Research Methods Courses

ACCTG 501  
Research Methods in Accounting

ADTED 550  
Qualitative Research in Adult Ed (Introduction to the theory, principles, and practice of qualitative research)

ADTED 551  
Qualitative Data Analysis (Students learn to analyze data qualitatively by engaging in, and continuously reflecting on the process)

A ED 502  
Research in Art Education (Examination of past and present research in art education, an introduction to general methods of research, and critical evaluation of research in art education)

AEE 520  
Scientific Method in the Study of Ag & Extension Ed (Methods of procedure in investigation and experimentation in education, accompanied by a critical examination of studies made in agricultural education)

AEE 521  
Basic Applied Data Analysis in Ag & Extension Ed (Continuation of AEE 520; emphasis upon stat techniques)

AEREC 510  
Econometric I (General linear model, multicolinearity, specification error, autocorrelation, heteroskedasticity, restricted least squares, functional form, dummy variables, limited dependent variables)

AEREC 511  
Econometric II (Stochastic regressors, distributed lag models, pooling cross-section and time-series data, simultaneous equation models)

APLNG 578  
Computational & Statistical Methods for Corpus Analysis

APLNG 581  
Discourse Analysis (CAS 581; Overview of theories and approaches to the analysis of spoken and/or written discourse)

BB H 505  
Behavioral Health Research Strategies (Research strategies in behavioral health investigations are examined. Designs and data analytic models relevant to biobehavioral research are included.)
Issues in Rhetorical Theory (Theoretical, analytical, philosophical, and critical problems in human communication, with application of humanistic and social scientific research framework)

Qualitative Research Methods (Introduces graduate students to principles, issues, and design considerations underlying social scientific methodology; material is applied to communication research)

Qualitative Research in Curriculum & Instruction I (Presentation of theoretical and practical issues related to designing and proposing qualitative research concerning curriculum, teaching and/or learning)

Qualitative Research in Curriculum & Instruction II (Considers forms of qualitative data, data analyses, procedures to generate data relationships, interpretation, and presentation of data)

Systems Optimization Using Evolutionary Algorithms (Comprehensive introduction to genetic and evolutionary computation: genetic algorithms, evolutionary strategies, multi-objective optimization, parallelization approaches, and fitness approximation.)

Introduction to Mass Communications Research (The scientific method; survey of basic concepts of theoretical and empirical research; variety of methodology; criteria for adequate research.)

Mass Communications Research Methods II (Problems of bibliographical research; evaluation of sources and materials in mass communications history, biography, structure, ethics, and other areas)

Introduction to Data Analysis in Communications (To understand and be able to use data analysis techniques common to research in communications.)

Psychological Aspects of Communication Technology (Investigation of psychological aspects of human-computer interaction (HCI) and computer-mediated communication (CMC).

Computer Security (Specification and design of secure systems; security models, architectural issues, verification and validation, and applications in secure database management systems.)
Numerical Optimization Techniques (Unconstrained and constrained optimization methods, linear and quadratic programming, software issues, ellipsoid and Karmarkar's algorithm, global optimization, parallelism in optimization)

Concurrent Matrix Computation. This course discusses matrix computations on architectures that exploit concurrency. It will draw upon recent research in the field.

Algorithm Design & Analysis (An introduction to algorithmic design and analysis.)

Topics in Computer Vision (Discussion of recent advances and current research trends in computer vision theory, algorithms, and their applications.)

Data Privacy, Learning and Statistical Analysis (The course will cover a variety of topics in theoretical computer science through the lens of data privacy. The main goal of the course is to introduce students to study of methods for private data analysis - how can we publish useful statistical summaries about sensitive data without leaking individual information? Along the way, we will learn basic results in randomized algorithms, learning theory and statistics, and cryptography.)

