning:** Students will learn how to use formal models to understand patterns in the data and policy effects and develop understanding of how results depend on underlying assumptions.
- **Data-driven analysis:** Students will develop skills analyzing and presenting trade-related datasets. Specifically, students will gain experience using economy theory to guide empirical analysis, and using data to assess economic theories.

Course Structure:

The course will be a synchronous lecture with activities and discussion. In order to facilitate in-class interaction, lectures will be run as live Zoom meetings during the scheduled meeting time, and students are expected to be present. Discussion will be encouraged in class, and meetings will involve in-class polls and quizzes. The course will include several in class data analysis tutorials. Each week, students will be required to submit responses to brief discussion questions about required reading.

Student Code pertaining to student attendance: http://studentcode.illinois.edu/article1_part5_1-501.html
Office of the Dean of Students helps to assist students navigate the Student Code and course policies. If students will be absent for an extended period of time, they should discuss with this office:
<http://odos.illinois.edu/>

Website

We will use the course space on Illinois Compass 2g: <https://compass2g.illinois.edu>

Textbook/Other Required Materials

There will be required reading for each week, usually articles that review of the literature or non-technical overviews of topics. Supplemental readings will be provided as well. All readings will be accessible on JSTOR and/or posted online on the course Compass website. There is no required textbook for this course.

Students should purchase a one-semester Stata/SE 16 license through the campus web store:

<https://webstore.illinois.edu/shop/product.aspx?zpid=3865>

Required Assignments

- **Problem Sets:** There will be biweekly problem sets assigned during the semester. These will include analytics exercises, hands-on empirical exercises using R or STATA, and expository writing exercises. The lowest grade will be dropped.
- **Weekly Discussion Questions:** Before each Tuesday lecture, students are required to submit responses to discussion questions about required reading to ensure preparation for discussion in class. Students are allowed to skip submitting responses two weeks during the semester. **Answers must be posted on the course blog by 9 PM Monday the night before lecture**
- **Review Quizzes.** Each Thursday lecture will begin with a 5-minuted in-class multiple choice mini-quiz that will review materials from prior weeks. The lowest two grades will be dropped.
- **Final Assignment.** Students will pick a technological innovation that affects work in an industry and draw on data and academic literature to write a policy memo analyzing how the technological development has impacted the labor market and whether such changes require a policy response.

Assessment Policies:

Problem sets are to be turned in by the beginning of the class in which they are due. Late assignments receive *no* credit without an instructor approved excuse. Acceptable excuses include physical and mental illness, and personal or family emergencies. A written request for an extension must be submitted at least 48 hours in advance.

Assignments should be submitted through the course Compass site as a single file digital attachment (a scan or a document file). You are encouraged to work as a group with your classmates on problems sets, although you have to hand in your own solutions.

Note that we cannot grade assignments that we cannot read. Consequently, please be careful to make all assignments legible.

Exam Policy:

In the event that a student misses one of the exams, the instructor reserves the right to give the student a zero on that exam. There are no make-up exams without an instructor approved excuse. Instructor approved excuses include 1) medical reasons, in which case you should bring a letter from a medical professional describing your reason for missing the exam, 2) death or serious illness of an immediate family member or close friend (documentation required), or 3) conflict with a religious holiday. Requests for exam make-ups should be made as far in advance as possible.

We will follow the University guidelines on student conflicts with final exams. For this year's student code, see *Student Code Evening/Midterm/Hourly Exams*: http://studentcode.illinois.edu/article3_part2_3-202.html
Student Code Final Exams: http://studentcode.illinois.edu/article3_part2_3-201.html

Regrades:

All regrade requests must be submitted in writing no more than one week after the assignment or exam is returned. The request must be written and include a detailed summary of why the student believes the grade they received was incorrect. I generally regrade the entire exam or assignment, so the grade may go up or down. Consequently, students should only request a regrade if they are very confident that the original grade they received was incorrect.

