

Department of

Educational Research Methodology

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<http://www.uncg.edu/erm>

Graduate Programs in Educational Research Methodology

- M.S.
- M.S./Ph.D.
- Ph.D.
- Doctoral Minor

Professors

Terry Ackerman, Ph.D.

Educational measurement and practical applications of item response theories, including computerized adaptive testing, test construction, equating, differential item/test functioning and ability estimation; theory and application of multidimensional item response theory; applied statistics (Chair of Department and Director of Graduate Study).

Micheline Chalhoub-Deville, Ph.D.

Second/foreign language testing and assessment, including proficiency, performance-based, computer-based/adaptive, and achievement testing; large-scale/standardized testing, especially in international contexts; the assessment of less commonly taught languages, and language policy and planning in educational testing.

Richard Luecht, Ph.D.

Educational measurement, employment and professional testing; performance assessments; standard setting; design of computerised testing systems; integration of cognitive science and measurement; automated test assembly; structural equation modeling; experimental design; multivariate statistics.

Assistant Professors

Robert Henson, Ph.D.

Educational measurement, latent variable modeling with an emphasis on skills diagnosis models, factor analysis, item response theory, classical test theory, test construction, and multivariate statistics.

John Willse, Psy.D.

Educational measurement, practical applications of classical and modern test theory, outcomes assessment in higher education, computer adaptive testing.

Adjunct Faculty

Deb Bartz, M.A.

Program evaluation, specifically in the areas of education and non-profit organizations, survey construction, classroom assessment, feminist research methodologies.

Craig Deville, Ph.D.

Education measurement, student achievement and classroom assessment, test accommodations and assessing special populations, performance assessments, testing for licensure and certification, computer-based testing, foreign and second language assessment.

Alex Epanchin, Ph.D.

Uses and abuses of standardized testing, high stakes testing, program evaluation, applied research in education, reporting assessment results, longitudinal data analyses.

Rick Morgan, Ph.D.

Educational measurement, performance assessment, assessment design, applied statistics, equating, validity, differential item functioning.

The Department of Educational Research Methodology offers programs of study leading to the M.S. and Ph.D. in educational research, measurement, and evaluation as well as a doctoral minor in educational research methodology. Graduates are prepared for careers in such settings as universities and colleges, school systems, state and federal departments of education, social service agencies, educational research and development centers, and the corporate sector. Coursework is supplemented with research experience on grants

and funded projects that include measurement research and evaluation that are being conducted by individual faculty and the UNCG Center for Educational Research and Evaluation.

Non-ERM doctoral students who want to pursue an area of concentration in ERM coursework are strongly encouraged to obtain a Minor in educational research methodology.

MS**Requirements for the Master of Science
in Educational Research, Measurement, and Evaluation**

The Department of Educational Research Methodology offers a graduate program of study leading to a 36 hour Master of Science degree in educational research, measurement, and evaluation. After completing at least 18 hours in the M.S. program, students may submit a request to faculty within the department to be considered for admission into the Ph.D. program. The departmental Director of Graduate Study will take leadership in reviewing the request with ERM faculty and advising the student and The Graduate School of the department's recommendation in writing. Students approved by this process will not be required to submit another formal application.

Required Core Courses (24 hours)

In cases where students have previously satisfied these requirements, course substitutions may be allowed with the approval of the major advisor.

- ERM 604 Methods of Educational Research (3)
- ERM 642 Evaluation of Educational Programs (3)
- ERM 667 Foundations of Educational Measurement Theory (3)
- ERM 668 Survey Research Methods in Education (3)
- ERM 669 Item Response Theory (3)
- ERM 675 Data Presentation and Reporting (3)
- ERM 680 Intermediate Statistical Methods in Education (3)
- ERM 681 Design and Analysis of Educational Experiments (3)

Electives (12 hours)

Students must complete a combination of 12 hours in elective courses at the 600-749 level. At least 6 hours must be completed in a cognate discipline outside of educational research. Cognate disciplines may include educational foundations, curriculum and instruction, psychology, sociology, statistics (some 500-level courses are acceptable), public health, political science, or computer science. With the approval of the major advisor, 6 hours may be selected from among the following educational research courses:

