POLYSCI 489-003 CMPLXSYS 489-001: Collective Intelligence  
W 2016  
M, W 11:30-1:00  
Professor: Scott E Page (scotepage@gmail.com)  
Office Hours: M: 1-2, W: 10-11:30 and by appointment in 317 West Hall.

**Book:**  

**Description:** Collective Intelligence (CI) refers to the potential for a group or population to have better information, make better predictions, or to find better solutions to problems than the average or the best individual. Democracies, markets, juries, scientific panels, and insect colonies rely on collective intelligence. In this course, we study the phenomenon of collective intelligence focusing on what makes it possible, how it depends on diversity, coordination, and incentives. We place particular focus on the role of institutions - both formal and informal - in producing collective intelligence. The course borrows from literatures in philosophy of science, political science, economics, organizational behavior, neuroscience, and machine learning. Students should be comfortable with algebraic models, basic statistics, and readings from multiple fields. Course grades will be determined by individual assignments, group activities, and exams.

**Course Requirements:** Students will be asked to write summary documents, build (and if willing record) powerpoint presentations and pecha kuchas, develop classroom exercises, and engage in a variety of collective projects and exercises.

**Grades:** Grades will be based on individual assignments, collective participation, exam performance, and overall performance of the entire class. Each student will receive a percentage score in each of these four categories. The final grade will be determined by assigning weights of 0.4, 0.3, 0.2, and 0.1 to determine a final percentage. The allocation of the weights will be assigned individually to each student so as to maximize final grade. This grading procedure advantages exceptional performance in a single area and collective performance (see examples on canvas page).
Course Outline:

W Jan 6: Introduction

M Jan 11: Economics and Biology

W Jan 13: Political Science and Law

M Jan 18: MLK Day No Class

W Jan 20: Cognitive Psychology and Organizational Behavior

M Jan 25: Computer Science and Neuroscience

W Jan 27: Categorization 1: Coordinate, Order, Create, (Self)-Organize, Assemble, Cooperate, Respond, Identify, Solve, and Predict (COCOA CRISP

M Feb 1: Categorizations 2-5: Integrative or Tapping, External or Emergent, Static vs Systolic, Institutional Structure


W Feb 5: Algorithms II: DeGroot Algorithm, Page Rank


M Feb 15: In Class Midterm

W Feb 17: Crowdsourcing Team Competition (Remote)

M Feb 22: Attributes of The Collective

W Feb 24: Explore vs Exploit, Selection, Evolution Diversity

M Mar 7: Recommender Systems

W Mar 9: Crowdsourcing

M Mar 14: Prediction

W Mar 16: Game Playing and Strategy Formation

M Mar 21: Creation and Innovation

W Mar 23: Group Intelligence
M Mar 28: Collective Writing

W Mar 30: Computation

M Apr 4: Cognition

W Apr 6: Consciousness

M Apr 11: The Madness of Crowds

W Apr 13: Exercises

M Apr 18: Exam

T Apr 26: Deadline for all edits and changes