



**NYU**

**ROBERT F. WAGNER GRADUATE  
SCHOOL OF PUBLIC SERVICE**

**PADM-GP 4318  
Social Impact and Emerging Technologies  
Summer 2022**

Class Information: 5:30pm - 8pm EST June 15th - 19th

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Office Hours: By appointment

**Prerequisites:** Recommended - PADM.GP2311 - Social Impact Investing

**Course Description**

Technology excites in its promise to help transform and improve lives. Yet we observe that this promise has not always translated into reality.

Organized around key applications and case studies, this course examines the promises – and pitfalls – of technology for impact. It examines the ways in which entrepreneurs and practitioners harness technologies to solve key challenges, while also questioning how new technologies transform or reinforce dominant paradigms.

Critical perspectives from development and technology studies are introduced alongside case examples to examine the way that technologies shape how approach problems. Central questions of this course include:

- What opportunities for impact have new technologies created?
- How disruptive or revolutionary are new technologies for impact?
- What tools do we need to improve these technology-driven initiatives?

**Course Objectives**

The course opens with an introduction to the key themes and frameworks that will be woven through the course, and then is followed by five modules that focus on specific themes: impact measurement, climate change and conservation tech, financial inclusion and mobile money; education technology; and agricultural tech. The class will create a balance between theory and practice as well as between lecture, guest speakers, case analysis, and class discussion.

<b>Course Learning Objective Covered</b>	<b>Corresponding Assignment Title</b>
Teach students a framework for evaluating technology in terms of agency, ambivalence,	Final Paper

amplification and appropriateness (4A framework)	
Develop capacity to discuss the nuances around the application of technology within impact sectors and geographies.	Class participation
Build an understanding of emerging technologies, their opportunities and limitations.	Final Paper
Develop an understanding of the ways in which companies and systems are succeeding (and failing) to address key social and environmental issues through technology.	Assignment 1
Encourage rigorous analysis of the promises made by technology providers and entrepreneurs and their ability to create both positive and negative impact.	Final paper

**What You Will Take Away**

- An understanding of the types of technology that are being developed and deployed in impact sectors such as conservation, financial inclusion, education and agriculture.
- Engagement with industry insiders that are at the cutting edge of ImpactTech.
- The ability to discuss trends in ImpactTech and an understanding of how to evaluate the positive and negative effects of these trends on end users.
- Preparation for a career in ImpactTech (including Fintech, Edtech, Healthtech, Agritech, etc.) or international development.

**Required Readings**

- Learning resources are listed below, they will be available on NYU Classes.

**NYU Classes**

All announcements, resources, and assignments will be delivered through the NYU Classes site. I may modify assignments, due dates, and other aspects of the course as we go through the term with advance notice provided as soon as possible through the course website.

**Academic Integrity**

Academic integrity is a vital component of Wagner and NYU. Each student is required to sign and abide by Wagner’s Academic Code. Plagiarism of any form will not be tolerated since you have all signed an Academic Oath and are bound by the academic code of the school. Every student is expected to maintain academic integrity and is expected to report violations to me. If you are unsure about what is expected of you should *ask*.

## **Henry and Lucy Moses Center for Students with Disabilities at NYU**

Academic accommodations are available for students with disabilities. Please visit the Moses Center for Students with Disabilities (CSD) website at [www.nyu.edu/csd](http://www.nyu.edu/csd) and click on the Reasonable Accommodations and How to Register tab or call or e-mail CSD at (212-998-4980 or [mosescsd@nyu.edu](mailto:mosescsd@nyu.edu)) for information. Students who are requesting academic accommodations are strongly advised to reach out to the Moses Center as early as possible in the semester for assistance.

## **NYU's Calendar Policy on Religious Holidays**

NYU's Calendar Policy on Religious Holidays states that members of any religious group may, without penalty, absent themselves from classes when required in compliance with their religious obligations. Please notify me in advance of religious holidays that might coincide with exams to schedule mutually acceptable alternatives.

## **Student Resources**

Wagner offers many [quantitative](#) and [writing](#) resources as well as [skills workshops](#). The library offers a variety of [data services](#) to students.

## **Class Policies**

Due to the short tenure of this course, only one unexcused absence permitted.

