

Quant Research Methods Courses

FOCUS/AGENDA	RECOMMENDED COURSES
Master's in education (in general)	EDPSY 490, 538, 517 and potentially 513 + EDSPE/EDLPS courses (this page)
Design, implement, analyze a <u>small-scale survey project</u>	EDPSY 490, 538, 513, 539 and potentially 517 and 575/576/591
Analysis of <u>education policy</u> data	EDPSY 490, 538 and EDLPS courses (this page)
Educational <u>measurement</u> -oriented cognate (doctoral students)	EDPSY 490, 538, 539, 591 and potentially 558/559/561 or 592/593/594
Educational <u>statistics</u> -oriented cognate (doctoral students)	EDPSY 490, 538, 539, 575 or 576 and potentially 588/595 or 596/597

Note. For doctoral students who have taken regression, we also recommend advanced quant courses through CSSS/STAT and PUBPOL, as appropriate. Please refer to [OnCourse](#) for future College of Education offerings of courses listed below.

TIER 1: INTRODUCTORY COURSES						
Basic Educational Statistics - EDPSY 490	Pre-Req	Course	CR	Offered	Taught By	
Geared for all levels, including undergraduates, graduates, and post-doctoral researchers (<i>Note: course meets QSR requirement for undergraduates</i>) Prepares students to critically evaluate statistics encountered in everyday life, and serves as a pre-requisite for more advanced courses (<i>Note: course can be waived as pre-req. to other courses if student passes online screener exam or has a degree in Statistics; for info email: lizz@uw.edu</i>) Covers language, logic, ethics, and computations associated with hypothesis testing, including measurement assumptions, sampling distributions, 1- and 2-group z, t-, and χ^2 tests, and simple regression; SPSS workshop offered at end of course	None (Basic Algebra Recommended)	EDPSY 490	3	AUT WIN SPR SUM	All M&S Faculty & M&S Doc Students	
Applied Behavior Analysis (Single-Case Research) - EDSPE 511	Pre-Req	Course	CR	Offered	Taught By	
Geared for graduates in special educ and school psych, but all graduates welcome Prepares students to design, implement, and evaluate the effects of interventions for individuals or small groups in home, school, and communities Covers single-case research design logic, appropriate research questions, critiquing research, and writing a research proposal	EDSPE 571 or equivalent preparation	EDSPE 511	3	WIN	Spaulding	
Policy Evaluation - EDLPS 568	Pre-Req	Course	CR	Offered	Taught By	
Geared for graduates in educational policy, but all graduates welcome Prepares students to evaluate educational policies Covers basic understanding of common qualitative and quantitative research designs related to education and other social sciences	None	EDLPS 568	3	SPR	Knight	
Assessment & Evaluation in Higher Education - EDLPS 593	Pre-Req	Course	CR	Offered	Taught By	
Geared for education policy graduates, but all graduates welcome Prepares students to design program evaluation plans in school contexts, including quantitative and qualitative aspects Covers basic program assessment and evaluation approaches; uses <i>Excel</i>	None (EDPSY 490 Recommended)	EDLPS 593	3	SPR	Bowen	
Secondary Data Analysis - EDLPS 596	Pre-Req	Course	CR	Offered	Taught By	
Geared for education policy graduates, but all graduates welcome Prepares students to consume basic statistics, work with large-scale data, present statistical results, and utilize data to advance equitable educational practice Covers descriptive/inferential statistics, and data visualization; uses <i>Excel</i>, <i>SPSS</i>	None (EDPSY 490 Recommended)	EDLPS 596		WIN	Gehrke	

TIER 2: INTERMEDIATE COURSES (PRE-REQ: EDPSY 490)