- ERM 643 Applied Educational Evaluation (3)
- ERM 682 Multivariate Analysis (3)
- ERM 688 Contemporary Problems Seminar: Educational Statistics and Measurement (1-3)
- ERM 693 Seminar in Advanced Research Methods (3)
- ERM 726 Advanced Topics in Educational Measurement (3)
- ERM 727 Computer-based Testing: Methods and Applications (3)
- ERM 728 Factor Analysis and Multidimensional Scaling (3)
- ERM 729 Advanced Item Response Theory (3)
- ERM 731 Structural Equation Modeling in Education (3)
- ERM 732 Hierarchical Linear Modeling (3)
- ERM 733 Language Assessment and Testing (3)
- ERM 735 Multidimensional Item Response Theory (3)
- ERM 742 Advanced Evaluation of Educational Programs (3)

Comprehensive Examination

The student will successfully complete a written comprehensive examination to be arranged by the major advisor.

MS/PhD**Requirements for the Master of Science/Doctor of
Philosophy in Educational Research, Measurement, and Evaluation**

The Department of Educational Research Methodology offers a graduate program of study leading to a Ph.D. degree in educational research, measurement, and evaluation of 93 hours beyond the baccalaureate degree (for student's entering the program in the M.S./Ph.D. track).

Required Core Courses (42 hours)

In cases where students have previously satisfied these requirements, course substitutions may be allowed with the approval of the major advisor.

- ERM 604 Methods of Educational Research (3)
- ERM 642 Evaluation of Educational Programs (3)
- ERM 643 Applied Educational Evaluation (3)
- ERM 667 Foundations of Educational Measurement Theory (3)
- ERM 668 Survey Research Methods in Education (3)

- ERM 669 Item Response Theory (3)
- ERM 675 Data Presentation and Reporting (3)
- ERM 680 Intermediate Statistical Analysis (3)
- ERM 681 Design and Analysis of Educational Experiments (3)
- ERM 682 Multivariate Analysis (3)
- ERM 727 Computer-based Testing: Methods and Applications (3)
- ERM 728 Factor Analysis and Multidimensional Scaling (3)
- ERM 729 Advanced Item Response Theory (3)
- ERM 731 Structural Equation Modeling in Education (3)

Secondary Area of Concentration (12 hours)

Students are required to complete a Secondary Area of Concentration in a cognate area of their own choosing with the approval of their doctoral Advisory/Dissertation Committee. Cognate disciplines may include, but are not limited to, educational leadership and cultural foundations,

curriculum and instruction, psychology, sociology, human development and family studies, statistics (some 500-level courses are acceptable), public health, political science, specialized education services, or computer science.

Electives (27 hours)

Students must complete a minimum of 27 hours in elective courses from the suggested list below. If the student elects to take a course that is not on the list they must receive approval from their doctoral Advisory/Dissertation Committee.

- ERM 688 Contemporary Problems Seminar (1-3)
- ERM 692 Independent Study (1-4)
- ERM 711 Experimental Course (3)
- ERM 725 Applied Methods on Educational Research (3)
- ERM 726 Advanced Topics in Educational Measurement (3)
- ERM 730 Practicum in Educational Research and Evaluation (3)
- ERM 732 Hierarchical Linear Modeling (3)
- ERM 733 Language Assessment and Testing (3)

- ERM 734 Equating (3)
- ERM 735 Multidimensional Item Response Theory (3)
- ERM 742 Advanced Topics in Evaluation of Educational Programs (3)
- ERM 750 Case Study Methods in Educational Research (3)
- CUI 730 Qualitative Analysis (3)
- STA 551 Introduction to Probability (3)
- STA 552 Introduction to Mathematical Statistics (3)

Comprehensive Examination

A student may elect, but is not required, to take the comprehensive exam following 24 hours of core courses and 12 hours of electives to receive the M.S. degree. Following the completion of 42 hours of core courses, 27 hours of electives, and 12 hours of a minor, the student must successfully complete a written comprehensive examination to be arranged by the doctoral Advisory/Dissertation Committee.

