

# Hammad Shaikh

**Address:**

Department of Economics  
University of Toronto  
150 St. George St.  
Toronto, Ontario  
M5S 3G7, Canada

**Email:** hammy.shaikh@mail.utoronto.ca**Website:** <https://shaikhhammad.com/>

---

**Citizenship:** Canadian**Research Interests:** Public, Behavioural, Applied Econometrics, and Economics of Education**Teaching Interests:** Public, Education, Econometrics, and Programming for Economists

## EDUCATION

PhD in Economics, University of Toronto 2022 (Expected)  
*Committee:* Robert McMillan, Aloysius Siow, and Román Andrés Zárate

MA in Economics (Doctoral Stream), University of Toronto 2015

HBSc in Math and Economics, University of Toronto Mississauga 2014

## RESEARCH

**Improving Online Learning Through Course Design: A Microeconomic Approach**  
(Job Market Paper)

**Provision of Online Public Goods: Evidence From a Peer Discussion Board**

**Information Disclosure and Advanced Course Selection: A Field Experiment Involving High Achieving Freshmen Students**, with Robert McMillan and Linda Wang

**Understanding Gender Gaps in STEM**, with Robert McMillan and Linda Wang

## AWARDS AND GRANTS

Excellence in Teaching by a Economics Teaching Assistant	2020
Ontario Graduate Scholarship (\$15,000 $\times$ 2)	2019 - 2020
University of Toronto Doctoral Fellowship (\$12,000 $\times$ 5)	2015 - 2019

## TEACHING AND RESEARCH ASSISTANT EXPERIENCE

Course Instructor, University of Toronto Mississauga

2017

- ECO411: Human Capital and Education in the Economy
  - Student Evaluation (n = 16): mean = 4.6/5 and median = 5/5
  - \* Scale: 1 = Poor and 5 = Excellent

Teaching Assistant (Economics/Math/Computer Science)

2012 - present

- MAT133/134/1345: Calculus I (x4)
  - Nominated for U of T Teaching Excellence Award in 2013
- ECO220: Quantitative Methods in Economics (x8)
- ECO375: Applied Econometrics (x2)
- ECO502: Matlab and Stata Programming TA (x3)
- ECO1001: UTM Graduate Help Desk (x6)
- MAT102: Introduction to Mathematical Proofs
- MAT236: Calculus III
- MAT232: Linear Algebra
- CSC108: Introduction to Python Programming (x2)
- CSC2558: Designing Intelligent Self-Improving Systems

Research Assistant, University of Toronto

2014 - Present

- Project: Affirmative Action and Student Effort
  - Task: Empirical analysis in Stata
  - Supervisor: Dr. Natalie Bau
- Project: Incentive Design in Education: An Empirical Analysis
  - Task: Structural estimation in Matlab
  - Supervisor: Dr. Robert McMillan
- Project: A New Method for Computing Teacher Value Added
  - Task: Empirical analysis in Stata and simulations in R
  - Supervisor: Dr. Jiaying Gu

## CONFERENCE AND SEMINAR PRESENTATIONS

Empirical Microeconomics, University of Toronto

Oct 2021

Graduate Students in Economics of Education Zoom Seminars, Online

March 2021

Educational Data Mining, Montreal

July 2019

## ACADEMIC SERVICE

Departmental Chair Search Committee, Mississauga

2020

Graduate Student Mentor, Toronto

2017 - 2020

Board Games Event Coordinator, Toronto

2016 - 2019

First Year University Transition Mentor, Mississauga

2015

## LANGUAGES

English (fluent), Urdu (fluent), and Hindi (intermediate)

*Programming:* Python, MATLAB, Stata, R, L<sup>A</sup>T<sub>E</sub>X, and Java Script

- Open source programming projects: <https://github.com/hammadshaikhha>

## REFERENCES

Robert McMillan  
Department of Economics  
University of Toronto  
150 St. George St.  
Toronto, Ontario  
M5S 3G7, Canada  
mcmillan@chass.utoronto.ca  
+1-416-978-4190

Aloysius Siow  
Department of Economics  
University of Toronto  
150 St George St.  
Toronto, Ontario  
M5S 2E4, Canada  
siow@chass.utoronto.ca  
416-978-4139

Román Andrés Zárate  
Department of Economics  
University of Toronto  
150 St George St.  
Toronto, Ontario  
M5S 2E4, Canada  
ra.zarate@utoronto.ca  
+1 (617) 3984-710

Last Updated: November 1, 2021

## Abstracts

---

### **Improving Online Learning Through Course Design: A Microeconomic Approach (JMP)**

Online education has expanded dramatically over the past two decades, yet significant learning challenges remain. This paper provides the first microeconomic analysis to examine how course design can enhance the quality of online university courses, addressing the twin needs of providing individualized support to students and keeping them engaged with online coursework. First I gather rich data covering over 3,500 undergraduates in an online introductory programming course at a large public university. The data allow me to monitor students' study time precisely and to characterize important dimensions of heterogeneity: their attentiveness and whether they are forward-looking. I then conduct two randomized informational interventions, which turn out to be successful in nudging inattentive students to utilize an online discussion board more fully and complete online assignments. I find that an additional 4.5 weeks of discussion board utilization and completing one extra online assignment (out of 10 in total) increase final exam grades by 0.07 SD and 0.18 SD, respectively. I then develop and estimate a behavioural model of student effort supply using the two field experiments to credibly identify the marginal benefits and costs of effort at each stage of the cumulative learning process. In contrast to the actual course grading scheme (with equal assignment weights), the simulated weights that maximize learning are decreasing across assignments, serving to increase effort by myopic students early in the course when they acquire foundational skills. The framework can accommodate other course structures, shedding light on how instructors can encourage effective effort allocation by heterogeneous students, both in other online and traditional course settings.