

A Proposal to Create a Minor Degree in Quantitative Social Science

Approved by CLASS Undergraduate Studies Committee on Dec. 4, 2008

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1. Narrative

What tools do students of the social sciences need to understand and succeed in today's world? Our conviction is that "numeracy" and statistical literacy are crucial skills that directly relate to one's ability to generate causal inferences from observations, to make reasoned or rational choices, to evaluate numerical claims and arguments, and to support one's own arguments with evidence. An increasingly important ingredient of social *science* is the utilization of quantitative methods in conducting research.

The idea behind the Quantitative Social Science initiative is to unite multiple departments, each with different areas of specialization and expertise, in an alliance to train undergraduates in quantitative methods. The curriculum we propose will provide students with a common grounding in statistical concepts and tools, while also allowing them to pursue their own interests through electives and directed research projects.

Creating an interdisciplinary Minor in Quantitative Social Science can help students two main ways: the Minor can organize their studies by providing a suggested course sequence and advice on electives, and the Minor can provide motivation to invest in numerical and statistical literacy by rewarding them for their efforts.

Like most universities, the strategy of the University of Houston and its constituent departments is *all stick, no carrot*. Under the core curriculum, the Math/Reasoning Requirement requires students to take a course in quantitative analysis, such as ECON 2370, POLS 3316, or PSYC 3301. The Psychology and Sociology departments require all majors to take a class in research design (PSYC 2301 and SOC 3401) and a class in elementary data analysis (PSYC 3301 and SOC 3400). The Political Science department offers both classes (POLS 3312 and 3316), but is only now implementing a requirement that one or the other be taken, and only for the Bachelor of Science. The Economics department requires all majors to take data analysis (ECON 2370), but does not offer a course in research design. In short, university or departmental regulations mandate that students hurdle one or two obstacles, but do little to promote further development of statistical literacy or acquisition of quantitative methods skills.

It is illuminating to consider the contrast between how social science departments treat undergraduate and graduate students. The former we seek to make into college graduates – hopefully gainfully employed ones. But the latter we seek to make into scientists.

The training of undergraduate and graduate students differs, therefore, both in degree and in overall strategy. For example, although the Political Science department requires all graduate students to take two courses in quantitative methods (the stick), it also offers a carrot: doctoral students have the option of taking a comprehensive exam in methods, which is a marketable credential in the academic job market. The Political Science

department rotates five methods electives (Mathematical Methods, Advanced Multivariate Statistics, Time-Series Analysis, Hierarchical Models, Game Theory); all the courses for graduate students are taught by talented and devoted faculty members – *never* by adjuncts. In short, teaching graduate students statistical methods is made a priority for faculty and for students.

Creating a Minor in Quantitative Social Science represents a shift in the College's strategy for training undergraduates: it would be the first Minor degree component that is tools-oriented rather than substantive. Faculty members would benefit, for the Minor would better prepare students for conducting research, and would hence ease identifying potential research assistants and junior collaborators. The social science departments would benefit, for the Minor would allow them to coordinate their course offerings and to ensure that the most highly motivated students can get the training they seek. The University of Houston will also benefit from an enhanced reputation of its students in the social sciences. Because the Minor curriculum initially will be composed of existing courses, the cost of creating the Minor is relatively low.

2. Timeline

The Quantitative Social Science initiative will require many steps, of which having the Minor approved is the second. The first step was submission of a Quality Enhancement Project (QEP) grant to the Office of Discovery-Based Learning. Scott Basinger serves as PI for the grant proposal; David Pappel and David Francis are Co-PIs. The grant proposal was submitted November 17th, and funding decisions will be announced December 17th.

During Spring 2009, meetings will continue between Economics, Political Science and Psychology department representatives. A list of fourteen faculty members who have participated already in the planning, or who have volunteered to participate in future planning activities, follows below. The purposes of the Spring 2009 meetings will be to coordinate offerings of existing courses that satisfy Minor requirements, to plan the new course on Research Quality Assurance and Data Management, and to arrange for its listing as a Special Topics class in 2009.

During the Summer of 2009, cbm-003 forms to create the Quantitative Social Science courses will be submitted to the College. Further meetings between representatives of the Economics, Political Science, and Psychology departments will occur, with the main purpose being to identify necessary changes to departments' Catalog entries, to allow students to fulfill departmental requirements with appropriate Quantitative Social Science courses. Guidelines for the directed quantitative research projects will also be negotiated.

During the Fall of 2009, representatives from the aforementioned departments will continue to meet, with attention turning to staffing the new Quantitative Social Science courses, to harmonizing the departments' undergraduate computer laboratories, and to creating an instructional computing facility. Issues about statistical computing software will also be addressed.