Theoretical, Computational and Experimental Regularity on Interdisciplinary Large Data Sets (This is a course on computational methods for digital data, that is across scale, modality and application domains. Our methodology content is a unique mixture of theoretical and experimental bases drawn from group theory, pattern theory, statistical learning theory as well as human/animal/insect visual perception research. We aim at automatic pattern discovery, comparison and learning. The students are trained throughout the course to apply theory and algorithms to real world scientific data, with an emphasis on discovering hidden patterns automatically from large data sets, including imagery/video of human faces, urban scenes, zebra in the wild, crowds/cell videos, volumetric images of Zebrafish, C. elegans, neuroradiology images (MR, CT, EEG) and MoCap data of human dance/movements. Your own research data sets are welcome)

Field Research in Educational Leadership (Field study and qualitative methods in research on educational organizations)

Qualitative Methods in Education Research (EDTHP 586/HI ED 586; Exploration of the theoretical framework undergirding qualitative research and its attendant practices and techniques)

Qualitative Methods in Educational Research II (Advanced study of methods involved in executing and analyzing qualitative research in education)
EDPSY 576 Research Methods in Teacher Education (A basis in theory, findings from research, research design, and methodologies related to teacher education)

GEOG 597A Visual Analytics: Leveraging GeoSocial Data (Conceptual and project-based seminar on visual analytics and its applications to geo-social data analysis and Big Data Social Science research)

IE 511 Experimental Design in Engineering (Statistical design and analysis of experiments in engineering; experimental modesl and experimental designs using the analysis of variance)

IE 512 Graph Theory and Networks in Management (Graph and network theory; application to problems of flows in networks, transportation and assignment problems, pert/CPM, facilities planning)

IE 516 Applied Stochastic Processes (Study of stochastic processes and their applications to engineering and supply chain and information systems.)

IE 520 Multiple Criteria Optimization (Study of concepts and methods in analysis of systems involving multiple objectives with applications to engineering, economic, and environmental systems)

IE 558 Engineering of Cognitive Work (Information processing and decision making models of the human in the modern workplace, emphasizing visual inspection and other industrial applications.)

INSYS 574 Applied Qualitative Research for Work Practice, Innovation & Systems Design (Investigates qualitative research paradigms and methodologies; develops skills in use of ethnographic methods in work practice, innovation and systems design.)

INSYS 575 Designing Experimental Research in Instructional Systems (Designing research studies in Instructional Systems of a quantitative and experimental nature. Will result in a research proposal.)

IST 503 Foundations for IST Research (Study of major methodological, normative, and theoretical issues in philosophy of science related to research in information sciences and technology)

IST 515 Information Security & Assurance (This course covers theoretical, conceptual, and methodological foundations of information security and assurance.)

IST 516 Web & Internet Information Retrieval (The course addresses aspects of searching, retrieving and modeling the Web/ Internet as information repositories using mathematical and probabilistic treatments.)
Computer-Supported Cooperative Work (Introduces theories, empirical findings, evaluation methods, and design frameworks in computer-supported cooperative work)

Development Tools & Visualizations for Human-Computer Interaction (addresses concepts and tools for developing working user interface software and prototypes to provide effective information visualizations)

Organizational Informatics (Researching Information and Information Systems in Organizations)

Qualitative Research in IST (Assists IST researchers in their efforts to learn about and employ appropriate qualitative methods in their research)

Data & Knowledge Management (Introduces the computational foundations, methodologies and tools for data and knowledge management)

Network Management & Security (Essential skills and knowledge for effectively utilizing networks and Internet technologies to facilitate, manage and secure data communications and applications)

Web Analytics: Research Approaches for Online Data (The course will provide the theoretical and methodological foundations of web data with the major focus on the application of web analytics methods and data) Jansen

Data Mining: Techniques and Applications (Introduction of data mining field, including why data mining, what is data mining, what kinds of data can be mined, what kinds of patterns can be mined, an overview of technologies, the major issues in data mining, and a brief history of data mining community.)