Grading

Grades will be on a +/- letter scale and will follow a light curve.

Semester grades will be based on the following:

- Weekly Discussion Questions—15%
- Problem Sets—45%
- Participation (including review quizzes)—15%
- Final Assignment—25%

Academic Assistance

Students are encouraged to utilize the many resources we have throughout campus to assist with academics. We recommend that you seek them out starting early in the semester, not just in times of academic need, in order to develop good study habits and submit work which represents your full academic potential. Many resources may be located on the Economics Website, including information about the Economics Tutoring Center, other tutoring centers, : <http://www.economics.illinois.edu/undergrad/resources/accassistance/>

Academic Integrity

According to the Student Code, 'It is the responsibility of each student to refrain from infractions of academic integrity, from conduct that may lead to suspicion of such infractions, and from conduct that aids others in such infractions.' Please know that it is my responsibility as an instructor to uphold the academic integrity policy of the University, which can be found here: http://studentcode.illinois.edu/article1_part4_1-401.html

Academic dishonesty may result in a failing grade. Every student is expected to review and abide by the Academic Integrity Policies. Ignorance is not an excuse for any academic dishonesty. It is your responsibility to

read this policy to avoid any misunderstanding. Do not hesitate to ask the instructor(s) if you are ever in doubt about what constitutes plagiarism, cheating, or any other breach of academic integrity.

Read the full Student Code at the following URL: <http://studentcode.illinois.edu/>

Students with Disabilities

To obtain disability-related academic adjustments and/or auxiliary aids, students with disabilities must contact the course instructor and the Disability Resources and Educational Services (DRES) as soon as possible. To contact DRES you may visit 1207 S. Oak St., Champaign, call 333-4603 (V/TTY), or e-mail a message to disability@illinois.edu DRES Website: www.disability.illinois.edu/

Emergency Response Recommendations

Emergency response recommendations can be found at the following website:

<http://police.illinois.edu/emergency-preparedness/>. I encourage you to review this website and the campus building floor plans website within the first 10 days of class. <http://police.illinois.edu/emergency-preparedness/building-emergency-actionplans/>.

Family Educational Rights and Privacy Act (FERPA)

Any student who has suppressed their directory information pursuant to Family Educational Rights and Privacy Act (FERPA) should self-identify to the instructor to ensure protection of the privacy of their attendance in this course. See <http://registrar.illinois.edu/ferpa> for more information on FERPA. Student information and records will not be released to anyone other than the student, unless the student has provided written approval or as required by law. More information may be found here: http://studentcode.illinois.edu/article3_part6_3-602.html.

Sexual Misconduct Reporting Obligation

The University of Illinois is committed to combating sexual misconduct. Faculty and staff members are required to report any instances of sexual misconduct to the University's Title IX and Disability Office. In turn, an individual with the Title IX and Disability Office will provide information about rights and options, including accommodations, support services, the campus disciplinary process, and law enforcement options. A list of the designated University employees who, as counselors, confidential advisors, and medical professionals, do not have this reporting responsibility and can maintain confidentiality, can be found here:

<http://www.wecare.illinois.edu/resources/students/#confidential>.

Other information about resources and reporting is available here: <http://wecare.illinois.edu/>.

Student Support

The Counseling Center is committed to providing a range of services intended to help students develop improved coping skills in order to address emotional, interpersonal, and academic concerns. Please visit their website to find valuable resources and services: <https://counselingcenter.illinois.edu/>.

Counseling Center Information: 217-333-3704

Location: Room 206, Student Services Building 610 East John Street, Champaign, IL

Appointment: Scheduled for same day, recommend calling at 7:50 a.m.

McKinley Mental Health Information: 217-333-2705

Location: 3rd Floor McKinley Health Center 1109 South Lincoln, Urbana, IL

Hours: 8 a.m. – 5 p.m., Monday through Friday Appointment: Scheduled in advance.

