

# RESEARCH METHODS AND STATS (RMS)

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## **RMS 4900 Education Research and Measurement (4 Credits)**

This course is intended for Master's degree students in the College of Education. Quantitative research designs, empirical methods of data collection and interpretation, and measurement issues in research are examined.

## **RMS 4910 Introductory Statistics (4 Credits)**

This beginning statistics course examines use and interpretation of statistics in educational and human services research, including descriptive and inferential techniques. Cross listed with SOWK 5930.

## **RMS 4911 Correlation and Regression (4 Credits)**

This course focuses on the study of correlation and multiple regression research designs and their application to educational and social science programs. Cross listed with SOWK 5202. Prerequisite: RMS 4910.

## **RMS 4912 Analysis of Variance (4 Credits)**

Conceptual and applied analyses of one-way through factorial nested analysis of variance designs and multivariate analysis of variance are presented. Prerequisite: RMS 4910.

## **RMS 4914 Structural Equation Modeling (4 Credits)**

This course covers major applications of and issues related to covariance structure modeling, specifically confirmatory factor analysis and latent variable path modeling; types of research applications for which covariance structure modeling analyses are appropriate. Prerequisite: RMS 4921.

## **RMS 4915 Hierarchical Linear Modeling (4 Credits)**

This course introduces models that extend multiple regression to analysis of nested data structures common in education and other social sciences. Application of those methods to various forms of multilevel data, including repeated measure (growth trajectory) data is emphasized. Prerequisite: RMS 4911.

## **RMS 4916 Latent Growth Curve Modeling (4 Credits)**

This course covers advanced issues in longitudinal data analysis using structural equation modeling and hierarchical linear modeling with latent variables. It involves both conceptual development and practical implementation of longitudinal data analysis. This course is intended to be a hands-on approach to working with data and addressing research questions that can be best answered by longitudinal data. Prerequisite: RMS 4914.

## **RMS 4918 Propensity Score Analysis (3 Credits)**

Propensity score analysis provides a conceptual understanding of the rationale and importance of controlling for biases that might emerge during the selection process in experimental research. The common procedures of fitting a propensity score model and estimating the effect of the treatment after correction for biases are demonstrated.

## **RMS 4919 Topics in Statistics (1-5 Credits)**

Topics vary by quarter but may include log-linear analysis, factor analysis, or missing data analysis.

## **RMS 4920 Educational Measurement (3 Credits)**

This course examines the meaning, characteristics, and processes of educational measurement and evaluation. Development and interpretation of both standardized and informal tests are considered.

## **RMS 4921 Psychometric Theory (3 Credits)**

This course examines major psychometric theories (e.g., classical, item response) as related to reliability, generalizability, validity, and item analysis methods. Prerequisite: RMS 4910.

## **RMS 4922 Item Response Theory (3 Credits)**

Theory and methods for the educational and psychological measurement of latent variables using item response theory are covered in this course. Prerequisite: RMS 4910, RMS 4921.

## **RMS 4924 Advanced Measurement (4 Credits)**

This course instructs students in advanced measurement models and techniques are employed in the social sciences. Prerequisites: RMS 4921 & RMS 4911.

## **RMS 4929 Topics in Psychometrics (1-3 Credits)**

Topics vary, but include: large scale testing, computer applications of item response theory, affective measure construction, generalizability theory, additive conjoint measurement, and standing testing. Prerequisite: RMS 4921 or instructor permission.

## **RMS 4930 Quantitative Research Design (3 Credits)**

This course provides in depth study of empirical research methods involved in experimental, quasi-experimental, single-subject, and non-experimental quantitative research designs.

## **RMS 4931 Survey and Design Analysis (3 Credits)**

Survey techniques, needs assessment, item construction, sampling, maximizing response rates and data analysis; survey construction and data analysis are required. Prerequisite: RMS 4910.

**RMS 4932 Meta-Analysis Social Science Research (3 Credits)**

This course examines meta analytic techniques in the social sciences. Included are discussions of review of critical data bases, coverage of all major methods of data collection and analysis, and coverage of how best to present meta analytic findings for publication. Prerequisite: RMS 4911, RMS 4930, and preferred RMS 4912.