Survey Instrument Design - EDPSY 513	Pre-Req	Course	CR	Offered	Taught By
- Geared for graduates in education, but all graduates welcome - Prepares students to plan, design, and implement an online survey - Covers basic sampling plans, item writing best practices, and online questionnaire implementation using <i>Qualtrics</i>	EDPSY 490	EDPSY 513	3	WIN	Li
Applied Measurement in Ed Research - EDPSY 517	Pre-Req	Course	CR	Offered	Taught By
- Geared for graduates in learning sci/school psychology, but all graduates welcome - Prepares students to review literature and plan research for measuring latent variable constructs (e.g., <i>belongingness</i>, <i>resilience</i>, <i>self-efficacy</i>, etc.) - Covers introductory measurement reliability and validity, critical quantitative perspectives, APA-style writing, and common quantitative research designs	EDPSY 490	EDPSY 517	3	SPR	Sanders
Multiple Regression - EDPSY 538	Pre-Req	Course	CR	Offered	Taught By
- Geared for graduates in education, but all graduates welcome - Prepares students to understand and conduct multiple linear and logistic regression - Covers introductory matrix/linear algebra, and applied multiple regression analysis; SPSS and R used	EDPSY 490	EDPSY 538	3	WIN	Olvera Astivia & Sanders

TIER 3: ADVANCED COURSES (PRE-REQ: EDPSY 538)

Classic Test Theory: Reliability & Validity - EDPSY 539	Pre-Req	Course	CR	Offered	Taught By
- Geared for graduates in education, but all graduates welcome - Prepares students to understand and conduct classic reliability and validity analyses for surveys and assessments measuring latent constructs - Covers in-depth understanding of true score theory and psychometrics, including all classic forms of reliability and validity analyses; uses <i>Excel</i>, <i>SPSS</i>	EDPSY 538	EDPSY 539	3	SPR	Li & Olvera Astivia
Structural Equation Modeling (SEM) I - EDPSY 575	Pre-Req	Course	CR	Offered	Taught By
- Geared for graduates in education, but all graduates welcome - Prepares students to understand and conduct exploratory and confirmatory factor models, and latent structural regression models for metrical dependent variables - Covers factor analysis and structural regression models; uses <i>R</i>	EDPSY 538	EDPSY 575	3	SPR	Olvera Astivia
Multilevel Modeling (MLM) - EDPSY 576	Pre-Req	Course	CR	Offered	Taught By
- Geared for graduates in education, but all graduates welcome - Prepares students to understand and analyze nested data (e.g., students in schools and measurements in people) using multilevel linear and logistic models - Covers 2- and 3L linear and logistic cross-sectional and longitudinal models; uses <i>R</i>	EDPSY 538	EDPSY 576	3	AUT	Sanders