Emergency Dean: The Emergency Dean may be reached at (217) 333-0050 and supports students who are experiencing an emergency situation after 5 pm, in which an immediate University response is needed and which cannot wait until the next business day. The Emergency Dean is not a substitute for trained emergency personnel such as 911, Police or Fire. If you are experiencing a life threatening emergency, call 911. Please review the Emergency Dean procedures: <http://odos.illinois.edu/emergency/>

Academic Dates and Deadlines

Students should make note of important academic dates for making changes to their courses (add, drop, credit/no-credit, grade replacement, etc.). <https://registrar.illinois.edu/academic-calendars>
Please check with your academic department regarding specific procedures and policies.

Course Schedule (Tentative)

The following outline is what we plan to cover in class during the different class meetings, as well as all assignments and exams required. The outline is subject to change at the Instructor's discretion, and information on these changes will be provided in class.

Weeks 1–2: Is This Time Different? (And Some Review)

Required reading for 9/1

*Mokyr, Joel, Chris Vickers, and Nicolas L. Ziebarth. 2015. "The History of Technological Anxiety and the Future of Economic Growth: Is This Time Different?" *Journal of Economic Perspectives*, 29 (3): 31-50.

*(**Skim Chapter 2**) GOLDIN, CLAUDIA, and LAWRENCE F. KATZ. *The Race between Education and Technology*. Cambridge, Massachusetts; London, England: Harvard University Press, 2008. Accessed August 10, 2020. www.jstor.org/stable/j.ctvjf9x5x.

*(**SKIM**) Hollander, Samuel. 2019. "Retrospectives: Ricardo on Machinery." *Journal of Economic Perspectives*, 33 (2): 229-42.

Podcast: "When Luddites Attack": <https://www.npr.org/sections/money/2015/05/06/404701816/episode-621-when-luddites-attack>

Week 3: Skill-Biased Technical Change and Rising Inequality

Required reading for 9/8:

*(**Read Intro + Chapters 3 and 8**) GOLDIN, CLAUDIA, and LAWRENCE F. KATZ. *The Race between Education and Technology*. Cambridge, Massachusetts; London, England: Harvard University Press, 2008. Accessed August 10, 2020. www.jstor.org/stable/j.ctvjf9x5x.

Supplemental reading:

(The rest of the book) GOLDIN, CLAUDIA, and LAWRENCE F. KATZ. *The Race between Education and Technology*. Cambridge, Massachusetts; London, England: Harvard University Press, 2008. Accessed August 10, 2020. www.jstor.org/stable/j.ctvjf9x5x.

Autor, David, Claudia Goldin, and Lawrence F. Katz. 2020. "Extending the Race between Education and Technology." *AEA Papers and Proceedings*, 110: 347-51. DOI: 10.1257/pandp.20201061

Week 4: Automation and Routine-Biased Technical Change

Required reading for 9/15

*(**Required: Sections 1, 3, 4.1, 4.2, and 5**) Acemoglu, Daron, and David Autor. 2012. "What Does Human Capital Do? A Review of Goldin and Katz's *The Race between Education and Technology*." *Journal of Economic Literature*, 50 (2): 426-63.

*Autor, David H., Frank Levy, and Richard J. Murnane. "The skill content of recent technological change: An empirical exploration." *The Quarterly journal of economics* 118.4 (2003): 1279-1333.

Week 5: Did Robots Replace Manufacturing Jobs?

Required reading for 9/22:

*Acemoglu, Daron, and Pascual Restrepo. "Robots and jobs: Evidence from US labor markets." *Journal of Political Economy* 128.6 (2020): 2188-2244.

*Fort, Teresa C., Justin R. Pierce, and Peter K. Schott. 2018. "New Perspectives on the Decline of US Manufacturing Employment." *Journal of Economic Perspectives*, 32 (2): 47-72.

*(**Skim**) Atack, Jeremy, Robert A. Margo, and Paul W. Rhode. 2019. "'Automation' of Manufacturing in the Late Nineteenth Century: The Hand and Machine Labor Study." *Journal of Economic Perspectives*, 33 (2): 51-70.

