Bachelor of Science in Computer Science 2023 and Onwards Intake

Course Curriculum

		Semester 1				
No	**Code**	**Title**	**Credit Hours**	**Related SDG**	**Pre Requisite**	**Contents**
1	CS-110	Fundamentals of Computer Programming	3+1	4,9		⚠️
2	MATH-101	Calculus & Analytical Geometry	3+0	4,8,9,16		⚠️
3	MATH-161	Discrete Mathematics	3+0	4,9		⚠️
4	HU-114	Functional English	3+0	4		⚠️
5	CS-108	Application of Information & Communication Technologies	2+1	4		⚠️
6		Total CHs	14+2=16			

Semester 2

No	Code	Title	Credit Hours	Related SDG	Pre Requisite	Contents
1	CS-220	Database Systems	3+1	4,9		⚠
2	CS-212	Object Oriented Programming	3+1	1,2,4, 9,16	CS-114 Fundamental of Programming	⚠
3	MATH-222	Linear Algebra	3+0	4	MATH-101	⚠
4	MATH-234	Multivariable Calculus	3+0	4,9	MATH-101	⚠
5	EE-223	Digital Logic Design	2+1	4		⚠
6		Total CHs	14+3=17			

SEMESTER 3						
No	Code	Title	Credit Hours	Related SDG	Pre Requisite	Contents
1	MATH-361	Probability & Statistics	3+0	4,8,9,12,16		⚠

No	Code	Title	Credit Hours	Related SDG	Pre Requisite	Contents
2	CS-353	Information Security	2+1	4,8,9		⚠
3	HU-101	Islamic Studies	2+0	4 , 16		⚠
4	CS-250	Data Structures & Algorithms	3+1	4,9	CS-110 Fundamental of Programming	⚠
5	CS-272	Artificial Intelligence	2+1	4		⚠
6	EE-347	Computer Networks	2+1	4		⚠
7		Total CHs	14+4=18			

SEMESTER 4						
No	Code	Title	Credit Hours	Related SDG	Pre Requisite	Contents
1	CS-352	Theory of Automata and Formal Languages	3+0	4,9		⚠
2	PHY-102	Applied Physics	2+1	4,9,12,15		⚠

No	Code	Title	Credit Hours	Related SDG	Pre Requisite	Contents
3	ENGL-104	Expository Writing	3+0	4	HU-114	⚠️
4	CS-236	Advanced Database Management Systems	2+1	4	CS-220	
5	CS-234	Computer Organization and Assembly Language	2+1	4	EE-223	⚠️
6	CS-XXX	CS Elective-I	2+1			
7		Total CHs	14+4=18			

			SEMESTER 5			
No	**Code**	**Title**	**Credit Hours**	**Related SDG**	**Pre Requisite**	**Contents**
1	MGT-164	Introduction To Management	2+0	4,8,9		
2	CS-339	Computer Architecture	2+1	4	COAL	
3	CS-333	Operating Systems	2+1	4		⚠️
4	CS-337	HCI & Computer Graphics	2+1	4		
5	CS-XXX	CS Elective-II	2+1			

No	Code	Title	Credit Hours	Related SDG	Pre Requisite	Contents
6	CS-XXX	CS Elective-III	2+1			
7		Total CHs	12+5=17			

SEMESTER 6						
No	Code	Title	Credit Hours	Related SDG	Pre Requisite	Contents
1	SE-200	Software Engineering	3+0	4,9,11,12	CS-212 Object Oriented Programming	⚠️
2	CS-325	Compiler Construction	2+1		TOA	
3	CS-347	Parallel and Distributed Computing	2+1	4,9		⚠️
4	CS-XXX	CS Elective-IV	2+1			
5	CS-XXX	CS Elective-V	2+1			
6	CS-XXX	CS Elective-VI	2+1			
7		Total CHs	13+5=18			

SEMESTER 7

No	Code	Title	Credit Hours	Related SDG	Pre Requisite	Contents
1	CS-251	Design & Analysis of Algorithms	3+0	4,9,11,12	CS-250	⚠️
2	MGT-271	Entrepreneurship	2+0	4,8,9		⚠️
3	HU-202	Technical & Business Writing	3+0	4,8,9,16,17	HU-114	
4	CS-498	Final Year Project-I	0+2			
5	CS-XXX	CS Elective-VII	2+1			
6		Total CHs	10+3=13			