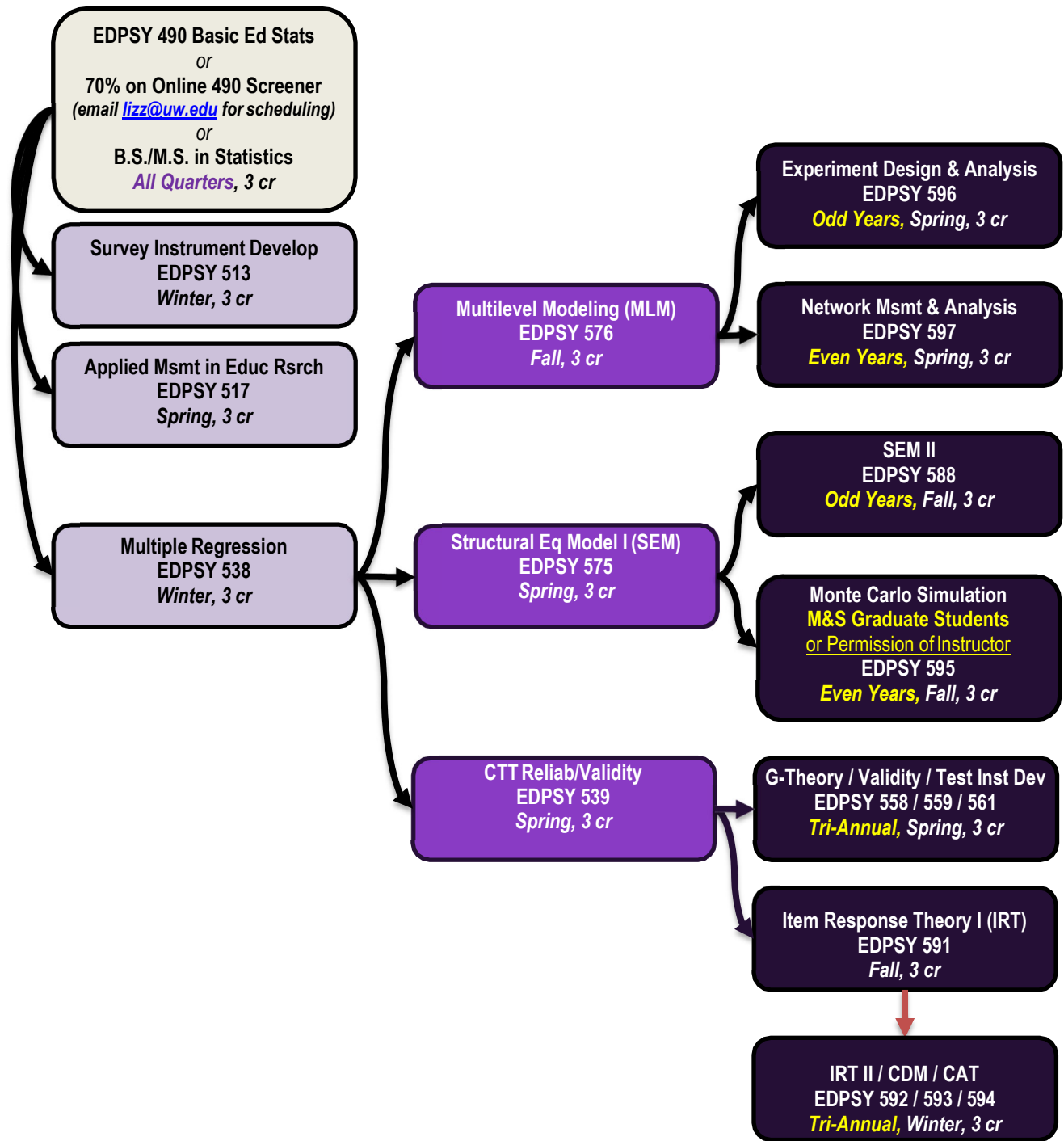
TIER 4: MORE ADVANCED COURSES (more specific PRE-REQs)

Validity Theory - EDPSY 559	Pre-Req	Course	CR	Offered	Taught By
- Geared for graduates in educational measurement, but all graduates welcome - Prepares students to rigorously evaluate <i>validity claims</i> about instruments (assessments, checklists, surveys), including consequential validity/criticality - Covers in-depth understanding of validity theory frameworks in evaluating validity claims about instruments	EDPSY 539	EDPSY 559	3	Tri-annual SPR	Li
Item Response Theory Modeling (IRT) I - EDPSY 591	Pre-Req	Course	CR	Offered	Taught By
- Geared for graduates in education, but all graduates welcome - Prepares students to understand and analyze items from surveys and assessments to create modern measurement scales - Covers concepts and applications of IRT models, including Rasch, 2-, and 3-PL models; uses <i>R</i>, <i>flexMIRT</i>	EDPSY 539	EDPSY 591	3	AUT	Wang
Structural Equation Modeling (SEM) II - EDPSY 588	Pre-Req	Course	CR	Offered	Taught By
- Geared for graduates in educational measurement, but all graduates welcome - Prepares students to understand and conduct factor models for categorical data - Covers higher-level SEM topics such as power analyses, factor models for binary outcomes, and latent class models; uses <i>R</i>, <i>Mplus</i>	EDPSY 575	EDPSY 588	3	Odd years AUT	Olvera Astivia