Podcast: "Humans vs Robots": <https://www.npr.org/sections/money/2015/05/08/405270046/episode-622-humans-vs-robots>

Podcast: "The Machine Comes to Town": <https://www.npr.org/sections/money/2015/05/13/406461675/episode-623-the-machine-comes-to-town>

Week 6: What Jobs Aren't Automated? Will AI Change That?

Required reading for 9/29:

* Helland, Eric, and Alexander T. Tabarrok. *Why Are the Prices So Damn High* (2019).

* Agrawal, Ajay, Joshua S. Gans, and Avi Goldfarb. 2019. "Artificial Intelligence: The Ambiguous Labor Market Impact of Automating Prediction." *Journal of Economic Perspectives*, 33 (2): 31-50.

Podcast "I Waiter" <https://www.npr.org/sections/money/2015/05/15/407086723/episode-624-i-waiter>

Week 7: A Race Between Man and Machine: Will Automation Replace Jobs?

Required reading for 10/6:

* (**Read up to "sources of labor demand growth..."**) Acemoglu, Daron, and Pascual Restrepo. 2019. "Automation and New Tasks: How Technology Displaces and Reinstates Labor." *Journal of Economic Perspectives*, 33 (2): 3-30.

*TED Talk: "Why are there still so many jobs?": <https://www.youtube.com/watch?v=LCxcnUrokJo>

* Autor, David H. 2015. "Why Are There Still So Many Jobs? The History and Future of Workplace Automation." *Journal of Economic Perspectives*, 29 (3): 3-30.

Supplemental reading:

Acemoglu, Daron, and Pascual Restrepo. 2018. "Modeling Automation." *AEA Papers and Proceedings*, 108: 48-53.

Week 8: The Great Divergence Between Tech Hubs and Rust Belts

Required reading for 10/13:

* Enrico Moretti 2012. "America's Great Divergence", *Salon*: https://www.salon.com/2012/05/20/america_resegregated/

* Autor, David H. 2020. "The Faltering Ladder of Urban Opportunity", MIT Work of the Future Research Brief

*(**Read Sections 1, 2, 5**) Goldfarb, Avi, and Catherine Tucker. 2019. "Digital Economics." *Journal of Economic Literature*, 57 (1): 3-43.

Supplemental reading:

Moretti, Enrico 2012. *The New Geography of Jobs*

Autor, David H. 2019. "Work of the Past, Work of the Future." *AEA Papers and Proceedings*, 109: 1-32.

Week 9: Bigger Stages, Bigger Superstars

Required reading for 10/20:

* **(Read Section 1)** Sattinger, M. (1993). Assignment Models of the Distribution of Earnings. *Journal of Economic Literature*, 31(2), 831-880. Retrieved August 11, 2020, from www.jstor.org/stable/2728516

* **(Read Section 3.2)** Goldfarb, Avi, and Catherine Tucker. 2019. "Digital Economics." *Journal of Economic Literature*, 57 (1): 3-43.

* **Felix Koenig. (2020).** "The rise of TV shows how technological change can lead to superstar wages for some and low wages for most others." Blog Post: <https://blogs.lse.ac.uk/usappblog/2020/01/29/the-rise-of-tv-shows-how-technological-change-can-lead-to-superstar-wages-for-some-and-low-wages-for-most-others/>

* **(Read Sections 1 and 7)** Connolly, M. and Krueger, A.B., 2006. Rockonomics: The economics of popular music. *Handbook of the Economics of Art and Culture*, 1, pp.667-719.

*Walter Frick. 2017 "The Real Reason Superstar Firms are Pulling Ahead". *Harvard Business Review*. <https://hbr.org/2017/10/the-real-reason-superstar-firms-are-pulling-ahead>

Supplemental Readings:

Acemoglu, Daron, David Laibson, and John A. List. 2014. "Equalizing Superstars: The Internet and the Democratization of Education." *American Economic Review*, 104 (5): 523-27.

