

(For students admitted in 2023-24 and onwards under the 4-year degree)

BSc in Data Science and Big Data Technology

120 credits are required for BSc in Data Science and Big Data Technology:

- ◆ **30 credits for University Common Core Courses**
- ◆ **85 credits for Major Requirements, including:**
 - **31 credits for Fundamental Courses**
 - **30 credits for Major Required Courses**
 - **24 credits for Major Electives**
- ◆ **Free Elective Courses can be used to fill in any shortfall in total credits**

Major Requirements

Fundamental Courses (31 credits)

Course Code		Course Title	Credit(s) attained	
UFUG	1601	Introduction to Computer Science	3	
UFUG	2601	C++ Programming	4	
UFUG		<i>Note: (UFUG 1102 OR UFUG 1105)</i>	3	
UFUG	1102	Calculus I	3	
UFUG	1105	Honors Calculus I	3	
UFUG		<i>AND (UFUG 1103 OR UFUG 1106)</i>	3	
UFUG	1103	Calculus II	3	
UFUG	1106	Honors Calculus II	3	
UFUG		<i>Note: UFUG 1301 OR UFUG 1302 OR UFUG 1401 OR UFUG 1501 OR UFUG 1502 OR UFUG 1503 OR UFUG 1504 (2 courses out of 7)</i>	6	
UFUG	1301	General Chemistry	3	
UFUG	1302	Honors Chemistry I	3	
UFUG	1401	General Biology I	3	
UFUG	1501	General Physics I	3	

UFUG	1502	General Physics II	3	
UFUG	1503	Honors General Physics I	3	
UFUG	1504	Honors General Physics II	3	
UFUG		<i>Note: UFUG 1701 OR UFUG 1801 OR UFUG 1811</i>	3	
UFUG	1701	Introduction to Civil Engineering	3	
UFUG	1801	Principle of Economics	3	
UFUG	1811	Quantitative Data Analysis for Social Research	3	
UFUG	2103	Linear Algebra	3	
UFUG	2104	Applied Statistics	3	
DSAA/UFUG		<i>Note: UFUG2106 or DSAA2088</i>	3	
UFUG	2106	Discrete Mathematics	3	
DSAA	2088	Mathematics for Data Science	3	

Major Required Courses (30 credits)

Course Code		Course Title	Credit(s) attained	
DSAA/AIAA		<i>Note: DSAA1001 or AIAA 2205</i>	3	
DSAA	1001	Introduction to Data Science and Analytics	3	
AIAA	2205	Introduction to Artificial Intelligence	3	
DSSA/AIAA		<i>Note: DSAA2011 or AIAA 3111</i>	3	
DSAA	2011	Machine Learning	3	
AIAA	3111	Introduction to Data Mining	3	
DSAA	2012	Deep Learning	3	
DSAA	2031	Database Management Systems	3	
DSAA	2043	Design and Analysis of Algorithms	3	
DSAA	2044	Data Science Project	3	
DLED	3020	English Communication I for Information Hub Programs	3	
DLED	4020	English Communication II for Information Hub Programs	3	
DSAA	4591	Final Year Capstone Project	6	

Major Electives (24 credits)

Program				
Course Code		Course Title	Minimum credit(s) required	
		<i>Data Science and Big Data Technology Electives (8 courses from the specific elective list. Courses taken as Required Courses may not be counted towards this elective requirement.)</i>	24	
DSAA	1001	Introduction to Data Science and Analytics	3	
DSAA	1085	Probability and Statistics	4	
DSAA	2011	Machine Learning	3	
DSAA	2042	Computer Architecture and Systems	4	
DSAA	2049	Advanced Programming Languages	4	
DSAA	2088	Mathematics for Data Science	3	
AIAA	2205	Introduction to Artificial Intelligence	3	
AIAA	2290	Ethics, Privacy and Security in Artificial Intelligence	3	
DSAA	3032	Introduction to High-Performance and Parallel Computing	3	
DSAA	3041	Advanced Algorithms	3	
DSAA	3051	Introduction to Natural Language Processing and Knowledge Engineering	3	
DSAA	3052	Data Science for Computer Vision and Multimedia	3	
DSAA	3053	Introduction to Reinforcement Learning	3	
DSAA	3055	Data Privacy and Security	3	
DSAA	3070	Bayesian Models and Applications	3	
DSAA	3071	Theories in Computing	3	
DSAA	3072	Advanced Theories in Computing	3	
DSAA	3073	Theories in Data Science	4	
DSAA	3074	Deep Learning for Science	3	
AIAA	3111	Introduction to Data Mining	3	
FTEC	3130	Statistical Inference	3	
DSAA	4011	Advanced Machine Learning and Deep Learning	4	
DSAA	4012	Machine Learning Systems	3	
DSAA	4018	Data Science for Cross-disciplinary Applications	3	
DSAA	4019	Special Topics in Data Science	4	

DSAA	4031	Data Management for Data Science	3	
DSAA	4032	Complex Data Management	3	
DSAA	4040	Cloud Computing and Big Data Systems	3	
DSAA	4070	Data Science for Battery Technologies	3	
DSAA	4086	Introduction to Optimization	3	
FTEC	4280	Data Visualization	3	