Dissertation (12 hours)

Research that culminates in the preparation of a required doctoral dissertation.

- ERM 799 Dissertation (12)

PhD

Requirements for the Doctor of Philosophy in Educational Research, Measurement, and Evaluation

The Department of Educational Research Methodology offers a graduate program of study leading to a 75 hour Ph.D. degree in educational research, measurement, and evaluation.

Required Core Courses (27 hours)

With the approval of the Advisory/Dissertation Committee, a maximum of 15 hours in the following courses may be transferred from UNCG's master's degree or from a comparable master's degree program. The 15 hour maximum also includes any transferred courses included to satisfy required core courses. In cases where students have previously satisfied these requirements, course substitutions may be allowed with the agreement of the major advisor.

- ERM 642 Evaluation of Educational Programs (3)
- ERM 643 Applied Educational Evaluation (3)
- ERM 668 Survey Research in Education (3)
- ERM 675 Data Presentation and Reporting (3)
- ERM 682 Multivariate Analysis (3)
- ERM 727 Computer-based Testing: Methods and Applications (3)
- ERM 728 Factor Analysis and Multidimensional Scaling (3)
- ERM 729 Advanced Item Response Theory (3)
- ERM 731 Structural Equation Modeling in Education (3)

Secondary Area of Concentration (12 hours)

Students are required to complete a Secondary Area of Concentration in a cognate area of their own choosing with the approval of their doctoral Advisory/Dissertation Committee. Cognate disciplines may include, but are not limited to, educational leadership and cultural foundations, curriculum and instruction, psychology, sociology, human development and family studies, statistics (some 500-level courses are acceptable), public health, political science, specialized education services, or computer science.

Electives (24 hours)

Student must complete a minimum of 24 hours in elective courses from the suggested list below. If the student elects to take a course that is not on the list he or she must receive approval from their doctoral Advisory/Dissertation Committee.

- ERM 688 Contemporary Problems Seminar (1-3)
- ERM 692 Independent Study (1-4)
- ERM 711 Experimental Course (3)
- ERM 725 Applied Methods on Educational Research (3)
- ERM 726 Advanced Topics in Educational Measurement (3)
- ERM 730 Practicum in Educational Research and Evaluation (3)
- ERM 732 Hierarchical Linear Modeling (3)
- ERM 733 Language Assessment and Testing (3)

- ERM 734 Equating (3)
 ERM 735 Multidimensional Item Response Theory (3)
 ERM 742 Advanced Topics in Evaluation of Educational Programs (3)
 ERM 750 Case Study Methods in Educational Research (3)
 CUI 730 Qualitative Analysis (3)
 STA 551 Introduction to Probability (3)
 STA 552 Introduction to Mathematical Statistics (3)

Comprehensive Examination

Following the completion of 24 hours of core courses, 27 hours of electives, and 12 hours of a minor, the student must successfully complete a written comprehensive examination to be arranged by the doctoral Advisory/Dissertation Committee.

Dissertation (12 hours)

Research that culminates in the preparation of a required doctoral dissertation.

- ERM 799 Dissertation (12)

Minor Requirements for the Doctoral Minor in Educational Research Methodology

The Department of Educational Research Methodology offers a graduate program of study leading to a 15 hour doctoral minor in educational research methodology.

Core (12 hours)

- ERM 667 Foundations of Educational Measurement Theory (3)
 ERM 680 Intermediate Statistical Methods in Education (3)
 ERM 681 Design and Analysis of Educational Experiments (3)
 ERM 682 Multivariate Analysis (3)

Electives (3 hours)

Select one of the following courses:

- ERM 642 Evaluation of Educational Programs (3)
 ERM 668 Survey Research in Education (3)
 ERM 675 Data Presentation and Reporting (3)
 ERM 693 Seminar in Advanced Research Methods (3)
 ERM 726 Advanced Topics in Educational Measurement (3)
 ERM 728 Factor Analysis and Multidimensional Scaling (3)
 ERM 731 Structural Equation Modeling in Education (3)
 ERM 732 Hierarchical Linear Modeling (3)
 ERM 733 Language Assessment and Testing (3)

ERM Educational Research Methodology Courses

604 Methods of Educational Research (3:3)

Techniques and uses of research in education. Designed to provide the student with the ability to read, understand, and critically evaluate published empirical research. (Formerly EAR 593. Students who took this course as EAR 593 are **not** eligible to take ERM 604 and receive credit.)