Theoretical Fundations of Info Sci (Introduces the theoretical foundations of information science, with applications in communication, signal processing, machine learning, and pattern recognition)

Software Security and Analysis (The latest research and development in software security and analysis, such as ROP, overflow, and injection attacks, will be studied) Dinghao Wu Sp 15

Big Data Fundamentals (Foundations and applications of big data science: complexity, cyberinfrastructure, search, security, processing, analytics, visualization, mining, governance and management. Should be familiar with databases and statistics)

Computer and Information Security: Economic and Psychological Considerations (Surveys theories, methods and key results of modern security research to understand the economic robustness of systems, and the behavior of users and attackers) Jens

LING 520  Seminar in Psycholinguistics (Consideration of theoretical and research issues relevant to psychological aspects of language sounds, syntax and semantics, and other cognitive support)

MGMT 538  Seminar in Organization Theory (Current theoretical and research issues applicable to the study of design and management of complex organizations)

MGMT 591  Organizational Research Design (Experience in designing research for organizational science, to maximize the validity of eventual conclusions; methodological choices, constraints, and compromises (tradesoff)

MGMT 592  Qualitative Research Methods (Provides students with an introduction to and experience with qualitative research methods employed in organizational contexts)

NURS 585  Qualitative Methods in Health Research (Provides an overview of advanced qualitative research methodologies useful in the conduct of social and behavioral health research)

PL SC 502  Statistical Methods for Political Research (Basic concepts of statistics and their use in political research; data analysis, casual inference, regression analysis, computer applications)

PL SC 583  Modern Political & Social Theory (Research on major developments and issues in modern political and social theory, such as critical theory, modernism, and postmodernism)

SC & IS 505  Management Info Systems Research (Research problems and issues in supply chain and information systems)

SOC 513  Sociological Research Methods (Critical review of methodological issues; research designs; analysis and interpretation of findings)

SOC 518  Survey Methods I: Survey Design (Research design for social, behavioral and health surveys)

STAT 500  Applied Statistics (Descriptive statistics, hypothesis testing, power, estimation, confidence intervals, regression, one- and 2-way ANOVA, Chi-square tests, diagnostics)

STAT 501  Regression Methods (Analysis of research data through simple and multiple regression and correlation; polynomial models; indicator variables; step-wise, piece-wise, and logistic regression)
STAT 502  **Analysis of Variance & Design of Experiments** (Analysis of variance and design concepts; factorial, nested, and unbalanced data; ANCOVA; blocked, Latin square, split-plot, repeated measures designs)

STAT 503  **Design of Experiments** (Design principles; optimality; confounding in split-plot, repeated measures, fractional factorial, response surface, and balanced/partially balanced incomplete block designs)

STAT 504  **Analysis of Discrete Data** (Models for frequency arrays; goodness-of-fit tests; two-, three-, and higher-way tables; latent and logistic models)

STAT 506  **Sampling Theory & Methods** (Theory and application of sampling from finite populations)

STAT 507  **Epidemiologic Research Methods** (Research and quantitative methods for analysis of epidemiologic observational studies. Non-randomized, intervention studies for human health, and disease treatment)

STAT 510  **Applied Time Series Analysis** (Identification of models for empirical data collected over time. Use of models in forecasting)

STAT 512  **Design & Analysis of Experiments** (AOV, unbalanced, nested factors; CRD, RCBD, Latin squares, split-plot, and repeated measures; incomplete block, fractional factorial, response surface designs; confounding)

STAT 513  **Theory of Statistics I** (Probability models, random variables, expectation, generating functions, distribution theory, limit theorems, parametric families, exponential families, sampling distributions)

STAT 514  **Theory of Statistics II** ( Sufficiency, completeness, likelihood, estimation, testing, decision theory, Bayesian inference, sequential procedures, multivariate distributions and inference, nonparametric inference)

STAT 518  **Probability Theory** (Measure theoretic foundation of probability, distribution functions and laws, types of convergence, central limit problem, conditional probability, special topics)

STAT 540  **Statistical Computing** (Computational foundations of statistics; algorithms for linear and nonlinear models, discrete algorithms in statistics, graphics, missing data, Monte Carlo techniques)

STAT 557  **Data Mining I** (This course introduces data mining and statistical/machine learning, and their applications in information retrieval, database management, and image analysis)

Last Updated: 1/19/2016