

(For students admitted in 2023-24 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
- ◆ 90 credits for Major Requirements, including:
 - 28 credits for Fundamental Courses
 - 33 credits for Major Required Courses
 - 24 credits for Major Electives
 - Free Electives can be used to fill in any shortfall in total credits

Major Requirements

Fundamental Courses (28 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	

Major Required Courses (33 credits)

Course Code		Course Title	Credit(s) attained	
DSAA		<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		<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	

DSAA		<i>Note: DSAA2085 or DSAA2088</i>	3
DSAA	2085	Discrete Mathematics	3
DSAA	2088	Mathematics for Data Science	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	2085	Discrete Mathematics	3	
DSAA	2088	Mathematics for Data Science	3	
AIAA	2205	Introduction to Artificial Intelligence	3	
DSAA	3031	Cloud Computing and Big Data Systems	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	3	
DSAA	3052	Data Science for Computer Vision and Multimedia	3	
DSAA	3053	Introduction to Reinforcement Learning	3	
DSAA	3054	Data Visualization	3	

DSAA	3055	Data Privacy and Security	3	
DSAA	3059	Data Science Ethnics	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	
DSAA	3086	Introduction to Optimization	3	
DSAA	3087	Statistical Inference	3	
AIAA	3111	Introduction to Data Mining	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	4070	Data Science for Battery Technologies	3	