



Department of Psychology

Advanced Certificate in Quantitative Methods – Completion Form

Name: \_\_\_\_\_ ID #: \_\_\_\_\_

1. Completion of both of the following courses:

Table with 5 columns: CRSE #, Title, Yr/Sem, Grade, Instructor. Rows include PSY 501 (Analysis & Design) and PSY 502 (Correlation/Regression).

Three (3) additional quantitative courses from the following list (instructors may change; courses outside Psychology require the permission of those instructors). Any substitutions must be approved by the Graduate Director in advance by providing a syllabus of the course to be substituted.

Table with 5 columns: CRSE #, Title, Yr/Sem, Grade, Instructor. Lists 18 additional quantitative courses such as PSY 505, PSY 506, POL 602, etc.

3. Teaching Requirement:

Serve as the instructor of one of the following: PSY 201 or PSY 301 OR serve as a Teaching Assistant in PSY 501 or PSY 502.

Table with 4 columns: CRSE #, Title, Taught/Semester, TA'd/Semester.

Director of Graduate Studies (signature)

Date

# Outside Department Course Descriptions

## **POL 602: Applied Data Analysis I**

The application of statistical and mathematical models to the analysis of political data: introduction to the research process and to topics in measurement, basic descriptive statistics, and inferential statistics.

*3 credits, Letter graded (A, A-, B+, etc.)*

## **POL 603: Applied Data Analysis II**

The application of statistical and mathematical models to the analysis of political data: regression analysis.

*3 credits, Letter graded (A, A-, B+, etc.)*

## **POL 604: Applied Data Analysis III**

The application of statistical methods to the analysis of political data. The emphasis is on diagnosing and dealing with violations of assumptions of statistical models. Topics covered include advanced regression, models for discrete dependent variables, systems of equations, and selection bias.

*3 credits, Letter graded (A, A-, B+, etc.)*

## **POL 606: Time Series Analysis**

This seminar will consider statistical models for political processes observed over time. The major topics will include cointegration, time varying parameter models and duration models.

*3 credits, Letter graded (A, A-, B+, etc.)*

## **POL 610: Foundations II: Experimental Design and Methods**

An overview of experimental research with an emphasis on experimental design, data analysis, and interpretation. Students develop the ability to critically evaluate experimental research. Students also participate in the development, implementation, and analysis of a laboratory experiment.

*3 credits, Letter graded (A, A-, B+, etc.)*

## **POL 676: Advanced Topics: Methods I**

A course reviewing the literature and methodology of specific areas of political science research. The course relates directly to research applications and provide students with an opportunity to apply advanced research tools to selected substantive problems.

*3 credits, Letter graded (A, A-, B+, etc.) May be repeated for credit.*

## **CSE 507: Introduction to Computational Linguistics**

Overview of computational approaches to language use. Core topics include mathematical and logical foundations, syntax, semantics and pragmatics. Special topics may include speech processing, dialog system machine translation information extraction and information retrieval. Statistical and traditional approaches are included. Students will develop familiarity with the literature and tools of the field.

*Prerequisites: CSE 537; CSE 541 recommended*

*Spring, 3 credits, Letter graded (A, A-, B+, etc.)*

## **CSE 529: Simulation and Modeling**

A comprehensive course in formulation, implementation, and application of simulation models. Topics include data structures, simulation languages, statistical analysis, pseudo-random number generation, and design of simulation experiments. Students apply simulation modeling methods to problems of their own design. This course is offered as CSE 529, AMS 553 and MBA 553.

*3 credits, Letter graded (A, A-, B+, etc.)*

## **AMS 571: Mathematical Statistics**

Sampling distribution; convergence concepts; classes of statistical models; sufficient statistics; likelihood principle; point estimation; Bayes estimators; consistence; Neyman-Pearson Lemma; UMP tests; UMPU tests; Likelihood ratio tests; large sample theory. Offered as HPH 697 or AMS 571.

*3 credits, Letter graded (A, A-, B+, etc.)*