Effective August 2023

DATA SCIENCE – NEUROSCIENCE CONCENTRATION	**120 total credits required** **42 upper division credits required** *Please review with the Data Science Advisor*

ALL UNIVERSITY CORE CURRICULUM (AUCC)

Status	Category	Course	Credit
	1A) Intermediate writing	CO 150 or HONR 193	3
	1B) Quantitative Reasoning	MATH 156 (preferred) or MATH 160	4
	1C) Diversity, Equity, and Inclusion		3
	2) Advanced Writing	CO 300, 301B ,302, or JTC 300	3
	3A) Biological and Physical Science w/ lab	CHEM 107 + 108	4
	3A) Biological and Physical Science	LIFE 102	3
	3B) Arts & Humanities	CS 150B	3
	3B) Arts & Humanities	CS 201/PHIL 201	3
	3C) Social & Behavioral Science	PSY 100	3
	3D) Historical Perspectives		3
	4) Depth and Integration	DSCI 445 and DSCI 478	7
		total	39

CORE COURSES (Total of 58 credits) – Must complete ALL core courses

COMPUTER SCIENCE

___ CS 150B - Culture and Coding [3]
___ CS 164 - CS1--Computational Thinking w Java [4]
___ CS 165 CS2--Data Structures [4]
___ CS 201 - Ethical Computing Systems [3]
___ CS 220 - Discrete Structures & their Applications[4]

DATA SCIENCE

___ DSCI 100 - First Year Seminar in Data Science [1]
___ DSCI 235 - Data Wrangling [2]
___ DSCI 320 - Optimization Methods in Data Science[3]
___ DSCI 335 - Inferential Reasoning in Data Analysis [3]
___ DSCI 336 - Data Graphics and Visualization [1]
___ DSCI 369 - Linear Algebra for Data Science [4]
___ DSCI 445 - Statistical Machine Learning [3]
___ DSCI 478 - Capstone in Data Science [4]

MATHEMATICS

___ MATH 151- Math Algorithms in Matlab I [1]
___ MATH 156 - Math for Computational Science I [4]
___ MATH 256 - Math for Computational Science II [4]

STATISTICS

___ STAT 158 - Introduction to R Programming [1]
___ STAT 315 - Intro to Theory & Practice of Statistics[3]
___ STAT 341 - Statistical Data Analysis I [3]
___ STAT 342 - Statistical Data Analysis II [3]

ADVANCED WRITING

__ CO 300, 301B ,302, or JTC 300

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NEUROSCIENCE CONCENTRATION REQUIREMENTS

Biological & Biomedical Sciences:

___ LIFE 102 - Attributes of Living Systems [4]
___ BMS 300 - Principles of Human Physiology [4]
Concurrent registration of BMS 200 (Concepts in Human Anatomy and Physiology – 1 credit) recommended to support success in BMS 300
___ BMS 325 - Cellular Neurobiology [3]
___ BMS 345 - Functional Neuroanatomy [4]

Select one from:

___ LIFE 201b – Introductory Genetics: Molecular/Immunological/Developmental [3]
___ BZ 350 - Molecular and General Genetics [4]

Psychology:

___ PSY 100 - General Psychology [3]
___ PSY 252 - Mind, Brain, and Behavior [3]
___ PSY 458 - Cognitive Neuroscience [3]

Chemistry:

___ CHEM 107 - Fundamentals of Chemistry [4]
___ CHEM 108 - Fundamentals of Chemistry Lab [1]

Select a minimum of TWO (2) courses from Neuroscience Electives List:

___ BMS 405 - Nerve and Muscle-Toxins, Trauma and Disease [3]
___ BMS 425 - Intro to Systems Neurobiology [3]
___ BMS 450 - Pharmacology [3]
___ PSY 454 - Biological Psychology [3]
___ PSY 456 Sensation and Perception [3]

Data Science Electives – Select a minimum of FOUR (4) credit hours from a minimum of two courses included in the Data Science Electives List below:

___ DS Elective 1: _____ [ ]
___ DS Elective 2: _____ [ ]

Data Science Electives List:

CS 214 - Software Development [3]
CS 250 - Computer Systems Foundations [4]
CS 270 – Computer Organization [4]
CS 314 – Software Engineering [3]
CS 320 - Algorithms--Theory and Practice [3]
CS 370 - Operating Systems [3]
CS 435 – Introduction to Big Data [4]
CS 440 – Introduction to Artificial Intelligence [4]
CT 301 – C++ Fundamentals [2]
DSCI 473 - Intro to Geometric Data Analysis [2]
DSCI 475 - Topological Data Analysis [2]
ECON 202 – Principles of Microeconomics [3]
ECON 204 – Principles of Macroeconomics [3]
ECON 435 Intermediate Econometrics [3]
MATH 301- Introduction to Combinatorial Theory [3]
MATH 317 - Advanced Calculus of One Variable [3]
MATH 331 - Introduction to Mathematical Modeling [3]
MATH 332 - Partial Differential Equations [3]
MATH 345 - Differential Equations [4]
MATH 360 - Mathematics of Information Security [3]
MATH 450 - Introduction to Numerical Analysis I [3]
MATH 451 - Introduction to Numerical Analysis II [3]
STAT 351 - Sports Statistics and Analytics I [3]
STAT 400 - Statistical Computing [3]
STAT 420 - Probability and Mathematical Statistics I [3]
STAT 430 - Probability and Mathematical Statistics I [3]
STAT 440 - Bayesian Data Analysis [3]
STAT 451 - Sports Statistics and Analytics I [3]

Additional Notes:

- Although there is not a specified grade required for courses in the major, it is important to be aware of prerequisite requirements. Grades of C are better are often necessary, and some courses require B or better in prerequisite coursework.
- A cumulative GPA of 2.0 or above is required to remain in good academic standing
- Students pursuing the Data Science major with a CS concentration are not eligible for any minors offered by the Computer Science Department
- MATH 160, 161, and 261 sequence will substitute for MATH 156+256 sequence
- LIFE 210 is fall only, LIFE 201B is spring only
- BMS 325 is fall only, BMS 345 is easier after taking BMS 325