

COMPLIANCE CERTIFICATE FOR UNDERGRADUATE 2.0 POLICY

Program Name: _____ BS DATA SCIENCE _____

Program Scheme of Studies

Structure of the Scheme	
Courses Credit Hours	1-4
Core Courses: (Credit Hours)	47
Foundation Courses: (Credit Hours)	12
Major Courses: (Credit Hours)	18
Technical Electives: (Credit Hours)	21
General Electives: (Credit Hours)	35
Supporting Science: (Credit Hours)	
University Electives: (Credit Hours)	3
Undergraduate 2.0 courses (Credit hours)	Distributed above
Total Credit Hours:	136

Program Road Map

Applicable to Batch No. F2023332 Session F2023

1 st Year							
Fall Semester (1 ST)				Spring Semester (2 ND)			
Code	Course Title	Cr. Hrs.	Prerequisite	Code	Course Title	Cr. Hrs	Prerequisite
CC111	Programming Fundamentals	3		ISL104	Islamic thought and perspectives	3	
CC111L	Programming Fundamentals Lab	1		EN125	English II	3	EN111
MA107	Calculus and Analytical Geometry	3		MA108	Multivariable Calculus (DS Supporting 1)	3	MA107
CC120	Application of Information & Communication Technologies	2		CC112	Object Oriented Programming	3	CC111, CC111L
CC120L	Application of Information & Communication Technologies	1		CC112L	Object Oriented Programming Lab	1	CC111, CC111L
EN111	English I	3		CC121	Digital Logic Design	2	
NS125	Applied Physics	2		CC121L	Digital Logic Design Lab	1	
NS125L	Applied Physics Lab	1		CC141	Discrete Structures	3	
POL106	Pakistan: Ideology, Constitution, and Society	3					
Semester Credit Hours		19		Semester Credit Hours		19	
2 Year							
Fall Semester (3 rd)				Spring Semester (4 th)			
Code	Course Title	Cr. Hrs.	Prerequisite	Code	Course Title	Cr. Hrs	Prerequisite
CC213	Data Structures	3	CC112, CC112L	CC251	Computer Networks	2	
CC213L	Data Structures Lab	1	CC112, CC112L	CC251L	Computer Networks Lab	1	
MA210	Linear Algebra (DS Supporting 2)	3	MA107	CC230	Database Systems	3	
SS103	Civics and Community Engagement	2		CC230L	Database Systems Lab	1	
					Technical Elective 1	3	
CC222	Computer Organization and Assembly Language	2	CC121, CC121L	HU201	Professional Practices	3	
CC222L	Computer Organization and	1	CC121, CC121L		Univ. Elective 1	3	

	Assembly Language Lab						
CC281	Software Engineering	3					
MA150	Probability and Statistics (DS Supporting 3)	3		DS291	Introduction to Data Science	2	MA150
				DS291L	Introduction to Data Science Lab	1	MA150
Semester Credit Hours		18		Semester Credit Hours		19	

3 rd Year							
Fall Semester (5 th)				Spring Semester (6 th)			
Code	Course Title	Cr. Hrs.	Prerequisite	Code	Course Title	Cr. Hrs	Prerequisite
CC323	Operating Systems	3			Technical Elective 3	3	
CC323L	Operating Systems Lab	1		CC361	Information Security	3	
	Technical Elective 2	3		DS392	Advanced Statistics	3	MA150
				SD101	21st Century	0	
SD100	English Immersion	0			Technical Elective 4	3	
MG365	Innovation and entrepreneurship	3		EN220	Technical & Business Writing	3	EN107
DS393	Data Mining	2	DS291, DS291L	DS395	Data Warehousing & Business Intelligence	3	DS393, DS393L
DS393L	Data Mining Lab	1	DS291, DS291L				
CC342	Analysis of Algorithms	3	CC213, CC213L				
CC371	Artificial Intelligence	3	CC213, CC213L				
Semester Credit Hours		19		Semester Credit Hours		18	

4 th Year							
Fall Semester (7 th)				Spring Semester (8 th)			
Code	Course Title	Cr. Hrs.	Prerequisite	Code	Course Title	Cr. Hrs	Prerequisite
	Technical Elective 5	3			Univ. Elective 2	3	
CC425	Parallel & Distributed Computing	3	CC323, CC323L		Technical Elective 7	3	
	Technical Elective 6	3		CC492	Final Year Project – II/COOP2*	4	CC491
DS494	Data Visualization	2	DS395				
DS494L	Data Visualization Lab	1	DS395				

CC491	Final Year Project – I/COOP1*	2				
Semester Credit Hours		14		Semester Credit Hours	10	
				Total credit hours	136	

*COOP means FYP undertaken in the industry.

Total Credit Hours: 136

List of Electives (Add list of electives for this program)

	Technical Electives	Cr.Hr.
IT461	Blockchain Technology and Application	3(3-0)
DS 391	Big Data Analytics	3(3-0)
AI372	Machine Learning	3(2-1)
AI473	Artificial Neural Networks & Deep Learning	3(2-1)
CS324	Human Computer Interaction	3(3-0)
AI394	Large Language Models	3(3-0)
DS 492	Topics in Data Science	3(3-0)
AI 377	Introduction to Robotics	3(2-1)
AI374	Knowledge Representation & Reasoning	3(3-0)
AI391	Natural Language Processing	3(3-0)
AI378	Agent-Based Modeling	3(3-0)
CS393	Mobile Application Development	3(2-1)
IT291	Web Technologies	3(2-1)
IT352	Internet of Things	3(3-0)
CY361	Cyber Security	3(2-1)
SE492	Open-Source Software Development	3(2-1)

University Elective 1 (3 Credit Hours) (From Arts and Humanities)

Arts and Humanities (3 Credit Hours) Min One Course

Course Code	Course	Cr. Hr.
SD221	Life and Learning	3
SD222	Foreign Language	3
SD223	Logical Reasoning	3

University Elective 2 (3 Credit Hours) (From Social Sciences)

Social Sciences (3 Credit Hours) Min One Course

Course Code	Course	Cr. Hr.
HWB101	Health and Wellbeing	3
SOC102	Understanding Society and Sociocultural Dynamics	3
PSY110	Psychology of Mind and Behavior	3
ECO202	Economics	3
MK210	Principles of Marketing	3
MG120	Principles of Management	3

Note:

The program BS Data Science (BS-DS) is accredited by NCEAC. The roadmap must contain the courses provided by the NCEAC. Some of the courses we offer differ from those prescribed by UMT UG 2.0 but they are those that are mandated by NCEAC and do fulfill the requirements of the respective areas of UG 2.0. The roadmap is compliant with all the other courses proposed in UG 2.0.

It is hereby certified that curriculum of _____BS Data Science_____ program, Session _____F2023_____ is compliant to Undergraduate 2.0 Policy. All the courses of UG 2.0 are incorporated in the roadmap accordingly.

Chairperson of Department

Dean concerned

Director AAQIC

Registrar