

Statistics and Analytics (STAN)

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Statistics and Analytics Website (<https://statistics-analytics.uark.edu/>)

Degree Conferred:
 M.S. (STANMS)

Graduate Certificate Offered:
 Graduate Certificate in Statistics and Analytics (STANGC) (Nondegree)

Program Description: The Graduate Certificate and M.S. degree in Statistics and Analytics are cross-college interdisciplinary programs that build on the university's current strengths in the Colleges of Arts and Sciences; Business; Education and Health Professions; and Engineering. Students may choose one of six concentrations: Statistics; Biological Analytics; Business Analytics; Operations Analytics; Computational Analytics; Educational Statistics & Psychometrics; or Quantitative Social Sciences.

Primary Areas of Faculty Research: Statistics and statistical analysis and design methodologies in business analytics, operations analytics, computational analytics, educational statistics and social science research.

Admission to the Master's Program: In addition to the requirements of the Graduate School, applicants for admission to the M.S. program in Statistics and Analytics must submit a) three letters of recommendation from persons familiar with the applicant's previous academic and professional performance and b) official test scores as specified for the applicant's area of interest.

Requirements for the Master of Science (M.S.) Degree

Requirements for the master's degree are fulfilled through one of seven concentrations. Students should also be aware of Graduate School requirements with regard to master's degrees (<http://catalog.uark.edu/graduatecatalog/degreerequirements/#mastersdegreestext>).

Requirements for Concentration in Biological Analytics

Undergraduate Deficiencies

MATH 2554	Calculus I (ACTS Equivalency = MATH 2405)
MATH 3083	Linear Algebra

Core

Requirements include one course from each of these areas as approved by the student's advisory committee: Statistical Methods, Regression Analysis, Multivariate Analysis, Experimental Design 12

Required Courses

CSCE 5013	Advanced Special Topics in Computer Science or Computer Engineering (taken as introduction to cluster computing)	3
BIOL 5153	Practical Programming for Biologists	3

ISYS 5723	Advanced Multivariate Analysis	3
Choose from one of the following options:		9
9 additional hours of electives		
3 hours of electives, 6 hours of thesis credit, and submission of an acceptable thesis		
Written comprehensive exam (non-thesis) or defense of the thesis		
Total Hours		30

Requirements for the Master of Science (M.S.) Degree

Requirements for the master's degree are fulfilled through one of seven concentrations. Students should also be aware of Graduate School requirements with regard to master's degrees (<http://catalog.uark.edu/graduatecatalog/degreerequirements/#mastersdegreestext>).

Requirements for Concentration in Business Analytics

Undergraduate Deficiencies

MATH 2554	Calculus I (ACTS Equivalency = MATH 2405)
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Core

Requirements include one course from each of these areas as approved by the student's advisory committee: Statistical Methods, Regression Analysis, Multivariate Analysis, Experimental Design 12

Required Courses

ISYS 511V	IT Toolkit & Skills Seminar	3
ISYS 5833	Data Management Systems	3
ISYS 5843	Seminar in Business Intelligence and Knowledge Management	3

Choose one of the following options:		9
9 hours of electives		
3 hours of electives and 6 hours of thesis credit and submission of an acceptable thesis.		
Written comprehensive exam (non-thesis) or defense of the thesis.		
Total Hours		30

Requirements for the Master of Science (M.S.) Degree

Requirements for the master's degree are fulfilled through one of seven concentrations. Students should also be aware of Graduate School requirements with regard to master's degrees (<http://catalog.uark.edu/graduatecatalog/degreerequirements/#mastersdegreestext>).

Requirements for a Concentration in Computational Analytics

Undergraduate Deficiencies

MATH 2554	Calculus I (ACTS Equivalency = MATH 2405)
MATH 3083	Linear Algebra
CSCE 4133	Algorithms

Core

Requirements include one course from each of these areas as approved by the student's advisory committee: Statistical Methods, Regression Analysis, Multivariate Analysis, Experimental Design. 12

Required Courses

CSCE 4523	Database Management Systems	3
Two of the following:		6

CSC 4613 Artificial Intelligence	
Choose one of the following options:	9
9 hours of electives	
3 hours of electives, 6 hours of thesis credit and submission of an acceptable thesis	
Written comprehensive exam (non-thesis) or defense of the thesis	
CSC 5063 Machine Learning	
CSC 5073 Data Mining	
Total Hours	30

Requirements for the Master of Science (M.S.) Degree

Requirements for the master's degree are fulfilled through one of seven concentrations. Students should also be aware of Graduate School requirements with regard to master's degrees (<http://catalog.uark.edu/graduatecatalog/degreerequirements/#mastersdegreestext>).

