



**Gifted LearningLinks Program
Course Syllabus Template**

**Instructor name: P. Stinchcombe
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Course Title: The Mathematics of Social Choice

Session Date: 2011-2012 Monthly Enrollment

Course Description:

Is voting by majority or plurality more fair? How do we mathematically rank our nation's best colleges? Reframing social issues using math, students design experiments to answer important authentic questions. Using case studies, students apply math to real-world social situations by analyzing consequences, benefits and costs, when appropriate.

Outcomes: Upon successful completion of this course, students will:

- Understand the frameworks political scientists, economists and sociologists use to analyze decisions.
- Understand some basic concepts from statistics and calculus, including the fundamentals of limits, integrals and derivatives, correlation, confidence intervals, and some descriptive statistical methods.
- Have experience with the use of spreadsheets to record, analyze, and display data.
- Be able to interpret and criticize presentations of mathematical subjects, and present social issues in ways that are both mathematically rigorous and accessible.

Resources and Materials:

We will use a variety of publicly available resources for our research, including:

- A couple chapters from public-domain textbooks, including *Principles of Macroeconomics*
- US Census and American Community Survey data;
- Blogs and journal articles;
- The CIA World Factbook.

CTD Statement on Third-Party Web Sites

Instructors are required to thoroughly review any third-party web sites they intend to use in their courses for inappropriate content. However, because web content continuously changes, CTD disclaims any responsibility for any of the content contained on third-party web sites used in course materials. If you become aware of anything that may be inappropriate, please notify CTD staff immediately.

Schedule:

	Topic/Focus	Activities & Reading Assignments	What do I need to post to the Discussion Board?	What do I need to turn in?
Unit One: Identifying the Goals				
Week 1	Classical Economics, Part 1	Classical Measures of Utility readings	News Grab #1	Reading response questions
Week 2	Classical Economics, Part 2	Assumptions of Classical Economics readings	News Grab #2	Reading response questions
Week 3	Standard of Living	Standard of Living worksheet	News Grab #3	Standard of Living Worksheet
Week 4	Inequality	Measures of Inequality worksheet	News Grab #4	Measures of Inequality worksheet
Unit Two: Identifying the Means				
Week 5	Correlation	Correlation worksheet	News Grab #5	Correlation worksheet
Week 6	Sampling and Confidence	Bayesian Probability and Sampling worksheet	News Grab #6	Bayesian Probability and Sampling worksheet
Week 7	Presenting Data	Data Presentations worksheet	News Grab #7	Data Presentations worksheet
Week 8	Case Study: University Rankings	University Ranking online research project	News Grab #8	University Ranking online research project
Unit Three: Making Decisions				
Week 9	Game Theory: Basic Concepts	Game Theory readings and worksheet	News Grab #9	Game Theory reading response and worksheet
Week 10	Game Theory: Classic Games	Classic Game Analysis worksheet	News Grab #10	Classic Game Analysis worksheet

	Topic/Focus	Activities & Reading Assignments	What do I need to post to the Discussion Board?	What do I need to turn in?
Week 11	Game Theory: Solving the Prisoner's Dilemma	Repeated Prisoner's Dilemma reading and worksheet	News Grab #11	Repeated Prisoner's Dilemma reading and worksheet
Week 12	Voting Systems: Electoral systems	Electoral Systems reading; Analysis worksheet	News Grab #12	Worksheet; reflection
Week 13	Voting Systems: Direct democracy	Direct and Consensus Democracy readings; Analysis worksheet	News Grab #13	Worksheet; reflection
Week 14	Voting Systems: Gerrymandering	Gerrymandering reading; Gerrymandering game	News Grab #14	Gerrymandering reflection questions
Week 15	Voting Systems: Drawing Districts	Redistricting reform reading	News Grab #15	District Design Project
Unit Four: Putting It All Together				
Week 16	Case Study: Budget Processes	Budget processes reading; Budget process online research project	News Grab #16	Reading response; online research project
Week 17	Final Project, Week 1	Begin final project	Nothing!	Final project proposal
Week 18	Final Project, Week 2	Finish final project.	Nothing!	Final project

Student Evaluation and Grading Policies for Credit Courses Only:

a. CTD Grading scale

A+ 97-100	B+ 87-89	C+ 77-79	D+ 67-69	F Below 60
A 93-96	B 83-86	C 73-76	D 63-66	
A- 90-92	B- 80-82	C- 70-72	D- 60-62	

b. Breakdown of final grade:

- Each week's assignments will count for 5% of your class grade. The final project will be worth 15% of your class grade.

Instructor Biography:

Per Stinchcombe is a Ph.D. student in the mathematics department at the University of California, Berkeley. After graduating from Wesleyan University in 2008, he spent three years teaching high-school mathematics in Chicago Public Schools – first at Lincoln Park High School and then at Fenger Academy. During two of those years, he also taught math, science, and technology courses in the Saturday Enrichment Program. This is his first year teaching online.

Contact Information:

During office hours (I'll arrange these with each cohort of students to make sure there's overlap in the times we're available), I can be reached at xxx-xxx-xxxx. At other times, I can be reached by email at xxx@xxx.xxx

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