Koenig, F., 2019. Superstar Effects and Market Size: Evidence from the Roll-Out of TV. *London School of Economics mimeo*.

Scheuer, F. and Slemrod, J., 2019. Taxation and the Superrich. *Annual Review of Economics*, 12.

Tervio, M., 2008. The difference that CEOs make: An assignment model approach. *American Economic Review*, 98(3), pp.642-68.

Autor, D., Dorn, D., Katz, L.F., Patterson, C. and Van Reenen, J., 2020. The fall of the labor share and the rise of superstar firms. *The Quarterly Journal of Economics*, 135(2), pp.645-709.

Week 10: Outsourcing and Offshoring in a Connected World

Required reading for 10/27:

* **(Read Sections 3.3-3.5)** Goldfarb, Avi, and Catherine Tucker. 2019. "Digital Economics." *Journal of Economic Literature*, 57 (1): 3-43.

* **(Read Chapters 1, 3, and 7)** WEIL, DAVID. *The Fissured Workplace*. Harvard University Press, 2014. JSTOR, www.jstor.org/stable/j.ctt6wppdw.

*Feenstra, R. C. (1998). Integration of Trade and Disintegration of Production in the Global Economy. *Journal of Economic Perspectives*, 12(4), 31-50.

*Weber, Lauren. 2017. "The End of Employees" *The Wall Street Journal*. <https://www.wsj.com/articles/the-end-of-employees-1486050443>

Supplemental Reading

Deborah Goldschmidt, Johannes F. Schmieder, The Rise of Domestic Outsourcing and the Evolution of the German Wage Structure, *The Quarterly Journal of Economics*, Volume 132, Issue 3, August 2017, Pages 1165–1217, <https://doi.org/10.1093/qje/qjx008>

Timmer, M. P., Erumban, A. A., Los, B., Stehrer, R., & de Vries, G. J. (2014). Slicing Up Global Value Chains. *The Journal of Economic Perspectives*, 28(2), 99-118.

Week 11: The Gig Economy and Alternative Work*Required reading for 11/3:*

*Oyer, P., 2020. The gig economy. *IZA World of Labor*.

*Mas, A. and Pallais, A., 2020. Alternative Work Arrangements. *NBER Working Paper*, (w26605).

*Koustas, D.K., 2019, May. What Do Big Data Tell Us about Why People Take Gig Economy Jobs?. In *AEA Papers and Proceedings* (Vol. 109, pp. 367-71).

*Collins, B., Garin, A., Jackson, E., Koustas, D. and Payne, M., 2019. Is gig work replacing traditional employment? Evidence from two decades of tax returns. *Unpublished paper, IRS SOI Joint Statistical Research Program*.

Supplemental Reading:

Abraham, K., Haltiwanger, J., Sandusky, K. and Spletzer, J., 2017. Measuring the gig economy: Current knowledge and open issues. In *Measuring and Accounting for Innovation in the 21st Century*. University of Chicago Press.

Chen, M.K., Rossi, P.E., Chevalier, J.A. and Oehlsen, E., 2019. The value of flexible work: Evidence from uber drivers. *Journal of Political Economy*, 127(6), pp.2735-2794.

Cook, C., Diamond, R., Hall, J., List, J.A. and Oyer, P., 2018. *The gender earnings gap in the gig economy: Evidence from over a million rideshare drivers* (No. w24732). National Bureau of Economic Research.

Cook, C., Diamond, R. and Oyer, P., 2019, May. Older workers and the gig economy. In *AEA Papers and Proceedings* (Vol. 109, pp. 372-76).

Farrell, Diana, and Fiona Greig. "The Online Platform Economy in 2018" (2018). Available at: <https://www.jpmorganchase.com/corporate/institute/document/institute-ope-2018.pdf>.

