Program Structure for B.Sc. in Data Science and Analytics

Total minimum credit hours of the curriculum are 130 and the credit distributions are described below:

A	GED Courses	33C
B	Core Courses	79C
C	Elective Courses	18C
	Total	130C

A. GED Courses (33C)

Credit Hours	
	(i) **English Communication Skills 2 Courses (6C)**
3	ENG101– Basic English
3	ENG102– Composition & Communication Skills
	(ii) **Business/Entrepreneurship/Social Sciences & Liberal Arts** **Any 1 Course (3C)**
3	BUS101– Introduction to Business
3	EDC101– Basic Entrepreneurship
3	GEN206– Introduction to Sociology
	(iii) **Computer Skill/Programming skills** **1 course (3C)**
3	CSE101– Introduction to Computers I
	(iv) **Quantitative/Science/Environment Knowledge** **Any 2 courses (6C)**
3	PHY100– Introductory Physics
3	GEB101– Basic Biology
3	GEN203– Ecological System & Environment
3	SOC212 – Social Ecology, Environment & Society
	(v) **Culture and History Knowledge** **Any 1 course (3C)**
3	GEN202– Eastern Culture and Heritage
3	GEN204– Western Thought
3	GEN226– Emergence of Bangladesh

	(vi) **Open GED Courses**
	                Any 4 GED courses offered by the university other than the
	                courses taken in (i) to (v) described before;
	                Some of them are listed below (12C)

3	PPHS102 –Introduction to Public Health Sciences
3	GEN205– Introduction to Psychology
3	GEN206– Introduction to Sociology
3	GEN207– Industrial Psychology
3	GEN208– Introduction to Philosophy
3	GEN210– International Relations
3	GEN211– Concepts of Journalism & Media Studies

Credit Hours	
3	GEN239– Professional Ethics
3	ACT101– Financial Accounting
3	ECO101– Principles of Microeconomics
3	ECO102– Introduction to Macroeconomics
3	FIN101– Principles of Finance
3	MGT101– Principles of Management
3	MKT101– Principles of Marketing
3	Any other GED course approved by the University

B. Core Courses   (79C)

Credit Hours	A student must take the following Core Courses (79C)
	Mathematics & Statistics Courses(25C)
3	MAT101–Differential & Integral Calculus
3	MAT102–Differential Equations & Special Functions
3	MAT291– Linear Algebra
3	MAT295– Discrete Mathematics
4	MAT397– Numerical Methods &Optimization
3	STA191– Probability & Statistics
3	STA293– Probability Distributions
3	STA395– Statistical Inference
	Computing Courses (16C)
4	CS191– Programming with C
4	CS295– Programming with Python
4	CS397– Data Structure & Algorithm
4	CS399–Artificial Intelligence
	Data Science Courses(38C)
4	DSA101–Introduction to Data Science
4	DSA201–Data Processing & Storage
3	DSA303–Regression Analysis
3	DSA305–Multivariate Analysis
3	DSA 307–Generalized Linear Model
4	DSA401–Data Mining
4	DSA403–Machine Learning
4	DSA405–Big Data & Cloud Computing
3	DSA407–Data Security & Privacy
6	DSA499–Data Science Project

C. Elective Courses   (18C)

Credit Hours	A student must choose 6 courses (3 from each Group of A and B) from the Elective Modules
	Group A
3	STA430–Stochastic Processes
3	STA432–Bayesian Statistics
3	STA434–Time Series Analysis

3	STA436–Experimental Design
3	STA438– Biostatistics
3	STA440– Information Systems
3	ECO465–Basic Econometrics
	Group B
3	CS410–Deep Learning
3	CS412–Data Visualization
3	CS414–Cryptography &Blockchain
3	CS416–Bioinformatics
3	CS418–Machine Learning for Health Sciences
3	CS420–Machine Learning for Cyber Security
3	BUS420–Business Intelligence
3	FIN7430–Foundation of Financial Technology
3	FIN7431–System Analysis & Design

D. **Flow-Chart for Courses to be followed during the FOUR YEARS of the Undergraduate Program of DSA (Numbers in parentheses indicate Credit Hours)**

		Course	**Prereq**
Year 1	**Semester 1**	ENG101(3)	None
		EDC101(3)	None
		MAT101(3)	None
		STA191(3)	None
	Short Summer	GEN226(3)	ENG101
		CSE101(3)	None
	Semester 2	ENG102(3)	ENG101
		DSA101(3)	STA191
		GEN203(3)	ENG101
		PHY100(3)	MAT101
	30 Credits		

		Course	**Prereq**
Year 2	**Semester 1**	MAT102(3)	MAT101
		STA293(3)	STA191
		CS191(4)	MAT10
		OPT001(3)	ENG101
	Short Summer	MAT291(3)	MAT102
		OPT002(3)	ENG101
	Semester 2	MAT295(3)	STA191
		DSA201(4)	CS191
		OPT003(3)	ENG101
		CS295(4)	CS191
	33 Credits		

			Course	Prereq
Year 3	**Semester 1**		MAT397(4)	MAT291
			STA395(3)	STA293
			OPT004(3)	ENG101
			CS397(4)	CS295
	Short Summer		DSA303(3)	STA395
			DSA305(3)	STA395
	Semester 2		CS399(4)	CS295
			DSA307(3)	STA395
			DSA401(4)	CS295
			DSA403(4)	CS397
	35 Credits			

			Course	Prereq
Year 4	**Semester 1**		DSA405(4)	DSA403
			DSA407(3)	DSA401
			DSA499A(3)	DSA403
			ELV001(3)	DSA403
	Short Summer		ELV002(3)	DSA405
			ELV003(3)	DSA405
	Semester 2		DSA499B(3)	DSA405
			ELV004(3)	DSA405
			ELV005(3)	DSA405
			ELV006(3)	DSA405
	31 Credits			

Legends: **OPT001–OPT004:** Any FOUR optional General Education Courses approved by the University.
ELV001 & ELV002: Any TWO Elective Courses from GROUP A of the Elective Courses.
ELV003 & ELV004: Any TWO Elective Courses from GROUP B of the Elective Courses.

The course DSA499 (Research Project) is spread over two semesters. Although the registration for this course will be done in SEM 1 of 4th year, the grades for this course will be finally assigned at the end of SEM 2 of 4th year. Grade X (continuation) will be assigned at the end of SEM 1 of 4th year.