

Mathematics with Data Analytics Concentration
Effective Date: August 2016



Freshman Fall Semester			Freshman Spring Semester		
Course	Course Name	Cr	Course	Course Name	Cr
MTSC-191	University Seminar I (C)	1	MTSC-192	University Seminar II (C)	1
MTSC-251	Calculus I^ (B/AtC)	4	MTSC-252	Calculus II^ (AtC)	4
Session I: ENGL-121	Introduction to Composition I (C)	2	Session I: ENGL-123	Intro to Composition and Speech III (C)	3
Session II: ENGL-122	Introduction to Composition II (C)	2	Session II: ENGL-124	Intro to Speech and Composition IV (C)	2
xx-xxx	Foreign Language I (B/AtC)	3			
MTSC 241	Elementary Statistics	3	CSCI-225^^ Or CSCI-120^^	Structured Programming for Scientist & Engineers + (S/AtC) Elements of Computer Programming I + (S/AtC)	3 Or 4
MGMT-100	Introduction to Business	3	ECON 201	Principles of Macroeconomics (AtC)	3
	Total Credits	18		Total Credits	16/17
Sophomore Fall Semester			Sophomore Spring Semester		
Course	Course Name	Cr	Course	Course Name	Cr
MTSC-253	Calculus III	4	MTSC-313	Linear Algebra	3
MTSC-213	Discrete Math (AtC)	3	MTSC-317 or MTSC-319	Number Theory (S-E/AtC), or Combinatorics (S-O/AtC)	3
PHYS-211^^ Or PHYS-201^^	Fundamentals of Physics I + (B) General Physics I + (B)	4	xx-xxx	Free Elective (Recommend: PHYS 212 or PHYS 202)	3
xx-xxx	Foreign Language II (B/AtC)	3	ECON-303	Mathematical Economics	3
ECON 202	Microeconomics	3	ECON-308	Statistical Analytics II – Bus/Econ	3
	Total Credits	17		Total Credits	15
Junior Fall Semester			Junior Spring Semester		
Course	Course Name	Cr	Course	Course Name	Cr
MTSC-341	Probability (F)	3	MTSC-491	History of Math (S/AtC)	3
MTSC-351	Differential Equations (F)	3	MTSC-461	Intro to Real Analysis (S)	3
GLOB-395	Global Societies (C)	3	MVSC-101	Fitness and Wellness (C)	2
MGMT-3xx	Introduction to Analytics		MIS 470	Database Management System	3
MGMT-305	Management Information Systems	3	MTSC-340	Advanced Analytical Statistics	3
	Total Credits	15		Total Credits	14
Senior Fall Semester			Senior Spring Semester		
Course	Course Name	Cr	Course	Course Name	Cr
MTSC-451	Advanced Calculus I (F)	3	MTSC-452	Advanced Calculus II (S)	3
MTSC-411	Algebraic Structures I (F)	3	BANL-xxx	Data Analytics Capstone* (B)	3
BANL-xxx	Programming for Analytics	3	MTSC-xxx	Math Elective	3
See Gen Ed Breadth Course List	Literature Elective (B/AtC)	3	See Gen Ed Breadth Course List	History Elective (B/AtC)	3
PSYC 201	Introduction to Psychology	3			
	Total Credits	15		Total Credits	12

Name: _____
 ID: _____
 Phone: _____
 Advisor: _____
 Minor: _____

Total Credits 122

Breadth & AtC Requirements	Course(s)
History (African-American Experience /Multicultural)	
Literature (African-American Experience /Multicultural)	
Social Science	ECON 201
Arts/Humanities Elective 1 (African-American Experience /Multicultural)	Foreign Language I
Arts/Humanities Elective 2 (African-American Experience /Multicultural)	Foreign Language II
Natural Science w/ Lab	PHYS 211 or PHYS 201
African-American Experience (History/Literature/Art/Free Elective)	
Multicultural 1 (History/Literature/Social Science/Art/Free Elective)	Foreign Language I
Multicultural 2 (History/Literature/Social Science/Art/Free Elective)	Foreign Language II
Reading/Speaking/Listening Across the Curriculum	MTSC 317 or MTSC 319
Self Evaluation	PSYC 201
Wellness	PSYC 201
Information Literacy	MTSC 491
Computer Competency	CSCI 225 or CSCI 120
Writing in Major	MTSC 491
Quantitative Reasoning	MTSC 251 or MTSC 252
Global Issues	MTSC 491
Critical Thinking/Problem Solving Issues	MTSC 213

Key Codes:

^ Students who do not satisfactorily complete MTSC-251 & MTSC-252 may be advised to consider changing to another major.

