Educational Statistics and Research Methods (ESRM)

Courses

ESRM 2403. Statistics in Nursing. 3 Hours.
Introduction to descriptive and inferential statistics used in nursing research.
(Typically offered: Fall, Spring and Summer)

ESRM 5013. 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 5303. 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 5393. 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 5823. 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 5303, ISYS 5503,
ISYS 5833, and ISYS 5843, or permission of the instructor. (Typically offered: Irregular)

ESRM 5853. 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
5823 or instructor permission. (Typically offered: Irregular)

ESRM 600V. Master's Thesis. 1-6 Hour.
Master's Thesis. (Typically offered: Fall, Spring and Summer) May be repeated for
degree credit.

ESRM 605V. Independent Study. 1-6 Hour.
Independent study. (Typically offered: Fall, Spring and Summer)

ESRM 6403. 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 5013 or ESRM 5933 or an equivalent course, each with a grade
of C or better. (Typically offered: Fall, Spring and Summer)

ESRM 6413. 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 6403 with a grade of C or better or an equivalent course with a
grade of C or better. (Typically offered: Spring)

ESRM 6423. Multiple Regression Techniques for Education. 3 Hours.
Introduction to multiple regression procedures for analyzing data as applied
in educational settings, including multicollinearity, dummy variables, analysis of
covariance, curvilinear regression, and path analysis. Prerequisite: ESRM 6403 with
a grade of C or better or an equivalent course with a grade of C or better. (Typically
offered: Fall)

ESRM 6453. 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 6413 and ESRM 6423, both with a grade of
C or better. (Typically offered: Spring)

ESRM 6513. 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 6413 and ESRM 6423, both with a grade of C or better.
(Typically offered: Fall Even Years)

ESRM 6523. 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 6423 with a grade of C or better. (Typically offered: Spring)

ESRM 6533. 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 6403 with a grade of C or
better. (Typically offered: Fall and Spring)

ESRM 6543. Advanced Qualitative Research. 3 Hours.
Preparation for the conduct of qualitative research, structuring, literature reviews,
data collection and analysis, and reporting results. Prerequisite: ESRM 6533 with a
grade of C or better. (Typically offered: Spring) May be repeated for up to 6 hours of
degree credit.

ESRM 6553. 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 6453 with a grade of C or better.
(Typically offered: Spring Even Years)

ESRM 6613. 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 6403 with a grade
of C or better. (Typically offered: Fall)

This course is cross-listed with EDRE 6213.

ESRM 6653. 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 6403 with a grade of C or
better. (Typically offered: Fall)

ESRM 668V. 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 6753. 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 6653 with a grade of C or better. (Typically offered: Spring Odd Years)

ESRM 699V. Seminar. 1-6 Hour.
Seminar. Prerequisite: Advanced graduate standing. (Typically offered: Irregular) May be repeated for up to 6 hours of degree credit.

ESRM 700V. Doctoral Dissertation. 1-18 Hour.
Doctoral dissertation. Prerequisite: Candidacy. (Typically offered: Fall, Spring and Summer) May be repeated for degree credit.