SEMESTER 8

No	Code	Title	Credit Hours	Related SDG	Pre Requisite	Contents
1	CCE-401	Civic and Community Engagement	1+1	4,11		⚠️

2	HU-102	Psychology	3+0	3,4		⚠
3	HU-127	Ideology and Constitution of Pakistan.	2+0	1 to 17		⚠
4	HU-222	Professional Ethics	2+0	1,3,4,5,8,9,10,11,12,15,16,17		⚠
5	CS-499	Final Year Project II	0+4		CS-498	
6		Total CHs	8+5=13			
7		Grand Total	133			

Data and Knowledge Management System						
No	Code	Title	Credit Hours	Related SDG	Pre Requisite	Contents
1	CS-321	Advanced Database Systems	3+0	9		
2	CS-322	RDBMS Using Oracle	2+1	9		
3	CS-340	Web Technologies-I	2+1	8,9		
4	CS-424	Information Retrieval	3+0			

No	Code	Title	Credit Hours	Related SDG	Pre Requisite	Contents
5	CS-425	Management Information Systems	3+0	9		
6	CS-441	Web Technologies-II	3+1	9		
7	CS-443	E-Commerce And Solutions	3+0	8,9,10,12		
8	CS-423	Data Warehousing and Data Mining	3+1	9,11,12		⚠️
9	CS-404	Big Data Analytics	2-1	9		⚠️

Intelligent Systems						
No	Code	Title	Credit Hours	Related SDG	Pre Requisite	Contents
1	BIO-215	Bioinformatics	3+0	9		
2	BIO-317	Computational Biology	3+0	9		
3	CS-471	Machine Learning	3+1		MATH-361	⚠️
4	CS-472	Natural Language Processing	3+0	9		
5	CS-474	Computer Vision	2+1	3,4,9		

No	Code	Title	Credit Hours	Related SDG	Pre Requisite	Contents
6	CS-476	Speech And Image Processing	3+1	9		
7	CS-473	Theory of Intelligent Systems	3-1	9		
8	CS-405	Deep Learning	3+1	9		⚠

Computer Graphics and Multimedia Systems						
No	Code	Title	Credit Hours	Related SDG	Pre Requisite	Contents
1	CS-361	Computer Graphics	3+1	9,11,12		
2	CS-362	Multimedia Systems And Design	2+1	9		
3	CS-363	Visualization	2+1	9		
4	CS-364	Game Programming	2+1	9		
5	EE-433	Digital Image Processing	3+1	9		

Parallel and Distributed Systems						
No	Code	Title	Credit Hours	Related SDG	Pre Requisite	Contents
1	CS-332	Distributed Computing	3+1	9	CS-330	

No	Code	Title	Credit Hours	Related SDG	Pre Requisite	Contents
2	CS-334	Open Source Systems	3+1	9		
3	CS-342	Mobile Computing	3+0	9		
4	CS-433	Applied Parallel Computing	2+1	9		
5	CS-331	System Programming	2-1	9		
6	SE-315	Cloud Computing	2-1	4,9		⚠️
7	CS-335	Internet of Things	3-0	4,9		⚠️
8	CS-3XX	Internet of Things	2+1			
9	CS-4XX	Software Defined Networks	2+1			

Software Engineering						
No	Code	Title	Credit Hours	Related SDG	Pre Requisite	Contents
1	CS-344	Web Engineering	3+1	9		⚠️
2	SE-210	Software Design and Architecture	3-1	9		

No	Code	Title	Credit Hours	Related SDG	Pre Requisite	Contents
3	SE-301	Object Oriented Software Engineering	3+0	9		
4	SE-311	Software Requirements Engineering	3+0	9		
5	SE-313	Design Patterns	2+1	9		
6	SE-320	Formal Methods	3+0	4,9	SE-200	⚠️
7	SE-321	Software Quality Engineering	3+0	4,12	SE-200	⚠️
8	SE-422	Software Testing	3+0	9		
9	SE-423	Software Metrics	3+0	9		
10	SE-430	Software Project Management	3+0	4,8,12	SE-200	⚠️
11	SE-431	Software Engineering Economics	3+0	9		
12	SE-440	Business Process Automation	3+0	9		

Computer Security						
No	Code	Title	Credit Hours	Related SDG	Pre Requisite	Contents

