Northeastern University

Global Collaboration and Conflict

Security Scanning
Carey Rappaport, Professor, Electrical and Computer Engineering

Everybody hates airport security. The lines, the waiting, the disrobing, the pat-downs, and the general atmosphere of suspicion makes the process unpleasant. On the other hand, everybody wants to be safe on airplanes. This project course considers the technology of security scanning and the reasons why the security experience is so inconvenient. Projects will consider ways of improving the experience and what security scanning may look like in the future. The final deliverable will be a proposal to suggest meaningful improvements to the entire process that considers all parties: the traveling public, the security establishment, the scanning equipment manufacturers, and the airports.

Social Choice and Social Systems
Sebastian Ille, Senior Lecturer in Economics, NCH

Did you ever ask yourself why people act in a certain way, why they follow social conventions, and why they form common or opposite beliefs? Why is a certain behavior considered to be good for society and other behavior is not? How is information shared on social networks or how does a pandemic spread? A social system (such as your community, your ethnic group, your city, or your online network) is composed of various interacting actors, such as individuals, groups of individuals, organizations, firms, etc. In this project, you will learn an easy and accessible approach that allows you to study a social system and find answers to questions such as those mentioned above. You will develop skills to understand the complex interdependencies that define our choices and form a social system, but above all, the project will turn you into system thinkers who understand the world better.

International Collaboration and Research
Darien Wood, Professor, Department of Physics

Large international research collaborations can be an effective way to approach big questions. There are advantages to bringing together resources from many countries, but there are also organizational challenges. This project course will explore the factors that make international research collaborations successful. There are positive examples of international Big Science such as the Human Genome Project, The CERN Large Hadron Collider, and the International Space Station, but not all examples have worked smoothly. The project for this learning community will focus on fusion energy. In spite of large national and international efforts on fusion energy research, the potential benefits are still many years away. How can the international collaboration on fusion energy be enhanced or restructured to increase the chance to realize the potential benefits

of fusion energy on a useful time scale? The deliverable for this project is a proposal to a national funding agency of a selected country to join or enhance its effort in fusion research to make a significant impact on the prospects for success.

Conflicts of Interest and Economic Inequality
Nicole Boyson, Research Professor, Department of Finance

Nearly every relationship between people, countries, or companies entails potential and often unavoidable conflicts of interest. For example, investment professionals have incentives to sell products that pay them the highest commissions, while healthcare providers have incentives to perform expensive – and perhaps unnecessary – surgeries. All these conflicts involve one party (the agent) putting his personal interests before the best interests of another (the principal). In this project course, we examine the history of conflicts of interest in the United States in a number of institutional, social, and legal settings and study how the existence of conflicts can exacerbate economic inequality. We research existing and potential solutions to conflicts, such as regulation, certifications, personal oaths, education, and market-based initiatives. Student projects investigate an existing conflict of interest and develop a policy recommendation to present to advocates, professional organizations, regulators, and/or policymakers.