## **Assignments and Evaluation**

This section is a brief overview of the assignments and elements that factor into a student's final grade. Below is an example:

Class Participation (10% of total grade): Participation is awarded based on attendance (one unexcused absence permitted), punctuality and engagement in class discussions. Missing or being late for two or more classes for the semester will negatively impact your participation grade. Extraordinary circumstances include religious observance and illness but you must give notice via email in advance (religious observance) or as soon as possible (illness).

If you foresee missing a class due to personal obligations, please notify me via email but also note that it will count as your one allotted unexcused absence. All students benefit from high levels of participation, so you are expected to do readings prior to class, attend class, and contribute to the discussion. Attendance is taken at the beginning of every class and I will be making note of those who routinely participate in the discussion.

Assignment 1 (30% of total grade): The goal of this assignment is to think critically about the topic a guest speaker is discussing by researching the speaker, their organization and determining the tone of the interview. Working in groups, students will design an introduction for the guest speaker and a set of suggested questions for them. Written introduction and questions due afternoon of assigned session. (2-3 pages, double-spaced, 12 point Times New Roman font, 1-inch margins. **Submit** through NYU Classes.)

Assignment 2 (20% of total grade): The goal of this assignment is to begin to apply the 4As framework. Students will be required to pick one of the module topics and do a one to two page write-up answering the question: “What are the greatest opportunities for technology in this area? What are the greatest risks?”. Students will need to use the 4A framework to frame their response. (1-2 pages, double-spaced, 12 point Times New Roman font, 1-inch margins. **Submit** through NYU Classes.)

Final Paper (40% of total grade): The final deliverable is a 10-page maximum paper that uses the 4A framework to evaluate a new technology in a selected impact area. (10 pages, double-spaced, 12 point Times New Roman font, 1-inch margins. Due by 11:59 PM, August 27th through NYU Classes.) Please include your Wagner mailbox number on a paper so that the paper can be returned.

### Overview of the Semester

Module	Date	Topic	Deliverable
Module 1	August 8th	Foundations of technology and impact measurement	
Module 2	August 9th	Financial Inclusion and Mobile Money	Assignment 1 (Group 1)
Module 3	August 10th	DAOs, community ownership and the case for distributed impact	Assignment 1 (Group 2)
Module 4	August 12th	Equity and inclusion: the implications of technology	Assignment 1 (Group 3)
Module 5	August 13th	Tech for Impact Reflection	Assignment 2

### Grading Scale and Rubric

Students will receive grades according to the following scale:

There is no A+

A = 4.0 points

A- = 3.7 points

B+ = 3.3 points

B = 3.0 points

B- = 2.7 points

C+ = 2.3 points

C = 2.0 points

C- = 1.7 points

There are no D+/D/D-  
F (fail) = 0.0 points

*Student grades will be assigned according to the following criteria:*

(A) Excellent: Exceptional work for a graduate student. Work at this level is unusually thorough, well reasoned, creative, methodologically sophisticated, and well written. Work is of exceptional, professional quality.

(A-) Very good: Very strong work for a graduate student. Work at this level shows signs of creativity, is thorough and well-reasoned, indicates strong understanding of appropriate methodological or analytical approaches, and meets professional standards.

(B+) Good: Sound work for a graduate student; well-reasoned and thorough, methodologically sound. This is the graduate student grade that indicates the student has fully accomplished the basic objectives of the course.

(B) Adequate: Competent work for a graduate student even though some weaknesses are evident. Demonstrates competency in the key course objectives but shows some indication that understanding of some important issues is less than complete. Methodological or analytical approaches used are adequate but student has not been thorough or has shown other weaknesses or limitations.

(B-) Borderline: Weak work for a graduate student; meets the minimal expectations for a graduate student in the course. Understanding of salient issues is somewhat incomplete. Methodological or analytical work performed in the course is minimally adequate. Overall performance, if consistent in graduate courses, would not suffice to sustain graduate status in “good standing.”

(C/-/+ ) Deficient: Inadequate work for a graduate student; does not meet the minimal expectations for a graduate student in the course. Work is inadequately developed or flawed by numerous errors and misunderstanding of important issues. Methodological or analytical work performed is weak and fails to demonstrate knowledge or technical competence expected of graduate students.

