Teaching Economics Principles to Engineering Students: Lessons and Questions

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Abstract

The economics education literature is full of research about how to teach economics to specific groups of students, mainly business and liberal arts students. Not much is known about the challenges and opportunities of teaching economics specifically to engineering students. This paper is intended to frame a discussion of those challenges and opportunities.

This paper is informed by experience and assessment data from a required core economics course at the Colorado School of Mines where most students are pursuing degrees in some kind of engineering. The main insights are that teaching economics to engineering students requires explicit communication of relationships between economics and engineering as well as adjustments to both content and pedagogy.

Relative to other students, engineering students are more interested in economic decision-making and innovation. An economics course for engineering students should emphasize tools for cost-benefit analysis and optimization that help students think about personal, social and engineering choices in terms of benefits and costs. Economics instruction for engineers should also focus on the role of innovation. Students who see themselves as innovators are turned off by an introductory economics course that stresses static models where technology is fixed. Innovation should be woven through the course so engineering students can understand incentives for innovation and effects of innovation on markets, workers and economies.

Although the discipline has made some strides in pedagogy, economics instruction is still less engaging than other disciplines. Economics instruction for engineers should incorporate learning tools that have proven to be effective in engineering education. The paper describes how several of these tools can be adapted for an economics course.