**RMS 4939 Topics in Quantitative Research Methods (1-5 Credits)**

Topics vary, but include minimization as an alternative to randomization, propensity score modeling as an alternative to experimental control, and analysis of data from single-subject designs. Prerequisites: RMS 4930 or instructor permission.

**RMS 4940 Structural Foundations of Research in Social Sciences (3 Credits)**

This introductory course on epistemology and research Includes discussion of identification and development of problems for research; introduction to basic quantitative and qualitative methods of conducting research in social science settings, ethnographic, and criticism methods.

**RMS 4941 Introduction to Qualitative Research (4 Credits)**

This course is designed to provide students with more in-depth understanding of naturalistic, qualitative research methods. It is assumed that students enrolling in this course have already completed an introductory research methods course in either education or another discipline. Purposes and questions posed in their course include: Why should a researcher choose to conduct a qualitative study? How are data collection strategies carried out in a qualitative research design? What are some of the ethical concerns that impact qualitative research?.

**RMS 4942 Qualitative Data Collection and Analysis (4 Credits)**

In this intermediate level qualitative research course students learn about design, purposeful sampling, field work, observational approaches, and interviews, with special attention directed to the skills and competencies needed to gather and analyze high quality data. Prerequisite: RMS 4941 or instructor permission.

**RMS 4945 Community-Based Research (4 Credits)**

This class introduces the emerging philosophical and methodological issues that arise when university faculty students collaborate on research with community-based organizations. Prerequisites: RMS 4942 and RMS 4930 or instructor permission.

**RMS 4946 Advanced Qualitative Research (4 Credits)**

This course introduces exemplary qualitative studies and consideration of implications for education and the social sciences, and considers the types of questions asked by qualitative researchers and methods they use, particularly observation and interviewing. Students undertake their own qualitative study to consider application of theory, techniques, and practice to their dissertation research. Prerequisite: RMS 4941 and RMS 4942 or instructor permission.

**RMS 4947 Arts-Based Research (3 Credits)**

In this course students explore the ground upon which arts-based research is built and become acquainted with salient issues regarding this kind of research. We practice interviewing, observations and a few arts-based practices. Prerequisites: RMS 4941 or instructor permission.

**RMS 4948 Criticism and Connoisseurship: Qualitative research and the enhancement of practice (3 Credits)**

Qualitative inquiry in educational settings takes many forms: ethnography, grounded theory, case-study research, and more. What these methods have in common is a framework built upon social science. Criticism and connoisseurship, however, draws its conceptual underpinnings from the arts and humanities. What does it mean to have a conceptual framework dependent upon the arts? How are the methods of educational criticism different from other research methods? This class teaches students how to conduct research using this method and it provides responses to these types of questions in order that students can defend this type of research as well as others that depend on the arts and humanities as their basis. Prerequisite: RMS 4941.

**RMS 4949 Topics in Qualitative Research (1-5 Credits)**

This seminar builds on the content of other qualitative research courses offered in the RMS program and meets the students where they are on their dissertation journey; thus learning opportunities are tailored to individual needs as far as possible. Assignments focus on the issues pertinent to the design of dissertation proposals and writing, including ethical issues and IRB preparation, theoretical/conceptual framework, literature review, methodology, data collection and analysis strategies, and various forms of representation. Prerequisite: RMS 4941.

**RMS 4950 Qualitative Research Methodologies (3 Credits)**

Each year this course examines three qualitative research methods. The methods that might be covered in any given year include: phenomenology, grounded theory, narrative, case study, and ethnography. For each method, the following is addressed: philosophical and historical foundations, various ways the method has been utilized, and practical recommendations for conducting research utilizing this method. Prerequisite: RMS 4941.

**RMS 4951 Mixed Method Research Design (4 Credits)**

This course is designed as a fundamental exploration of mixed model and mixed method approaches. Students design mixed model and mixed method research studies with a particular emphasis on multi-site and longitudinal designs that are especially suited to educational issues. Students learn analysis approaches that incorporate previously learned quantitative and qualitative skills, and apply these in practice problem examples. Prerequisites: RMS 4910, RMS 4930 and RMS 4941, and one of the following: RMS 4947, or RMS 4948, or instructor permission.