1	CS-380	Introduction To Computer Security	3+0	9		
2	CS-381	Network Security	3+1	9		⚠️
3	CS-481	Computer Forensics	3+1	9		
4	CS-482	System Incident Handling	3+0	9		
5	EE-322	Wireless Networks	3+0	9		

Miscellaneous						
No	**Code**	**Title**	**Credit Hours**	**Related SDG**	**Pre Requisite**	**Contents**
1	CS-213	Advanced Programming	3+1	9		
2	CS-260	Human Computer Interaction	3+0	9		
3	CS-414	Advanced Java With Emphasis On Internet Applications	3+1	9		
4	CS-453	Programming Languages	3+0	9		

5	CS-490	Advanced Topics In Computing	3+0	9		⚠
6	EC-303	Mobile Application Development for SME\\\'s	2+1	9		⚠
7	EE-232	Signals And Systems	3+1	7,9		
8	EE-330	Digital Signal Processing	3+1	7,9	EE-232	⚠
9	EE-350	Data Communication	3+0	9		
10	EE-430	Telecommunication Systems	3+0	9		
11	EC-4XX	Mobile Application Development for SMEs	3+1			
12	CS-4XX	Software Defined Networks	2+1			
13	CS-3XX	Advance Topics in Computing	2+1			

UNIVERSITY ELECTIVE

No	Code	Title	Credit Hours	Related SDG	Pre Requisite	Contents
1	CH-101	Applied Chemistry	2+1	9		
2	CS-271	Computational Logic	3+0	9		
3	CS-309	Computing and Society	3+0	3,11		
4	ECO-130	Engineering Economics	2+0	1 to 17		⚠
5	EE-212	Basic Electronics	2+1	9		
6	FIN-204	Financial Management For IT Professional	2+0	4,8		⚠
7	HRM-240	Organisational Behaviour	2+0	8		
8	HRM-441	Human Resource Management	2+0			
9	HU-102	Psychology	3+0	3,4		⚠
10	HU-104	English Literature	3+0	4		
11	HU-115	Principles of Sociology	3+0	3,5,11		⚠

12	MATH-232	Complex Variables And Transforms	3+0	4,9,13	MATH-101, MATH-121	⚠️
13	MGT-164	Introduction To Management	2+0	4,8,9		
14	MGT-175	Intellectual Property Rights	3+0	8		
15	MGT-452	New Business Ventures	2+0	12		
16	MKT-102	Principles Of Business And Marketing	2+0	8		
17	OTM-455	Engineering Project Management	2+0	8,17	EC_310	⚠️
18	PHY-401	Advanced Physics	2+1	9		
19	FIN-100	Principal of Accounting	3+0			⚠️

Computer Science Elective Courses						
No	Code	Title	Credit Hours	Related SDG	Pre Requisite	Contents
1	XX-XXX	Object Oriented Analysis and Design	2+1			
2	XX-XXX	Mobile Application Development-II	2+1			

3	XX-XXX	Software Testing & Quality Assurance	2+1			
4	XX-XXX	Cyber Security	2+1			
5	XX-XXX	Web Engineering	2+1			
6	CS-343	Web Technologies	2+1			
7	XX-XXX	Advanced Programming	2+1			
8	CS-415	Mobile Application Development-I	2+1			

For Pre-medical Students only (1st Semester)						
No	Code	Title	Credit Hours	Related SDG	Pre Requisite	Contents
1	MATH-162	Pre-Mathematics I (in lieu of MATH-161)	3+0	4		⚠
2	MATH-163	Pre-Mathematics II (In lieu of MATH-101)	3+0	4		⚠

For Pre-medical Students only (2nd Semester)						
No	Code	Title	Credit Hours	Related SDG	Pre Requisite	Contents

No	Code	Title	Credit Hours	Related SDG	Pre Requisite	Contents
1	MATH-101	Calculus & Analytical Geometry (in lieu of MATH-234)	3+0	4		⚠️
2	MATH-161	Discrete Mathematics (in lieu of MATH-222)	3+0	4		⚠️

For Pre-medical Students only (Summer Semester)						
No	Code	Title	Credit Hours	Related SDG	Pre Requisite	Contents
1	MATH-222	Linear Algebra	3+0	4	MATH-101	⚠️
2	MATH-234	Multivariable Calculus	3+0	4,9	MATH-101	⚠️

Internship						
No	Code	Title	Credit Hours	Related SDG	Pre Requisite	Contents
1	CS-488	Field Experience / Internship	0+3			