

QUANTITATIVE RESEARCH SPECIALIZATION

Expertise in the design, analysis and interpretation of research employing quantitative techniques underlies a substantial portion of educational research. The purpose of this research specialization is to provide a *programmatic approach to developing scholarly expertise in quantitative methodologies.*

THE PURPOSE OF THIS RESEARCH SPECIALIZATION:

1. To provide a foundation for students to be able to interpret and judge the appropriateness of quantitative aspects of educational research.
2. To be able to conduct quantitative analyses, to articulate the methodology employed, and to interpret and discuss the meaning of the results in lucid discourse.
3. To understand the strengths and limitations of quantitative methodology.
4. To develop a quantitative research base by becoming familiar with journals and seminal sources of research methodology.
5. To build a base upon which students can independently extend their knowledge and expertise in quantitative methods as demanded by their own research.

WHO SHOULD CHOOSE THIS RESEARCH SPECIALIZATION?

Students should become familiar with the methodologies used in the research in their area. They should discuss with their advisors, faculty, and other students current research topics. This *research specialization should be chosen by students in research areas dominated by quantitative approaches, students who will likely employ quantitative methods in their dissertation research, and/or students who will use quantitative methods in their careers.*

QUANTITATIVE RESEARCH SPECIALIZATION OVERVIEW:

This research specialization enables the student to further focus and specialize in one of three sub areas of quantitative methodology:

1. **Statistical and/or Quantitative** analysis and appropriate interpretation of data collected through experimental or quasi-experimental research.
2. The development and psychometric analysis of **Measurement** instruments.
3. The **Design of Experiments.**

REQUIREMENTS FOR THE QUANTITATIVE RESEARCH SPECIALIZATION:

There are FOUR requirements that must be completed for the Quantitative Research Specialization:

Requirement I:

Students must satisfactorily pass one course that provides a perspective on the goals and role of quantitative research. Courses that fulfill this requirement are:

- CI 550/EPsy 573 - Methods of Educational Inquiry (Strongly recommended)
- EPS 515 - Philosophy of Ed Research
- PHIL 475 - The Philosophy of Social Science

HRE 453 - Disciplined Inquiry in Education and Training
EPSY 513 - Research Methods in Counseling Psychology II (*added May 2005*)

Requirement II:

The student must demonstrate a basic level of statistical knowledge by satisfactorily completing either

EPSY 580 - Statistical Inference in Educ, AND, EPSY 581 - Applied Regression Analysis
OR
PSYC 406 - *Statistical Methods I*, AND, PSYC 407 - *Statistical Methods II*

These core courses provide the foundation required for courses under requirement III.

Requirement III:

The student must demonstrate expertise in a sub area by satisfactorily completing a *minimum of 8 hours from one of the following sub specializations:*

A. Statistical/Quantitative Analysis Methodology

EPSY/PSYC 588 - Covar Struct and Factor Models
EPSY 584/SOC 584/PSYC 594- Multivar Anlys in Psych and Ed
EPSY 582 - *Advanced Statistical Methods*
PSYC 435 - Math Form in Psych Theory
PSYC 506 - Psych Scaling: Unidimen Meth
PSYC 509 - Psych Scaling: Multidimen Meth
PSYCH 436 - Mathematical Models in Psychology
STAT 426 - Categorical Data Analysis or EPSY 589 Categorical Data in Ed/Psyc
EPSY/PSYC/STAT 587 - *Hierarchical Linear Models*

B. Measurement Methodology

PSYC 490 - Mea and Test Dev Lab
EPSY 585/PSYC 595, Section A - Theories of Measurement, 1
EPSY/PSYC 585 - Item Response Theory
PSYC 506 - Psych Scaling: Unidimen Meth
PSYC 509 - Psych Scaling: *Multidimen Meth*

C. Experimental Methodology

EPSY 582 - *Advanced Statistical Methods*
PSYCH 408 - Design of Experiments in Psychology
SPED 583 - Single Subject Research Design

Requirement IV:

Students are required to submit a paper that demonstrates their competency in the applications and interpretation of quantitative analysis of data. Ideally, methods from the student's sub area (requirement III) should be used in the paper. The paper may be co-authored and/or based on work done to satisfy any other requirement in the student's doctoral studies including:

1. Research projects as part of course requirements;
2. Master's thesis or equivalency paper;

3. Research project completed for independent study;
4. Research published in a journal article in which the student is first author; and,
5. Research reported in an AERA, NCME, ARA or APA paper.

The paper must follow certain guidelines before it will be accepted. The paper must be written in the format suggested by the American Psychological Association Guidelines *for journal submission*.

The purpose of the fourth requirement is to provide an opportunity for the student to demonstrate an acceptable level of proficiency in conducting and reporting quantitative research. The quality of research design, appropriate *statistical analysis, and correctness of conclusions and generalizations will be considered*.

Advisors are strongly encouraged to read through student's work before they submit it to insure that the requirements have been satisfied.