605 Educational Measurement and Evaluation (3:3)

For teachers, counselors, and administrators. Principles of measurement and evaluation; methods of scoring and interpreting tests. Construction and use of teacher-made tests. Statistical concepts basic to understanding and interpreting test data. (Formerly EAR 670; students who took this course as EAR or ERM 670 are **not** eligible to take ERM 605 and receive credit.)

617 Statistical Methods in Education (3:3)

Pr. elementary algebra

Introductory course in applied descriptive statistics, correlational methods, and linear regression that provides a conceptual and theoretical foundation for more advanced work and a thorough grounding in the use of computers for descriptive statistical analysis, and interpretation of results. (Formerly EAR 501. Students who took this course as EAR 501 are **not** eligible to take ERM 617 and receive credit.)

642 Evaluation of Educational Programs (3:3)

Pr. permission of instructor and 617 or equivalent

Existing and emerging formulations of educational evaluation. Developing operational guidelines for conducting evaluations in educational settings.

643 Applied Educational Evaluation (3:3)

Pr. 642

An application course that uses modern evaluation models, data collection, statistical analyses, and interpretation of findings to establish the effectiveness and utility of an educational program.

667 Foundations of Educational Measurement Theory (3:3)

Pr. 680 or equivalent course

Statistical foundations, classical test theory, reliability, validity, item analysis, and norms; selected topics in modern test theory. Designed for those who will develop, evaluate, and select measurement instruments in their professional roles. (Credit may not be obtained for PSY 437)

668 Survey Research Methods in Education (3:3)

Pr. 617 and 680 or equivalent

Theory, methods, and procedures of survey research as this methodology is applied to problems in education. Sampling from finite populations.

669 Item Response Theory (3:3)

Pr. 667, and either 681 or STA 662, or equivalent courses and permission of instructor.

Conceptual and mathematical foundations, parameter estimation, tests of model assumptions and goodness of fit, and practical applications of IRT.

