

BS (Computer Science)
Program as per Higher Education Commission NCRC
Nazeer Hussain University, Pakistan

NHU COURSE SCHEME AS PER NCRC 2017

I SEMESTER			Pre-Requisite
Code	Course Title	Cr. Hr.	Course Title
HS-105	English Composition & Comprehension	3+0	None
HS-102	Islamic Studies / Ethics	2+0	None
NS-101	Discrete Structures	3+0	None
NS-102	Calculus and Analytical Geometry	3+0	None
CS-103	Programming Fundamentals	3+1	None
CS-101	Introduction to Information and Communication Technology	2+1	None
Total Credit		16+2=18	
II SEMESTER			
Code	Course Title	Cr. Hr.	Course Title
HS-103	Pakistan Studies	2+0	None
HS-106	Communication & Presentation Skills	3+0	English Composition & Comprehension
NS-204	Differential Equations	3+0	Calculus & Analytical Geometry
NS-105	Applied Physics	3+0	None
CS-104	Object Oriented Programming	3+1	Programming Fundamentals
HS-201	Professional Practices	3+0	None
Total Credit		17+1=18	
III SEMESTER			
Code	Course Title	Cr. Hr.	Course Title
HS-201	Technical and Business Writing	3+0	None
NS-202	Multivariate Calculus	3+0	NS-202
CS-201	Data Structure & Algorithms	3+1	Discrete Structure
EE-201	Digital Logic Design	2+1	Basic Electronics
MS-306	University Electives – I	3+0	As per HEC NCRC
Total Credit		14+2=16	
IV SEMESTER			
Code	Course Title	Cr. Hr.	Course Title
NS-103	Linear Algebra	3+0	Calculus and Analytical Geometry
CS-202	Computer Organization & Assembly Language	3+1	None
CS-204	Database Systems	3+1	Programming Fundamentals
CS-304	Software Engineering	3+0	None
MS-307	University Electives – II	3+0	As per HEC NCRC
Total Credit		15+2=17	
V SEMESTER			
Code	Course Title	Cr. Hr.	Course Title
MS-402	University Electives – III	3+0	As per HEC NCRC
CS-301	Theory of Automata	3+0	Discrete Structures
CS-302	Operating Systems	3+1	Programming Fundamentals
CS-303	Design & Analysis of Algorithms	3+0	Data Structures & Algorithms
CS-305	Computer Networks	3+1	None
Total Credit		15+2=17	

VI SEMESTER			
Code	Course Title	Cr. Hr.	Course Title
CS-427	Parallel and Distributed Computing	3+0	Operating Systems
NS-301	Probability & Statistics	3+0	None
CS-306	Artificial Intelligence	2+1	Discrete Structures
CS-309	Computer Science Elective – I	3+1	As per HEC NCRC
CS-409	Computer Science Elective – II	3+1	As per HEC NCRC
Total Credit		14+3=17	

VII SEMESTER			
Code	Course Title	Cr. Hr.	Course Title
NS-302	Numerical Computing	2+1	Calculus and Analytical Geometry
CS-402	E-Commerce	3+0	None
CS-417	Compiler Construction	3+0	Theory of Automata
CS-415	Computer Science Elective – III	3+1	As per HEC NCRC
CS-440	Final Year Project – I	0+3	None
Total Credit		11+5=15	

VIII SEMESTER			
Code	Course Title	Cr. Hr.	Course Title
CS-428	Computer Science Elective – IV	3+0	As per HEC NCRC
CS-401	Information Security	2+1	Data Communications & Computer Networks
CS-429	Computer Science Elective – V	3+0	As per HEC NCRC
CS-441	Final Year Project – II	0+3	None
Total Credit		8+4=12	

Program Summary BS (CS)	
Duration of Program	4 Years
Number of Semesters	8
Average number of courses per semester	4,5 or 6
Total Credit Hours	130
Total Number of Courses	40 + Final Year Project (Part – I and II)

List of Electives

University Electives				CS Electives			
Code	Course Title	Pre-Req.	Cr.Hr.	Code	Course Title	Pre- Req.	Cr. Hr.
MS-XXX	Foreign Language	-	3+0		Computer Networks and Information Security		
MS- X06	Principles of Accounting	-	3+0				
MS- X07	Marketing and Management	-	3+0	CS-X13	Cloud Computing	Data Communi- -cation & Computer Networks	3+0
MS- X08	Principles of Management	-	3+0	CS-X18	Cryptography and Network Security	Data Communi- -cation & Computer Networks	3+0
MS- X03	Human Resource Management	-	3+0				
MS- X02	Entrepreneurship	-	3+0		Ubiquitous Computing		
	CS Electives			CS-X21	Computer Vision	-	3+0
	Common Electives			CS-X31	Ubiquitous Computing	-	3+0
CS-X07	Fuzzy Logic	Artificial Intelligence	3+0	CS-X35	Context Aware Applications	Discrete Structures	3+0
CS-X04	Digital Image Processing	-	3+0				
CS-X07	Data Warehousing and Data Mining	Data base Systems	3+0		Software Engineering		
CS-X13	Natural Language Processing	Theory of Automata	3+0	CS-X44	Software Requirement Engineering	Software Engineering	3+0
CS-X19	Advanced Database Management Systems	Data base Systems	3+0	CS-X45	Software Project Management	Software Engineering	3+0
CS-X22	Modeling and Simulation	-	3+0	CS-X47	Software Architecture	Software Engineering	3+0
CS-X24	Information Systems Audit	-	3+1	CS-X48	Software Quality Assurance	Software Engineering	3+0
CS-X26	Theory of Programing Languages	Object Oriented Programming	3+0		Mathematics and Science Foundation		
CS-X28	Data Science	-	3+0	NS-X02	Calculus & Analytical Geometry	-	3+0
CS-X29	Internet of Things(IoT)	-	3+0	NS-X01	Probability & Statistics	-	3+0
CS-X51	Machine Learning	-	3+0	NS-X03	Linear Algebra	-	3+0
	Mobile and Web Application Development			NS-X05	Applied Physics	-	3+0
CS-X05	Web Engineering	Programming Fundamentals		NS-X03	Complex Variables and Transforms	-	3+0
CS-X09	Computer Graphics	Object Oriented Programming					
CS-X15	Mobile Application and Development	-	3+1				
CS-X53	Game Development	-	3+0				

Computer Science Supporting Courses

Code	Course Title	Pre-Req.	Cr.Hr.			
NS-X02	Multi-Variant Calculus	-	3+0			
NS-X04	Differential Equations	-	3+0			
NS-X05	Graph Theory	-	3+0			
NS-X06	Theory of Programming Language	-	3+0			
NS-X02	Numerical Computing	-	3+0			