(F) Fail: Work fails to meet even minimal expectations for course credit for a graduate student. Performance has been consistently weak in methodology and understanding, with serious limits in many areas. Weaknesses or limits are pervasive.

### **Detailed Course Overview**

This section details week-by-week class topics, assigned readings, assignments, discussion questions, etc. Below is an example of one day:

## **Session 1:** Introduction – Foundations of technology and impact

This first session kicks off the course by diving into the topic of technology and impact, and providing a brief history of how people have approached the transformative potential of ICTs. It also introduces the core framework of the course, which asks us to consider the Four As: amplification, agency, ambivalence, and appropriateness. Finally, this session will focus on the use of technology in Impact Measurement and Management. We will look at some of the issues around impact measurement and the current discourse in the space around using technology. We will have a guest speaker come in to explain how the exponential tech is being used to revolutionize impact data collection.

### Readings Due (found on NYU Classes)

1. Toyama, K. (2010) "[Can Technology End Poverty?](#)" *Boston Review*, 36(5): 12- 29.
2. Stanford Social Innovation Review (2018). [Blockchain for Social Impact: Moving Beyond the Hype.](#)
3. Dichter, S., Adams, T. & Ebrahim, A. (2016). The Power of Lean Data. Stanford Social Innovation Review. Retrieved from: [https://ssir.org/articles/entry/the\\_power\\_of\\_lean\\_data](https://ssir.org/articles/entry/the_power_of_lean_data)
4. Lean Data Field Guide: <https://acumen.org/wp-content/uploads/2015/11/Lean-Data-Field-Guide.pdf>
5. Video: [Measuring your social impact – Theory of Change](#) (2:25)
6. [12 Things Everyone Should Understand About Tech](#) (2018). *Medium*
7. [Seven Technologies that are Remaking the World](#) (2018). *MIT Sloan Management Review*.
8. [Five Ways Technology is Fighting Global Poverty](#) (2020). *TechnoServe*
9. [Getting life-changing technologies to the poor](#) (2021). *UN Conference on Trade and Development* (more details and comprehensive report: [Technology and Innovation Report: 2021](#))

### Discussion Questions:

- What do you need to ask to do 'tech for impact' better?
- What is the relationship between a technology as designed and how people use it?
- How can the design of products empower or disempower? What enables or constrains this?
- Is technology a neutral tool? If technology is not 'neutral' that where do the politics enter?
- How do access, capabilities, and motivation influence impact? If access is not enough, what else is needed?
- What are the benefits of user-centered design? What are the limitations? How do ICTs differ from other 'technologies' in regards to gauging appropriateness?

- In what ways does tech present opportunities for better objective data collection? For subjective data collection?
- How should we think about monetizing data with respect to end users? Should research subjects be paid for their contributions?
- What are the greatest limitations for technology in impact measurement?
- How will the collection of impact data change the behavior of companies? Investors? How should it?
- Will there always be tension between standardization and personalization of data?

**Recommended Reading:**

- A. Kaplinsky, R. (2011) "Schumacher Meets Schumpeter: Appropriate Technology below the Radar," *Research Policy*, 40(2): 193–203.
- B. O’Neil, Cathy. TED Talk: [https://www.ted.com/talks/cathy\\_o\\_neil\\_the\\_era\\_of\\_blind\\_faith\\_in\\_big\\_data\\_must\\_end](https://www.ted.com/talks/cathy_o_neil_the_era_of_blind_faith_in_big_data_must_end)
- C. Prahalad, C.K. & Hammond, A. (2002) "Serving the World’s Poor, Profitably," *Harvard Business Review*, 80(9): 48-57. Search: [BSC AN=7269399](#)
- D. Sen, A. (2001) *Development as Freedom*, Oxford: Oxford University Press.
- E. Ya’u, Y.Z. (2004) "The new imperialism & Africa in the global electronic village," *Review of African Political Economy*, 31(99): 11-29.
- F. Theory of change thinking in practice: A stepwise approach (Hivos) [www.theoryofchange.nl/resource/theory-change-thinking-practice-stepwise-approach](http://www.theoryofchange.nl/resource/theory-change-thinking-practice-stepwise-approach)
- G. Guidance for developing a theory of change for your programme (NESTA and TSIP) [www.nesta.org.uk/sites/default/files/theory\\_of\\_change\\_guidance\\_for\\_applicants\\_.pdf](http://www.nesta.org.uk/sites/default/files/theory_of_change_guidance_for_applicants_.pdf) [download size - 512 kb]
- H. Theory of change: Methodological briefs Impact Evaluation No. 2 (Unicef) [www.unicef-irc.org/publications/747/](http://www.unicef-irc.org/publications/747/)
- I. Social Impact Investment Taskforce publications: Measuring Impact, Whitepaper and Case Studies. 2014.
- J. Schiff, H., Bass, R. & Cohen, A. (2016). The business value of impact measurement. GIIN
- K. Please review on <https://iris.thegiin.org/> & <https://impactmanagementproject.com/resources/> reviewing a variety of resources (including <https://iris.thegiin.org/introduction/#b1> & [https://impactmanagementproject.com/wp-content/uploads/Investor\\_s-Perspective\\_-A-Shared-Convention-for-Impact-Management.pdf](https://impactmanagementproject.com/wp-content/uploads/Investor_s-Perspective_-A-Shared-Convention-for-Impact-Management.pdf)