Requirements for Concentration in Educational Statistics and Psychometrics

Undergraduate Deficiencies

MATH 2554 Calculus I (ACTS Equivalency = MATH 2405)	
MATH 3083 Linear Algebra	

Core

Requirements include one course from each of these areas as approved by the student's advisory committee: Statistical Methods, Regression Analysis, Multivariate Analysis, Experimental Design 12

Required Courses

ESRM 5013 Research Methods in Education	3
ESRM 6653 Measurement and Evaluation	3
ESRM 6753 Item Response Theory	3
Choose one of the following options:	9
9 hours of electives as approved by the student's advisory committee	
3 hours of electives, 6 hours of thesis credit, and submission of an acceptable thesis	
Written comprehensive exam (non-thesis) or defense of the thesis	
Total Hours	30

Requirements for the Master of Science (M.S.) Degree

Requirements for the master's degree are fulfilled through one of seven concentrations. Students should also be aware of Graduate School requirements with regard to master's degrees (<http://catalog.uark.edu/graduatecatalog/degreerequirements/#mastersdegreestext>).

Requirements for Concentration in Operations Analytics

Undergraduate Deficiencies

MATH 2554 Calculus I (ACTS Equivalency = MATH 2405)	
MATH 3083 Linear Algebra	
STAT 3013 Introduction to Probability	

Core

Requirements include one course from each of these areas as approved by the student's advisory committee: Statistical Methods, Regression Analysis, Multivariate Analysis, Experimental Design 12

Required Courses

INEG 5613 Introduction to Optimization Theory	3
INEG 5803 Simulation	3
One of the following:	3
ISYS 5843 Seminar in Business Intelligence and Knowledge Management	
CSC 5073 Data Mining	
Choose one of the following options:	9
9 hours of electives	
3 hours of electives, 6 hours of thesis credit and submission of an acceptable thesis	
Written comprehensive exam (non-thesis) or defense of the thesis	
Total Hours	30

Requirements for the Master of Science (M.S.) Degree

Requirements for the master's degree are fulfilled through one of seven concentrations. Students should also be aware of Graduate School requirements with regard to master's degrees (<http://catalog.uark.edu/graduatecatalog/degreerequirements/#mastersdegreestext>).

Requirements for a Concentration in Quantitative Social Science

Undergraduate Deficiencies

MATH 2554 Calculus I (ACTS Equivalency = MATH 2405)	
MATH 3083 Linear Algebra	
STAT 3013 Introduction to Probability	

Core

Requirements include one course from each of these areas as approved by the student's advisory committee: Statistical Methods, Regression Analysis, Multivariate Analysis, Experimental Design. 12

Required Courses

ISYS 5723 Advanced Multivariate Analysis	3
ECON 4753 Forecasting	3
ECON 6623 Econometrics II	3
ECON 6633 Econometrics III	3
Choose one of the following options:	6
6 hours of electives to include two of the following: cost benefit analysis; GIS and spatial analysis; multilevel modeling; social network analysis	
6 hours of thesis credit and submission of an acceptable thesis	
Written comprehensive exam (non-thesis) or defense of the thesis	
Total Hours	30

Requirements for the Master of Science (M.S.) Degree

Requirements for the master's degree are fulfilled through one of seven concentrations. Students should also be aware of Graduate School requirements with regard to master's degrees (<http://catalog.uark.edu/graduatecatalog/degreerequirements/#mastersdegreestext>).

Requirements for Concentration in Statistics

Undergraduate Deficiencies

MATH 2564 Calculus II (ACTS Equivalency = MATH 2505)	
MATH 3083 Linear Algebra	

CSC 2014	Programming Foundations II	
Core		
Requirements include one course from each of these areas as approved by the student's advisory committee: Statistical Methods, Regression Analysis, Multivariate Analysis, Experimental Design		12
Required Courses		
STAT 5103	Introduction to Probability Theory	3
STAT 5113	Statistical Inference	3
STAT 5333	Analysis of Categorical Responses	3
STAT 5443	Computational Statistics	3
Choose one of the following options:		6
6 hours of electives		
6 hours of thesis credit and submission of acceptable thesis		
Written comprehensive exam (non-thesis) or defense of thesis		
Total Hours		30

Graduate Certificate in Statistics and Analytics (STAN)

Requirements for the Graduate Certificate in Statistics and Analytics:

The Graduate Certificate requires 12 hours of courses as specified below.

