

Students with an approved waiver for PUP 576 must take an alternate methods course. Refer to the following list of pre-approved methods courses while planning your coursework. Some courses are offered outside of SGSUP and therefore are subject to change. **Please view the [Schedule of Classes](#) for the most current course offerings, descriptions, and prerequisites.**

A maximum of 6.0 credits of 400-level elective coursework may be included on the plan of study.

Subject	Catalog Number	Course Title	Credit Hours	Usually offered	Course Description
AML	591	Special Topic: Modeling with Game Theory	3	Spring	In this course, we will learn how to use game theory to model and analyze systems that are managed by several strategic agents. These agents may be people or groups of people with a certain objective that may differ from the objectives of the other agents. We will demonstrate our tools on a variety of problems, from everyday life to challenges in environmental management.
AML	612	Applied Mathematics for the Life and Social Sciences Modeling Seminar	3	Fall/Spring	Presents and applies mathematical modeling principles and techniques for representing the structure and operation of complex life and social systems and processes. Helps students identify potential problems in the life and social sciences and the corresponding mathematical and statistical methods that can be used for their study.
ASM	570	Fundamentals of CAS Science	3	Fall	Many phenomena of critical relevance to human society are dynamic systems that change over individual and evolutionary time scales, and are highly interactive, both within and between systems. That is, they are complex adaptive systems (CAS), and thus share isomorphic properties like near-decomposability, hierarchical organization, scale-free networks, self-organized criticality, and emergence. Fundamentals of CAS science explores the diverse, interdisciplinary applications of a complex adaptive systems across the social, behavioral, and life sciences.
ASM	591	Special Topic: Dynamic Modeling of Social & Ecological Systems	3	Fall	Cross listed with SOS 591
COM	508	Quantitative Research Methods in Communication	3	Fall	Empirical research designs, measurements, and statistical strategies and techniques in analyzing and evaluating experimental and descriptive research in communication. Prereq: Com grad student. Request override online: https://humancommunication.clas.asu.edu/undergraduate/overrides
COM	608	Multivariate Statistical Analysis of Data in Communication	3	Fall	Statistical analysis of communication research data. Multivariate procedures used in communication research and methods of causal analysis. Prereq: Com PhD. Check with Faculty if override is allowed (Dr. Shin)
CRD	502	Statistical and Data Analysis	3	Fall	Introduces descriptive and inferential methods used in community development, with an emphasis on nonprofit, tourism, and recreation sciences. Students gain experience using statistical software.
CRD	620	Community Research Methods	3	Fall	Introduces community research methods, with emphasis on methodological questions and techniques relevant to contemporary community-based research.

DSC	598	Special Topic: Creative Measurement and Neighborhood Change	3	Fall	Creative Measurement and Neighborhood Change This graduate seminar and workshop will investigate existing and promising methods for assessing and documenting social, economic, physical and cultural change in moderate and low-income neighborhoods. Working with local community organizations in the Phoenix region on actual measurement challenges, the class will focus on (a) interrogating current practices among policymakers, planners and community leaders for use of information that informs policy and program choices; (b) assessing appetite for more nuanced and innovative information about community change; (c) exploration of how to push the envelope with existing evaluation and research practices and (d) exploration of highly innovative and unconventional research and evaluation practices drawing from multiple academic disciplines and fields of practice that better capture diverse facets of neighborhood change.
ECN	525	Applied Regression Models	3	Fall	Simple linear regression, multiple regression, indicator variables, and logistic regression. Emphasizes business and economic applications.
ECN	527	Applied Regression Models	3	Fall	Discrete data analysis in business research. Multidimensional contingency tables and other discrete models. Prereq: ECN 525
GCU	542	Geographical Analysis of Transportation	3	Fall	Examines the geographical aspects of transportation systems. Looks at the geography of networks; transport costs and rates; different modes of transport, trade, economic development, and technology. Studies the movement of freight and passengers at the individual, urban, national, and international scales.
GIS	521	Geographic Information Science Programming	3	Spring	In-depth look at programming within GIS. Focuses on programming and methodology, utilizing specific software, and basic scientific computing.
GIS	562	Location Analysis Modeling	3	Spring	Provides an overview of mathematical models for location optimization in the context of GIScience. Applies linear and integer programming (a type of linear algebra), computer programming, and GIS to optimize systems of points, lines and polygons for emergency services, natural resource management, private and public facilities, and undesirable and desirable facilities. Objectives include: formulating, solving and interpreting location problems; understanding differences among a variety of location analysis and modeling problems and methods; and linking GIS and optimization software for preparing inputs and visualizing results. Prereq: GIS 561. Check with faculty to see if this can be waived
PAF	502	Public Service Research II	3	Fall and Spring	Application of quantitative methods for inferring cause and effect relationships in public administration and policy. Interpretation, critique and execution of statistical analysis of data for effective evaluations, particularly multiple regression analysis. Prereq: PAF 501. Check with faculty to see if this can be waived
PAF	541	Program Evaluation	3	Fall	Provides foundational and related methodological tools for the evaluation of public policies and programs. Prereq: PAF 501. Check with faculty about override
PAF	573	Applied Econometrics	3	Fall	Applied treatment of the most important modern econometric methods used to evaluate public policies. Help students become savvy consumers of econometric methodology and develops the methodological skills necessary for implementing quantitative evaluations of public policies. Accordingly, course stresses critical thinking and creativity. Prereq: PAF 502. Check with faculty to see if this can be waived
POS	401	Political Statistics	3	Fall	Basic concepts in statistics as they facilitate the description, explanation, and prediction of social and political phenomena. Prereq: DAT401, POS 301, or SGS 305. Request override from faculty
PSY	533	Structural Equation Modeling	3	Spring	Path analysis; exploratory and confirmatory factor analysis; recursive and nonrecursive latent variable models; mean and covariance structures; latent growth models.

PUP	581	Fundamentals of Spatial Optimization	3	Spring	Covers the fundamentals of optimization for spatial analysis. Introduces math-based optimization methods, specifically linear programming, integer programming, and branch and bound. Provides the basics for use and application of GIScience and spatial analysis methods for suitability analysis and network analysis. Objectives include: reviewing basics of linear algebra; formulating and solving optimization problems using linear and integer programming; applying raster and vector GIS methods to site suitability analysis, shortest path and service area problems; and integrating GIS into problem formulation and result visualization.
SOS	540	Statistical Modeling for Sustainability	4	Spring	Equips students with sufficient knowledge of statistical theory and methods of applied data analysis to begin conducting empirical analyses in their domains of interest; bring students to a high level of competency in using a cutting-edge statistical software package (Stata) for data management and data analysis tasks; expose students to applications of statistical methods in the economics/policy/social science sustainability literatures in order to develop an understanding for how statistical tools are operationalized in the research world; and develop an appreciation for the careful synthesis of social and natural science theory, knowledge of data and its limitations and command of statistical tools that constitute quality empirical research.
TWC	514	Visualizing Data and Information	3	Fall	Covers how to process data and information in ways that help discover what's important about the information and what the clearest way is to communicate that information. Covers how to manage data and use a variety of software tools to communicate patterns and tell visual stories, as well as how to make choices in visualization style in ways that will assist an audience to effectively interact with and process the information. TWC 414 (also iCourse) has more spots available. Both are Session A or B only.