**Session 2: Financial Inclusion and Mobile Money**

Readings Due (found on NYU Classes)

1. GSMA (2018) [Decade Edition of the State of the Industry Report on Mobile Money](#) [online]. Available from <<https://www.gsma.com>>
2. GMSA (2022) [State of the Industry Report on Mobile Money 2022](#).
3. Technical guide to using Satellite data for financial inclusion - <https://www.cgap.org/research/publication/using-satellite-data-financial-inclusion>
4. Ashta, A. (2017) "[Evolution of Mobile Banking Regulations: A Case Study on Legislator's Behavior](#)," *Strategic Change*, 26(1): 3–20.
5. [Mobile Money, Financial Inclusion, and Unmet Opportunities: Evidence from Uganda \(2021\)](#). *The Journal of Development Studies*
6. [Does Mobile Money Improve Financial Inclusions? \(2022\)](#). *UN Capital Development Fund*
7. [Mobile Money in Emerging Markets: The Business Case for Financial Inclusion](#) (2018). *McKinsey*
8. [An Ethnological Analysis of the Influence of Mobile Money on Financial Inclusion: The Case of Urban Zambia](#) (2021). *Zambia Social Science Journal*.

Discussion Questions:

- How do mobile phones and mobile money ‘work’ for the poor on the ground?
- What are the roles that the blockchain and artificial intelligence are playing around remittances and digital banking
- Is ICT empowering? What is the theory of change?
- What is needed - beyond the technology and the mobile money platform - to build a greater ecosystem around financial inclusion? Is the technology itself enough?

**Session 3: DAOs, community ownership and the case for distributed impact**

This session, we are focusing on distributed autonomous organizations (DAOs), community ownership, and the case for distributed impact. . DAOs are part of the idea of Web 3.0, a new type of internet based on blockchain technology. This session will seek to unpack some of these topics by looking specifically at the role that (DAOs) could play in harnessing Web 3.0 for social and environmental impact (or harm). The class will dive into the topics of community ownership, distributed governance, Co2 emission, creative control and more.

Readings Due (found on NYU Classes)

1. [A beginner’s guide to DAOs](#) (2021). *linda.mirror via SuperBenefitDAO*
2. [What are DAOs?](#) (2022) *NYTimes*
3. [Scale and the levers that provide DAOs their power](#) (2022) *SuperBenefitDAO*
4. [Introduction to Web3](#) (2022) *Ethereum* (and other great DAO resources can be found on [SuperBenefitDAO](#))
5. [Decentralized Society: Finding Web3’s Soul](#) (2022). *SSRN*



6. [Come, Make Better Faster](#) (2022). *SuperBenefitDAO*
7. [How Decentralized Organizations Win \(and Lose\)](#) (2022) *creators.mirror via SuperBenefitDAO*
8. [The Best Examples of DAOs Everyone Should Know About](#) (2022) *Forbes*
9. [Taking ownership: Community empowerment through crowdfunded investments](#) (2019) *nesta UK*
10. [The emerging solidarity economy: a primer on community ownership of real estate](#) (2021) *Brookings*
11. <https://store.gitcoin.co/products/impactdao-book-digital-edition>