Choose one of the following:		3-4
STAT 5003	Statistical Methods & STAT 5001L and Statistics Methods Laboratory	
ESRM 6403	Educational Statistics and Data Processing	
ISYS 5503	Decision Support and Analytics	
PLSC 5913	Research Methods in Political Science	
PSYC 5133	Inferential Statistics for Psychology	
SOCI 5013	Advanced Social Research	
Choose one of the following:		3
STAT 5313	Regression Analysis	
INEG 5393	Applied Regression Analysis for Engineers	
PLSC 5943	Advanced Research Methods in Political Science	
PSYC 5143	Advanced Descriptive Statistics for Psychology	
SOCI 5313	Applied Data Analysis	
Choose one of the following:		3
STAT 5353	Methods of Multivariate Analysis	
ISYS 5723	Advanced Multivariate Analysis	
ESRM 6453	Applied Multivariate Statistics	
Choose one of the following:		3
STAT 4373	Experimental Design	
INEG 5333	Design of Industrial Experiments	
ESRM 6413	Experimental Design in Education	
Total Hours		12

Graduate Faculty

Aloysius, John, Ph.D. (Temple University), B.S. (University of Colombo, Sri Lanka), Professor, Department of Supply Chain Management, Oren Harris Chair in Logistics, 1995, 2017.

Beaulieu, Jeremy M., Ph.D. (Yale University), M.S., B.S. (California Polytechnic State University), Assistant Professor, Department of Biological Sciences, 2016.

Bridges, Ana Julia, Ph.D. (University of Rhode Island), M.S. (Illinois State University), B.S. (University of Illinois-Urbana-Champaign), Professor, Department of Psychological Science, 2007, 2019.

Cao, Chunhua, Ph.D. (University of South Florida-Tampa), Teaching Assistant Professor, Department of Rehabilitation, Human Resource and Communication Disorders, 2019.

Cassady, Richard, Ph.D., M.S.I.S.E., B.S.I.S.E. (Virginia Polytechnic Institute and State University), University Professor, Department of Industrial Engineering, 2000, 2019.

Chakraborty, Avishek, Ph.D (Duke University), M.S., B.S. (Indian Statistical Institute), Associate Professor, Department of Mathematical Sciences, 2014, 2021.

Chimka, Justin Robert, Ph.D., M.S.I.E., B.S.I.E. (University of Pittsburgh), Associate Professor, Department of Industrial Engineering, 2002, 2009.

Ferrier, Gary D., Ph.D. (University of North Carolina–Chapel Hill), B.A. (University of Wisconsin-Madison), University Professor, Department of Economics, Lewis E. Epley Jr. Professorship in Economics, 1993, 2012.

Freeze, Ron, Ph.D. (Arizona State University), M.B.A. (University of Missouri–Kansas City), B.S. (General Motors Institute), Clinical Professor, Department of Information Systems, 2015, 2021.

Gaduh, Arya, Ph.D. (University of Southern California), M.Phil. (Cambridge University), B.A. (University of California-Berkeley), Associate Professor, Department of Economics, 2013, 2019.

Gauch, Susan E., Ph.D. (University of North Carolina at Chapel Hill), M.Sc., B.Sc. (Queen's University, Canada), Professor, Department of Computer Science and Computer Engineering, 2007.

Gbur, Edward E., Ph.D., M.S. (The Ohio State University), B.S. (Saint Francis University), Professor, Department of Crop, Soil and Environmental Sciences, 1987, 1998.

Gu, Jingping, Ph.D. (Texas A&M University), M.A. (Peking University), B.A. (Renmin University of China, Beijing), Associate Professor, Department of Economics, 2008, 2014.

Mauromoustakos, Andy, Ph.D., M.S. (Oklahoma State University), B.S. (Oral Roberts University), Professor, Department of Crop, Soil and Environmental Sciences, 1989, 2002.

Wu, Xintao, Ph.D. (George Mason University), M.E. (Chinese Academy of Space Technology), B.S. (University of Science and Technology of China), Professor, Department of Computer Science and Computer Engineering, Charles D. Morgan/Axiom Graduate Research Chair, 2014, 2019.