



Economics of Science, Technology and Innovation: Empirical Approaches and Randomized Control Trials (RCTs)

10-14 January 2018



Discipline of Economics
School of Humanities and Social Sciences
Indian Institute of Technology Indore

Course details

Scientific advances and technological progress are key drivers of innovation and economic growth. Moreover, innovation in firms is vital in gaining advantage over other firms and sustaining survival in a competitive industry. Thus, policymakers give considerable importance to supporting innovation activities of scientists and firms, as they help fuel economic progress. In light of this, an understanding of the economics of science, technology and innovation is of immense significance for a growing economy like India to provide insights to managers and policymakers in order to incentivize and stimulate the process of innovation.

The course will examine the microeconomic foundations of the determinants of innovation and technical change and how science, technology and innovation can foster economic growth, with a focus on the issues facing emerging economies like India. The course will provide an in-depth overview of recent empirical research related to these topics, with a particular emphasis on the role of patents, R&D funding, and the mobility and collaborations of scientific personnel and inventors.

The course will cover several empirical methods that economists use to provide rigorous, evidence-based analysis of innovation. Significant attention will be devoted to use of randomized control trials (RCTs), which is currently an underutilized method in the field of innovation economics, despite its wide use in other fields of economics, notably in development economics. RCTs have great potential for providing policymakers with evidence about which tools, policies and programs work in increasing innovation and fostering economic growth.



Objectives of the Course

- ❖ Participants will learn about the microeconomic theoretical foundations for the determinants of innovation and how innovation can increase economic growth.
- ❖ They will learn the core econometric tools used for empirical research in innovation.
- ❖ The use of randomized control trials (RCTs) will be covered in depth.
- ❖ Participants will become familiar with important empirical evidence from research on innovation and technical change.
- ❖ In teams, participants will develop a proposal for an RCT that could be used to study an innovation policy question.

Who can attend?

- Business executives in the area of IP management.
- Postgraduate students of Economics and Law.
- Research scholars in the field of economics of innovation and intellectual property rights, industrial organization and public policy.

Lecture Schedule

Lecture 1:

Innovation and Economic Growth I: How do inputs to innovative activity map into productivity improvements in the macroeconomy? The nature of ideas and the ideas production function

Lecture 2:

Innovation and Economic Growth II: Innovation in emerging economies; the role of the public and business sectors

Lecture 3:

Threats to Identification and the Experimental Ideal: Causal inference. The selection problem and other threats to internal validity

Lecture 4:

Core Quasi-Experimental Tools: Core tools for econometric analysis, including difference-in-differences, matching, instrumental variables, and regression discontinuity

Lecture 5:

Econometric Tools for the Indian Context: Count data modeling, tobit/probit and self-selection models

Lecture 6:

Randomized Control Trials (RCTs): Design and a practical toolkit

Lecture 7:

Intellectual Property and Patents: Why do we need patents? How do patents impact downstream innovation? RCT designs

Lecture 8:

Geography and Knowledge I: How does geographic proximity influence the transfer of knowledge? Is there evidence of productivity spillovers? Evidence from RCTs

Lecture 9:

Geography and Knowledge II: How does migration impact knowledge flows and productivity?

Lecture 10:

Stars and Peers: What is the role of star scientists and inventors? How do they influence their peers?

Lecture 11:

Teams and Collaboration: The increased prevalence and internationalization of teams. How do scientific teams form? Evidence from RCTs

Lecture 12:

R&D Funding: Developed vs. developing country evidence on the impacts of R&D funding

Group proposal development and presentation:

Teams of students will focus on an important policy question related to the main topics covered (e.g. Patents, Knowledge Spillovers, Scientific Collaborations) and develop a proposal for how an RCT could be designed to study the question.

Registration fee

Participants from Abroad: 500 USD

Participants from Industry: 10,000 INR

Participants from Academic and Research Institutions: 2500 INR

Students/ Researchers from Academic and Research Institutions: 1000 INR

The above fee includes all instructional materials and internet facility. The participants will be provided shared accommodation on payment basis.

How to Register

Stage 1: Register on GIAN portal
<http://www.gian.iitkgp.ac.in/GREGN/index>

Stage 2: Course Registration (GIAN Portal)

Click on "Course Registration" option given at

"Economics of Science, Technology and Innovation: Empirical Approaches and Randomized Control Trials (RCTs)"

Confirm your registration by clicking "Confirm Course".

Selected candidates will be intimated through e-mail by course coordinator about further process of registration and fee payment.

Candidates may be directly contact course coordinator at iprgian@iiti.ac.in for further information.

Last date to register: 30th November 2017

Teaching Faculty



Dr. Ina Ganguli

Dr. Ina Ganguli is an Assistant Professor of Economics at the University of Massachusetts Amherst and a core faculty member of the Computational Social Science Institute. She holds a PhD from Harvard University and a Master's in Public Policy from the University of Michigan. Her primary research areas are labor economics and the economics of science and innovation, and she has run several randomized control trials in the areas of innovation and entrepreneurship. Her recent research has focused on the migration of high-skill workers, the formation of scientific collaborations, and the role of information in entry into scientific careers. Ina is also a Research Fellow at the Stockholm Institute of Transition Economics (SITE) at the Stockholm School of Economics, and a fellow at the Institute for Quantitative Social Sciences at Harvard University. She is a recent recipient of an NBER Innovation Policy grant, a Nesta Innovation Growth Lab (IGL) innovation, entrepreneurship and growth experiments grant, and an Early Career Research Award from the W.E. Upjohn Institute for Employment Research. Her research has been published in journals such as the Review of Economics and Statistics, American Economic Journal: Applied Economics, Journal of Labor Economics, and Research Policy.

Contact

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Dr. Ruchi Sharma

Dr. Ruchi Sharma is an Associate Professor of Economics at Indian Institute of Technology Indore. She has worked as an Assistant Professor at IIT Delhi and held visiting position at IIM Indore. Her research areas are Economics of Innovation, Patent Policy and Technology Transfer (FDI and Licensing). Currently, her research group is working on R&D and patenting by Indian firms, patenting by Indian universities and academic institutions and the impact of FDI on innovation by Indian firms. She has completed sponsored research project funded by Indian Council of Social Sciences Research. She has published research papers in international journals of repute like Economics of Innovation and Technology, Journal of Economic Studies, Global Economic Review and Journal of Intellectual Property Rights and World Patent Information. She was awarded Kusuma Young Faculty Incentive Fellowship at IIT Delhi.

Course Coordinator

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