Discussion Questions:

- The evangelists for Web 3.0 talk about the distributed nature of the infrastructure with social impact, saying that it could help us achieve the SDGs and empower local communities and marginalized individuals. This is particularly true of the language around DAOs. Is this hype, myth or a real possibility?
- Similarly, it is clear that mining crypto assets has an environmental effect. So beyond any distribution of wealth that NFTs claim to have, the vast amount of energy needed to create these digital assets could exacerbate climate change. How does this factor into their future? And are they ever going to be more than purple Ape images?
- Go onto a crowdfunding site (Kickstarter, GoFundMe, Indiegogo) and find a project that interests you. What did you find? Would you invest? What about this platform did (or did not) foster transparency, distributed governance, and community ownership?
- Similar to mobile money, is a crowdfunding platform (the technology) enough? What else is needed to create distributed governance and community ownership?

Recommended Reading:

- A. <https://www.technologyreview.com/2018/04/12/143410/inside-the-jordan-refugee-camp-that-runs-on-blockchain/>

**Session 4: Equity and inclusion: the implications of technology**

Readings Due (found on NYU Classes)

1. [Digital Inequalities in the Age of Artificial Intelligence and Big Data](#) (2019). *Human Behavior and Emerging Technologies*
2. Ethical and societal implications of algorithms, data, and artificial intelligence: a roadmap for research  
<https://www.nuffieldfoundation.org/sites/default/files/files/Ethical-and-Societal-Implications-of-Data-and-AI-report-Nuffield-Foundat.pdf>
3. [Can machine learning models overcome biased datasets?](#) (2022) MIT
4. [Artificial Intelligence has a Problem with Gender and Racial Bias: Here's How to Solve It](#) (2019) *Time*

5. [Gender Shades video](#). *MIT Media Lab*.
6. [Bias in data-driven artificial intelligence systems—An introductory survey](#) (2020). Ntoutsis E, Fafalios P, Gadiraju U, et al. *WIREs Data Mining Knowl Discov*. 2020;10:e1356
7. [Using Artificial Intelligence to Promote Diversity](#) (2019). *MIT Sloan Management Review*
8. [Digital assistants: Inequalities and social context of access, use, and perceptual understanding](#) (2022). *Poetics*.
9. [Mind the gap - Is fintech closing the gender gap in access to finance?](#) (2021) *World Bank Blogs*
10. Potential roles of blockchain in fighting poverty and reducing financial exclusion in the global south - <https://www.tandfonline.com/doi/full/10.1080/1097198X.2017.1391370>

*Discussion Questions:*

- **Does a greater emphasis need to be placed on how data and technology is designed to avoid biases?**
- **What else can be done to make technology more accessible, affordable, and appropriate to all of society?**
- **What lessons learned from biases in AI can be translated for future technology development?**

**Session 5: Tech for Impact: A Reflection session**

Readings Due (found on NYU Classes)

1. No additional readings

Discussion Questions:

- *Revisit questions from first class:*
- What do you need to ask to do ‘tech for impact’ better?
- What is the relationship between a technology as designed and how people use it?
- How can the design of products empower or disempower? What enables or constrains this?
- Is technology a neutral tool? If technology is not ‘neutral’ that where do the politics enter?
- How do access, capabilities, and motivation influence impact? If access is not enough, what else is needed?
- What are the benefits of user-centered design? What are the limitations? How do ICTs differ from other ‘technologies’ in regards to gauging appropriateness?

## **Back pocket session: Land and Real Estate Ownership**

- [Colored Coins: Bitcoin, Blockchain, and Land Administration](#)
- [A blockchain based property-ownership recording system](#)
- [The role of blockchain in documenting land users' rights: the canonical case of farmers in the vernacular land market](#)
- [The emerging solidarity economy: a primer on community ownership of real estate \(2021\) Brookings](#)
- [Four ways technology is addressing the housing affordability crisis \(2019\) Urban Institute](#)
- [Three ways technology will transform the real estate business \(2021\) SBS](#)
- [Top 10 real estate fintech stirring up the market \(2021\)](#)