- 675 Data Presentation and Reporting (3:3)**
Pr. 680
 Modern techniques for summarizing and visualizing univariate and multivariate data using various statistical and graphical software packages. Covers theories and research on graphics and the perception of visual data.
- 680 Intermediate Statistical Methods in Education (3:3)**
Pr. elementary algebra
 Applied descriptive and inferential statistics. Topics include applied probability, power analysis, chi-square distributions, hypothesis testing for a variety of applications, and correlation and regression. Concept learning, applications, and computer analyses are stressed. (Formerly ERM 618. Students who took this course as ERM 618 are not eligible to take ERM 680 and receive credit)
- 681 Design and Analysis of Educational Experiments (3:3)**
Pr. 618, 680 or equivalent, or permission of instructor
 Advanced inferential statistics including factorial ANOVA, repeated measures design, multiple regression, ANCOVA, log-linear analysis. Applications in education and the social sciences.
- 682 Multivariate Analysis (3:3)**
Pr. 680 and 681, or STA 573, or STA 662, or permission of instructor
 Multivariate normal distribution. Cluster analysis, discriminant analysis, canonical correlation, principal component analysis, factor analysis, multivariate analysis of variance. Use and interpretation of relevant statistical software. (Same as STA 671)
- 688 Contemporary Problems Seminar (1-3)**
Pr. advanced master's or doctoral standing, or permission of instructor
 Specific course title identified each semester by subscript, e.g., Contemporary Problems Seminar; Issues in Professional Negotiations. May be repeated for credit when topic varies.
- 692 Independent Study (1-4)**
Pr. permission of instructor
 Guided readings, research, and individual project work under direction of a staff member.
- 693 Seminar in Advanced Research Methods (3:3)**
Pr. 604, 605, 680, 681, or equivalent
 Advanced techniques of research or measurement applied to educational or social and behavioral science problems.
- 699 Thesis (1-6)**
 Individual guidance and direction in the development of a research problem in the master's degree thesis.
- 711 Experimental Course**
 This number reserved for experimental courses. Refer to the Course Schedule for current offerings.
- 725 Applied Methods of Educational Research (3:3)**
 Investigates procedures and methodologies necessary to pursue research problems in measurement, evaluation, and applied statistics. Student work must demonstrate the ability to organize and conduct a research project.
- 726 Advanced Topics in Educational Measurement (3:3)**
Pr. 680, 667 or permission of instructor
 Technical developments and applications in classical test theory, item response theory, generalizability theory, models of selection bias, differential item functioning, and test score equating.
- 727 Computer-Based Testing: Methods and Applications (3:3)**
Pr. 667
 Computer-based testing applications including automated test assembly, item banking, computer-adaptive and multistage testing, web-based testing, large scale assessment development and support systems, and computer-based performance assessments. Covers state-of-the-art research and developments.
- 728 Factor Analysis and Multidimensional Scaling (3:3)**
Pr. 682 or permission of instructor
 Exploratory and confirmatory factor analysis and multidimensional scaling. Methods of estimation and rotation including the common factor model. Weighted and unweighted MDS. Uses of SPSS, SAS statistical packages.
- 729 Advanced Item Response Theory (3:3)**
Pr. 669 or equivalent
 Estimation techniques for various unidimensional dichotomous and polytomus IRT models using various software packages. IRT applications such as computerized testing, equating, test construction, and differential item/test functioning are also covered.
- 730 Practicum in Educational Research and Evaluation (3)**
Pr. permission of instructor
 Field-based and mentored practicum. (Graded on S-U basis)
- 731 Structural Equation Modeling in Education (3:3)**
Pr. 682 or permission of instructor
 Formulation of structural models, estimation of structural coefficients using LISREL, estimation of model fit, confirmatory factor analysis models, practical applications.
- 732 Hierarchical Linear Modeling (3:3)**
Pr. 682, STA 671, or permission of instructor
 Structure of hierarchical data, random intercepts, individual change/growth models, applications in meta-analysis, assessing hierarchical models, hierarchical generalized linear models, hierarchical models for latent variables, cross-classified random effects, estimation.
- 733 Language Assessment and Testing (3:3)**
 Theoretical and practical issues related to second language testing with special attention paid to the assessment of English as a second language, world Englishes, and foreign languages.
- 734 Equating (3:3)**
Pr. 681, 667, or permission of instructor
 Equating designs, equating and scaling assumptions, design of anchor sets, observed score equating methods, true-score equating methods, standard error of equating, use and interpretation of relevant statistical software.
- 735 Multidimensional Item Response Theory (3:3)**
Pr. 669 and 729 or permission of instructor
 Multidimensional item response theory models including their estimation, representation, and application. Use of relevant estimation and graphing software discussed.

- 736 Advanced Studies in Second Language Testing (3:3)**
Pr. 733
Language testing for English and foreign language learners as well as the World Englishes domain. Policies, theories, research, and tools employed to measure different language modalities.
- 742 Advanced Topics in the Evaluation of Educational Programs (3:3)**
Pr. 642 and permission of instructor
Theoretical understanding of evaluation design and strengthening of practical program evaluation skills.
- 750 Case Study Methods in Educational Research (3:3)**
Pr. 604, 642, or equivalent
Overview of the methodology of case study research; enhancement of students' skills in using case study methods.
- 775 Directed Doctoral Research (1-6)**
Pr. doctoral students in ERM and permission of instructor
Individual work on dissertation research problems: collection and analysis of data; critical review, integration, and interpretation of research literature on a topic pertinent to the student's dissertation.
- 799 Dissertation (1-12)**
Individual direction in the development and execution of a doctoral dissertation.
- 801 Thesis Extension (1-3)**
- 802 Dissertation Extension (1-3)**
- 803 Research Extension (1-3)**