Katz, Lawrence F., and Alan B. Krueger. "Understanding trends in alternative work arrangements in the United States." *RSF: The Russell Sage Foundation Journal of the Social Sciences* 5.5 (2019): 132-146.

Mas, A. and Pallais, A., 2017. Valuing alternative work arrangements. *American Economic Review*, 107(12), pp.3722-59.

Week 12: New Work and The Gender Gap*Required reading for 11/10:*

*Goldin, C., 2014. A grand gender convergence: Its last chapter. *American Economic Review*, 104(4), pp.1091-1119.

*Goldin, C., 2015. How to achieve gender equality. *Milken Institute Review Q*, 3, pp.24-33.

*Kleven, Henrik, Camille Landais, and Jakob Egholt Sogaard. 2019. "Children and Gender Inequality: Evidence from Denmark." *American Economic Journal: Applied Economics*, 11 (4): 181-209.

Supplemental Reading:

Aguiar, Mark, Mark Bilal, Kerwin Charles, and Erik Hurst. *Leisure luxuries and the labor supply of young men*. No. w23552. National Bureau of Economic Research, 2017

Bronson, M.A. and Thoursie, P.S., 2019. *The Wage Growth and Within-Firm Mobility of Men and Women: New Evidence and Theory*. Working Paper.

Goldin, Claudia, and Lawrence F. Katz. "A most egalitarian profession: pharmacy and the evolution of a family-friendly occupation." *Journal of Labor Economics* 34, no. 3 (2016): 705-746.

Goldin, Claudia, Sari Pekkala Kerr, Claudia Olivetti, and Erling Barth. 2017. "The Expanding Gender Earnings Gap: Evidence from the LEHD-2000 Census." *American Economic Review*, 107 (5): 110-14.

Week 13: Policy Responses to Technological Change: Technology Policy, Universal Basic Income, Training, and More

Required reading for 11/17:

* Goolsbee, Austan. *Public policy in an AI economy*. No. w24653. National Bureau of Economic Research, 2018.

* Hoynes, Hilary, and Jesse Rothstein. "Universal basic income in the United States and advanced countries." *Annual Review of Economics* 11 (2019): 929-958.

* Kearney, Melissa S., and Magne Mogstad. "Universal basic income (UBI) as a policy response to current challenges." *Report, Aspen Institute* (2019): 1-19.

Podcast: "The Basic Income Experiment" <https://www.npr.org/sections/money/2017/09/22/552850245/episode-796-the-basic-income-experiment>

Supplemental Reading:

Ashok, V., Kuziemko, I. and Washington, E., 2015. *Support for redistribution in an age of rising inequality: New stylized facts and some tentative explanations* (No. w21529). National Bureau of Economic Research.

Autor, David, Anran Li, and Matthew Notowidigdo. "Preparing for the Work of the Future." *Abdul-Latif Jameel Poverty Action Lab(J-PAL)* (2019).

Week 14: Work During and After COVID-19

Required reading for 12/1:

*Autor, David, and Elisabeth Reynolds. "The nature of work after the COVID crisis: Too few low-wage jobs." (2020).

*Jonathan I. Dingel and Brent Neiman, "How Many Jobs Can Be Done at Home?" (Becker Friedman Institute for Economics at the University of Chicago, April 10, 2020), https://bfi.uchicago.edu/wp-content/uploads/BFI_White-Paper_Dingel_Neiman_3.2020.pdf.

*Bartik, Alexander W., Zoe B. Cullen, Edward L. Glaeser, Michael Luca, and Christopher T. Stanton. *What jobs are being done at home during the COVID-19 crisis? Evidence from firm-level surveys*. No. w27422. National Bureau of Economic Research, 2020.

*Alon, T. M., Doepke, M., Olmstead-Rumsey, J., & Tertilt, M. (2020). "The impact of COVID-19 on gender equality" (No. w26947). National Bureau of Economic Research.

(More TBD)

Week 15: Review and Recap