* Senior Capstone Course

** Mathematics Elective courses can be selected from MTSC-300 or higher level courses, except MTSC- 402 & 403. These courses include MTSC 317 (S/E) or 319 (S/O), 412 (S), 431 (F), 454 (S), 471 (S), or 499, and could occur in the Fall or Spring semester of the Senior year.

- (C) Core Course
- (B) Breadth Course
- (AtC) Across the Curriculum
- (S) Spring Only Course
- (F) Fall Only Course
- (E) Even Years
- (O) Odd Years

^^ It is highly recommended that students either double major or minor in business, computer science (take CSCI 120), information technology (take CSCI 120), engineering (take PHYS 201), physics (take PHYS 201), or other science related field to become more employable in industry, education, or the federal government.

It is highly recommended that students take MTSC 203, MTSC 431 or MTSC 471 if they plan to attend graduate school with a concentration in Mathematics. Students with advanced degrees (master's degree or doctorate) are more employable in industry, education, or the federal government.

+ This option is based on your chosen minor or double major. See advisor to select an option.

++ If you take PHYS 211, then you must take PHYS 212. If you take PHYS 201, then you must take PHYS 202. You are not permitted to interchange the course sequence.

Course in Black are on the original concentration list. Courses in red are required prerequisites for the concentration list.

MGMT-100. INTRODUCTION TO BUSINESS. 3:3:0

This course is designed for a student's first exposure to the study of business; views business as a complex of interrelated systems emphasizing management human resources, finance, production, and marketing.

ECON-201. PRINCIPLES OF MACROECONOMICS. 3:3:0

This course is a study of the operation and function of the American economic system. Attention is given to current economic problems, such as those relating to income, employment, business cycles, money and banking, growth, and development.

Prerequisites: Sophomore standing.

ECON 202 – MICROECONOMICS. 3:3:0

The course is a study of price and output determination in a free enterprise economy with the assumption of consumer maximization of utility and producer maximization of profits. Particular attention is paid to cost determination, the theory of the firm, and the four (4) major market structures of perfect competition, monopoly, monopolistic competition, and oligopoly. Market imperfections and disequilibrium are also discussed. Prerequisites: ECON 201. Credit, three hours.

ECON -208. INTRODUCTORY STATISTICS 3:3:0 This course introduces the concept of applied statistics. It addresses the following topics: data presentation; measures of central tendency; measures of variation, skewness, and kurtosis; basis probability concepts; probability distributions; sampling distributions estimation; and hypothesis testing.

ECON - 303. MATHEMATICAL ECONOMICS. 3:3:0

This course addresses the logic and structure of mathematics as applied to economics. Use of mathematics in the fundamental propositions of microeconomics and macroeconomics is emphasized. Topics covered include mathematical programming, differential and difference equations, and game theory, as well as other deterministic and stochastic modes. Prerequisites: ECON- 202, MGMT-208, and MTSC-225.

ECON 308. STATISTICAL ANALYSIS II FOR BUSINESS AND ECONOMICS. 3:3:0

This course focuses on applications of statistical techniques to economics and business. The course addresses the chi-square distribution, analysis of variance, simple and multiple regression analysis, time-series analysis, and forecasting. Statistical software packages are utilized. Prerequisite: 41- 208.

MIS-105. MICROCOMPUTER APPLICATIONS 3:3:0

The purpose of this course is to provide an introduction to computers and information processing for students desiring to learn what a computer is, how it functions, how it is applied to the solution of business and related problems in a modern society, and the future trends in computer applications. A hands-on approach will be employed with commercially available microcomputer software packages for word processing, electronic spreadsheets, database management, graphical presentations, and web design methods using HTML. Computer career opportunities will also be discussed.

MGMT 205 - MANAGEMENT PROCESSES 4:4:0 (no longer exist; replaced with MGMT xxx Intro to Bus Analytics)

MGMT-305. MANAGEMENT INFORMATION SYSTEMS 3:3:0

The application of information systems to organizational decision-making and operations is the focus of this course. Topics include: fundamentals of information system development, management and structures of databases, query processing and report generation using computer and non-computer concepts, computer-human interface, end-user computing, and data communications and network. Prerequisites: MGMT-205, MIS-105.

MIS-470. DATABASE MANAGEMENT SYSTEMS 3:3:0

The course offers an extended study of modern database technology, which is designed to expose students to the development of database management systems. Prerequisites: MGMT-305. (Concerned about the missing prerequisites from MGMT 305, 205, and MIS 105; existing curriculum is missing database content)