TIER 4, Cont'd

Generalizability Theory - EDPSY 558	Pre-Req	Course	CR	Offered	Taught By
- Geared for graduates in educational measurement, but all graduates welcome - Prepares students to evaluate <i>measurement errors</i> associated with instruments (assessments, checklists, surveys), and optimize instrument designs - Covers in-depth understanding application of generalizability theory in G and D studies; uses <i>SPSS</i>, <i>Genova</i>, <i>urGenova</i>	EDPSY 539	EDPSY 558	3	Tri-annual SPR	Li
Test Instrument Develop - EDPSY 561	Pre-Req	Course	CR	Offered	Taught By
- Geared for graduates in educational measurement, but all graduates welcome - Prepares students to rigorously evaluate and design <i>cognitive/learning assessments</i> - Covers measurement concepts, theoretical frameworks, and empirical findings for developing academic/cognitive assessment items individually and as a whole	EDPSY 539	EDPSY 561	3	Tri-annual SPR	Li
Item Resp Theory (IRT) II - EDPSY 592	Pre-Req	Course	CR	Offered	Taught By
- Geared for graduates in educational measurement, but all graduates welcome - Prepares students to understand and conduct advanced IRT methods, including multidimensional, multi-level, and equipercetile IRT models - Covers concepts and analysis models, as well as current issues, in advanced IRT IRT methods; uses <i>R</i>, <i>flexMIRT</i>	EDPSY 591	EDPSY 592	3	Tri-annual WIN	Wang
Cognitive Diag Model (CDM) - EDPSY 593	Pre-Req	Course	CR	Offered	Taught By
- Geared for graduates in educational measurement, but all graduates welcome - Prepares students to carry out different cognitive diagnostic models (CDMs) for item-level data to create skill profiles for formative assessment - Covers in-depth exploration of CDMs including DINA and GDINA models; uses <i>R</i>	EDPSY 591	EDPSY 593	3	Tri-annual WIN	Wang
Computer Adapt Tests (CAT) - EDPSY 594	Pre-Req	Course	CR	Offered	Taught By
- Geared for graduates in educational measurement, but all graduates welcome - Prepares students to design and evaluate adaptive testing for both latent measurement scales and classification - Covers in-depth exploration of CAT algorithms for unidimensional, multidimensional, categorical latent traits/profiles; uses <i>R</i>	EDPSY 591	EDPSY 594	3	Tri-annual WIN	Wang
Monte Carlo Simulations - EDPSY 595	Pre-Req	Course	CR	Offered	Taught By
- Geared for graduates in educational measurement, or with permission of instructor - Prepares students to evaluate, design, and conduct a Monte Carlo simulation study - Covers simulation of univariate and multivariate normal and non-normal data, applying models to simulated data, saving simulation results, and assessing properties of simulated results; uses <i>R</i>	EDPSY 575	EDPSY 588	3	Even years AUT	Olvera Astivia
Experim Design & Analysis - EDPSY 596	Pre-Req	Course	CR	Offered	Taught By
- Geared for graduates in educational measurement, but all graduates welcome - Prepares students for design and analysis of experimental (randomized) research - Covers individual-, cluster-, and stratified-randomized designs and analyses, with some coverage of SMART (adaptive) designs; uses <i>R</i>	EDPSY 576	EDPSY 596	3	Odd years SPR	Sanders
Network Measure & Analysis - EDPSY 597	Pre-Req	Course	CR	Offered	Taught By
- Geared for graduates in educational measurement, but all graduates welcome - Prepares students for measuring and analyzing network data (connections among individuals, rather than individuals) - Covers descriptive and inferential statistical applications, with emphasis on exponential random graph models (ERGMs); <i>R</i> used	EDPSY 576	EDPSY 597	3	Even years SPR	Sanders

Course Sequencing Snapshot
(arrows indicate pre-requisites)



* Counts towards Psychometrics & Applied Analytics (PAA) graduate certificate
PAA info: <https://education.uw.edu/academics/program/psychometrics-applied-analytics-certificate>

CTT = Classic Test Theory
CDM = Cognitive Diagnostic Modeling
CAT = Computerized Adaptive Testing