Educational Statistics and Research Methods (ESRM)

Courses

ESRM 24003. Statistics in Nursing. 3 Hours.
Introduction to descriptive and inferential statistics used in nursing research. (Typically offered: Fall, Spring and Summer)

ESRM 50103. Research Methods in Education. 3 Hours.
General orientation course which considers the nature of research problems in education and the techniques used by investigators in solving those problems. Prerequisite: Graduate standing. (Typically offered: Fall, Spring and Summer)

ESRM 53003. Healthcare Analytics Fundamentals. 3 Hours.
The Healthcare Analytics Fundamentals course provides fundamental knowledge and skills in several major areas of healthcare and business data analytics in a modular format. Several modules that emphasize healthcare analytics as well as data fundamentals, concepts, and problems are used and include - Healthcare Analytics Concepts, Problems, and Management; Intermediate & Advanced Spreadsheet Topics; Relational Databases & SOL; and Introductory Programming with Python. Prerequisite: Program Director permission. (Typically offered: Irregular)

ESRM 53903. Statistics in Education and Health Professions. 3 Hours.
Applied statistics course for Master's degree candidates. Includes concepts and operations for frequency distributions, graphing techniques, measures of central tendency and variation, sampling, hypothesis testing, and interpretation of statistical results. (Typically offered: Fall, Spring and Summer)

ESRM 58203. Healthcare Business Analytics I. 3 Hours.
Fundamentals of healthcare analytics to include data patterns, forecasting techniques, and linear prediction models, including theoretical and mathematical study of assumptions in model building. Prerequisite: ESRM 53003, ISYS 55003, ISYS 58303, and ISYS 58403, or permission of the instructor. (Typically offered: Irregular)

ESRM 58503. Healthcare Business Analytics II. 3 Hours.
Intermediate healthcare analytics to include categorical analyses and logistic regression for binary and polytomous models applied to healthcare. Prerequisite: ESRM 58203 or instructor permission. (Typically offered: Irregular)

ESRM 6000V. Master's Thesis. 1-6 Hour.
Master's Thesis. (Typically offered: Fall, Spring and Summer) May be repeated for degree credit.

ESRM 6050V. Independent Study. 1-6 Hour.
Independent study. (Typically offered: Fall, Spring and Summer)

ESRM 64003. Educational Statistics and Data Processing. 3 Hours.
Theory and application of frequency distributions, graphical methods, central tendency, variability, simple regression and correlation indexes, chi-square, sampling, and parameter estimation, and hypothesis testing. Use of the computer for the organization, reduction, and analysis of data (required of doctoral candidates). Prerequisite: ESRM 50103 or ESRM 53903 or an equivalent course, each with a grade of C or better. (Typically offered: Fall, Spring and Summer)

ESRM 64103. Experimental Design in Education. 3 Hours.
Principles of experimental design as applied to educational situations. Special emphasis on analysis of variance techniques used in educational research. Prerequisite: ESRM 64003 with a grade of C or better or an equivalent course with a grade of C or better. (Typically offered: Spring)

ESRM 64203. Multiple Regression Techniques for Education. 3 Hours.
Introduction to multiple regression procedures for analyzing data as applied in educational settings, including multicollearity, dummy variables, analysis of covariance, curvi-linear regression, and path analysis. Prerequisite: ESRM 64003 with a grade of C or better or an equivalent course with a grade of C or better. (Typically offered: Fall)

ESRM 64503. Applied Multivariate Statistics. 3 Hours.
Multivariate statistical procedures as applied to educational research settings including discriminant analysis, principal components analysis, factor analysis, canonical correlation, and cluster analysis. Emphasis on use of existing computer statistical packages. Prerequisite: ESRM 64103 and ESRM 64203, both with a grade of C or better. (Typically offered: Spring)

ESRM 65103. Hierarchical Linear Modeling. 3 Hours.
This course covers the theory and applications of hierarchical linear modeling (HLM) also known as multilevel modeling. Both the conceptual and methodological issues for analyses of nested (clustered) data in using HLM will be reviewed, including linear models, non-linear models, growth models, and some alternative designs. Prerequisite: ESRM 64103 and ESRM 64203, both with a grade of C or better. (Typically offered: Fall Even Years)

ESRM 65203. Structural Equation Modeling. 3 Hours.
This course provides a detailed introduction to structural equation modeling (SEM) based on students' previous knowledge of multiple linear regression. Topics include path analysis, confirmatory factor analysis, full latent variable models, estimation techniques, data-model fit analysis, model comparison, and other topics, potentially equivalent models, specification searches, latent mean models, parameter invariance, multi-group models, and models of discrete data. Prerequisite: ESRM 64203 with a grade of C or better. (Typically offered: Spring)

ESRM 65303. Qualitative Research. 3 Hours.
Introduction of non-quantitative methods, including data collection through interviews, field observation, records research, internal and external validity problems in qualitative research. Prerequisite: ESRM 64003 with a grade of C or better. (Typically offered: Fall and Spring)

ESRM 65403. Advanced Qualitative Research. 3 Hours.
Preparation for the conduct of qualitative research, structuring, literature reviews, data collection and analysis, and reporting results. Prerequisite: ESRM 65303 with a grade of C or better. (Typically offered: Spring) May be repeated for up to 6 hours of degree credit.

ESRM 65503. Advanced Multivariate Statistics. 3 Hours.
Builds on the foundation provided in Multivariate and introduces techniques that extend methodological elements of canonical, discriminant, factor analytic, and longitudinal analyses, providing the mathematical and theoretical foundations necessary for these designs. Prerequisite: ESRM 64503 with a grade of C or better. (Typically offered: Spring Even Years)

ESRM 66103. Evaluation of Policies, Programs, and Projects. 3 Hours.
Introduction to evaluation in social science research, including why and how evaluations of programs, projects, and policies are conducted; includes analysis of actual evaluations in a variety of disciplines. Prerequisite: ESRM 64003 with a grade of C or better. (Typically offered: Fall)
This course is cross-listed with EDRE 6210, ESRM 6610.

ESRM 66503. Measurement and Evaluation. 3 Hours.
Fundamentals of measurement: scales, scores, norms, reliability, validity. Test and scale construction and item analysis. Standardized measures and program evaluation models in decision making. Prerequisite: ESRM 64003 with a grade of C or better. (Typically offered: Fall)

ESRM 6680V. Practicum in Research. 1-6 Hour.
Practical experience in educational research on campus, in school systems, or in other agencies in educational program development. (Typically offered: Irregular)

ESRM 67503. Item Response Theory. 3 Hours.
Topics of measurement in the psychometric field focusing on item response
theory; item level and test level analyses including differential item functioning, test
dimensionality, computer adaptive testing, equating, and general evaluation and
usage of measurement instruments. Prerequisite: ESRM 66503 with a grade of C or
better. (Typically offered: Spring Odd Years)

ESRM 6990V. Advanced Seminar. 1-6 Hour.
Seminar. Prerequisite: Advanced graduate standing. (Typically offered:
Irregular) May be repeated for up to 6 hours of degree credit.

ESRM 7000V. Doctoral Dissertation. 1-18 Hour.
Doctoral dissertation. Prerequisite: Candidacy. (Typically offered: Fall, Spring and
Summer) May be repeated for degree credit.