3. Affiliated Faculty

The following fourteen professors either have already participated in the Quantitative Social Science initiative or have volunteered to participate in the future. Some serve only in an advisory capacity, some will develop and/or offer electives, and others expect to teach in the QSS core sequence.

Rebecca Achee Thornton, Department of Economics

John Antel, Department of Economics

George Antunes, Department of Political Science

Scott Basinger, Department of Political Science

Jennifer Clark, Department of Political Science

Jeronimo Cortina, Department of Political Science

David Francis, Department of Psychology

Jim Granato, Center for Public Policy

Noah Kaplan, Department of Political Science

Ryan Kennedy, Department of Political Science

Janet Kohlhase, Department of Economics

Adriana Kugler, Department of Economics

Paras Mehta, Department of Psychology

Lynne Steinberg, Department of Psychology

*** Proposed catalog language for Fall 2009 ***

Quantitative Social Science Degree Information

Who's Who in Quantitative Social Science
Overview
Minor in Quantitative Social Science

Who's Who in Quantitative Social Science

Director:

Scott Basinger, Department of Political Science

Overview

The Quantitative Social Science Minor exists to encourage students to acquire the knowledge, skills and tools needed to conduct scientific research. We draw inspiration from Herbert Simon – a seminal figure in the fields of Psychology and Political Science, and a Nobel Laureate in Economic Science – who wrote, “The social sciences need the same kind of rigor and the same mathematical underpinnings that made the "hard" sciences so brilliantly successful.”

Quantitative Social Science is an interdisciplinary initiative, with faculty drawn from the departments of Economics, Political Science, Psychology, and Sociology. The Minor in Quantitative Social Science is available to all UH students; academic advising is offered by undergraduate advisory staff members in the aforementioned departments. The Minor is directed by Dr. Scott Basinger (PGH 447).

Minor in Quantitative Social Science

Many courses can satisfy both a requirement of the student's major and a requirement of the Quantitative Social Science Minor. However the interdisciplinary nature of quantitative methodology obliges students not to confine coursework to any one department. A maximum of 6 semester hours of completed minor coursework may be counted towards a student's major. Note that any course that counts towards a student's

major and towards the Core Curriculum cannot also count towards the 18 semester hours required for the minor.

The Quantitative Social Science Minor requires a minimum of 18 semester hours:

1. Three hours on statistical concepts and basic statistical analysis (ECON 2370, MATH 2311, POLS 3316, PSYC 3301, SOC 3400).
2. Three hours on research design (COMM 2300, POLS 3312, PSYC 2301, SOC 3401).
3. Three hours on regression analysis (ECON 4365).
4. Three hours completing a directed research project. Credit may be given for a Senior Honors Thesis (ECON 3399–4399, POLS 3399–4399, PSYC 3399–4399, SOC 3398, SOC 4399), or students may use a 4000-level special problems course with QSS director approval. This is intended to be a capstone course, completed after the required course on research design and the two required courses on statistical analysis. Research projects must satisfy minimal criteria determined by the QSS director.
5. Six hours of electives at the 3000-level or higher. Students may fulfill the elective component with approved courses in economics, political science, psychology, and sociology. A list of approved courses, updated each semester, will be available from the QSS director. Credit for appropriate Selected Topics or Special Problems courses offered by any department, including Interdepartmental Liberal Arts and Social Sciences (ILAS), may be granted by petition.

Each CLASS area provides the opportunity to take special problems (independent study) courses. Participation in these courses requires an approved petition to be on file in the appropriate department. No more than six semester hours of special problems courses may be used to satisfy any major or minor requirements in CLASS.

Following is a partial listing of courses that would count as satisfactory electives for the Minor in Quantitative Social Science:

ECON 4349: Introduction to Game Theory
ECON 4360: Introduction to Mathematical Economics
ECON 4364: Introduction to Experimental Economics
PSYC 4347: Tests and Measurements
SOC 3352: Population Analysis

Courses numbered 6000 or higher are normally limited to graduate and postbaccalaureate students, however students may request permission from their department or college to enroll in these classes. The instructor's permission should also be sought.

At least 12 of the 18 hours must be in residence. A minimum 2.00 grade point average is required for all courses attempted in the minor.

Courses: Quantitative Social Science

QSS 2300: Statistical Concepts and Analysis

QSS 3301: Regression Analysis

QSS 3302: Research Design

QSS 3303: Research Quality Assurance

QSS 4300: Quantitative Social Science Research Project

QSS 4397: Selected Topics in Quantitative Social Science

QSS 4398: Special Problems in Quantitative Social Science