**RMS 4952 Research Ethics (3 Credits)**

This course introduces ethical theory and a selection of current issues in research ethics.

**RMS 4953 Topics in Data Management (1-3 Credits)**

This is a preparatory course emphasizing the manipulation and analysis of data in electronic form.

**RMS 4959 Topics in Research Design (1-5 Credits)**

Topics vary, but include single subject design issues, minimization as an alternative to randomization, advances in quasi-experimental design.

Prerequisite: RMS 4930.

**RMS 4960 Introduction to Evaluation Research (3,4 Credits)**

This course provides an introduction to frameworks for designing evaluation research studies.

**RMS 4963 Evaluation Research Practice I (3 Credits)**

This service learning course provides part 1 of a 2-part introductory experience in the practical craft of evaluation. Students who enroll in RMS 4963 must take RMS 4964 in the following quarter. The course is not a traditional lecture course; it is a course-embedded experiential learning course.

**RMS 4964 Evaluation Research Practice II (3 Credits)**

This service learning course provides part 2 of a 2-part introductory experience in the practical craft of evaluation. Students who enroll in RMS 4964 must have taken RMS 4963 in the preceding quarter.

**RMS 4969 Topics in Program Evaluation (1-5 Credits)**

Topics vary, but include advocacy and policy change, assessment in higher education, multi-level evaluation, cost effectiveness analysis, data visualization and reporting, assessment in distance education, and evaluation in the arts and culture. Prerequisite: RMS 4960.

**RMS 4970 Introduction to Data Analytics (4 Credits)**

This course offers a practical introduction to data analytics for students in Non-Stem fields. Students will learn foundational concepts in data collection, cleaning, visualization, and analysis, with a focus on real-world applications across education, information science, and social research. Using accessible tools such as Excel, R, and Tableau, students will develop skills in interpreting data patterns, generating insights, and communicating results effectively. No prior programming experience is required. The course emphasizes hands-on learning and critical thinking to prepare students to use data analytics ethically and effectively in diverse professional settings.

**RMS 4978 Practicum in Qualitative Research (1-4 Credits)**

Students may complete the Practicum in Qualitative Research with an individual professor or with a community partner. The goal of this practicum is to provide further experiences in thinking about, conceptualizing, designing, conducting, and/or presenting qualitative research. Prerequisites: RMS 4941, RMS 4942, and at least two of the following classes RMS 4945, RMS 4946, RMS 4947, RMS 4948.

**RMS 4980 Practicum in Research (1-5 Credits)**

This course provides a supervised experience in design and implementation of an empirical research or evaluation study. Organization of research proposals, completion of human subjects applications, collection, and analysis of data are emphasized. Students are expected to prepare a written report of their project which is suitable for professional presentation or publication.

**RMS 4981 Community-Based Research Practicum (1-5 Credits)**

Students provide community-based research assistance to a community partner (non-profit, school, community based organization, etc). Student researchers are supervised by DU faculty. This course is an excellent opportunity to match the student's research expertise with the real needs of community partners. Prerequisite: RMS 4945.

**RMS 4982 Practicum in Evaluation Research (1-6 Credits)**

Students provide evaluation assistance to a university or community partner (non-profit, school, community-based organization, etc.). Student researchers are supervised by DU faculty. This course is an excellent opportunity to match the student's evaluation and research expertise with the real needs of university or community partners. Prerequisite: RMS 4960.

**RMS 4991 Independent Study (1-10 Credits)**

This course allows Masters students in RMS to study a topic area independently in conjunction with a cooperating faculty member.

**RMS 4995 Independent Research (1-10 Credits)**

This course is for Masters students in RMS whose program requires completion of a Master's thesis.

**RMS 5771 RMS Dissertation Research Seminar (1-3 Credits)**

This course is for Ph.D. students in RMS who are engaged in completing their doctoral dissertation.

**RMS 5991 Independent Study (1-10 Credits)**

This course allows Ph.D. students in RMS to study a topic area independently in conjunction with a cooperating faculty member.

**RMS 5995 Independent Research (1-18 Credits)**

This course is for Ph.D. students in RMS who are engaged in completing their doctoral dissertation.