

BS (SE)

Course Group	Credit hours
Computing – Core	39
General Education	19
University Electives	12
Mathematics & Science Foundation	12
Common Courses	82
Domain Software Engineering (SE)	
Domain SE Core	24
Domain SE Supporting	09
Domain SE Electives	15
Domain SE Courses	48
TOTAL	130

Courses Common to all Computing Bachelor Programs – 82 Credits Computing Core Courses

Course Code	Pre-Requisite	Course Title	Credit hours
CS-323		Programming Fundamentals	4(3-3)
CS-423	CS-323	Object Oriented Programming	4(3-3)
CS-443	CS-323	Data Structures & Algorithms	4(3-3)
CS-335		Discrete Structures	3(3-0)
CS-583		Operating System	4(3-3)
CS-400		Database Systems	4(3-3)
CS-453		Software Engineering	3(3-0)
CS-577		Computer Networks	4(3-3)
CS-497		Information Security	3(3-0)
CS-698		Final Year Project-I	2(0-04)
CS-699	CS-698	Final Year Project-II	4(0-08)
		Total	39

General Education Courses

Course Code	Pre-Requisite	Course Title	Credit Hours
CS-300		Introduction to Information & Communication Technologies	3(2-3)
ENG-305		English Comprehension	3(3-0)
ENG-315		Technical & Business Writing	3(3-0)
ENG-325		Communication & Presentation Skills	3(3-0)
SSH-307		Professional Practices	3(3-0)
SSH-302		Pakistan Studies	2(2-0)
IS-302		Islamic Studies/ Ethics	2(2-0)
		Total	19

University Elective Courses

Course Code	Pre-Requisite	Course Title	Credit hours
MGT-322		Financial Accounting	3(3-0)
MGT-351		Introduction to Marketing	3(3-0)
MGT-411		Introduction to Management	3(3-0)
MGT-515		Introduction to Human Resource Management	3(3-0)
MGT-444		Digital Entrepreneurship	3(3-0)
SSH-304		International Relations	3(3-0)
SSH-308		Personal Grooming & Character Development	2(2-0)
		Total (Any Four of the above)	12

Mathematics and Science Foundation Courses

Course Code	Pre-Requisite	Course Title	Credit hours
MTH-310		Calculus & Analytical Geometry	3(3-0)
MTH-435		Linear Algebra	3(3-0)
STT-500		Statistics & Probability	3(3-0)
PHY-403		Applied Physics	3(3-0)
		Total	12

Domain Courses for BS-SE Software Engineering Core (Compulsory) courses

Course Code	Pre-Requisite	Course Title	Credit Hours
CS-652	CS-453	Software Project Management	3(3-0)
CS-685		Human Computer Interaction	3(2-3)
CS-666	CS-566	Web Engineering	3(2-3)
SE-415		Software Re-Engineering	3(3-0)
SE-440		Software Design & Architecture	3(2-3)
SE-454		Software Requirements Engineering	3(3-0)
SE-540		Software Construction & Development	3(2-3)
SE-542		Software Quality Engineering	3(3-0)
		Total	24

Software Engineering Supporting Courses

Course Code	Pre-Requisite	Course Title	Credit Hours
SE-441		Business Process Engineering	3(3-0)
SE-442		Formal Methods in Software Engineering	3(3-0)
SE-510		Introduction to Simulation & Modeling	3(3-0)
CS-573		Operations Research	3(3-0)
CS-673		Stochastic Processes	3(3-0)
		Total (Any Three of the above)	09

Software Engineering Elective Courses

Course Code	Pre-Requisite	Course Title	Credit hours
CS-432	CS-423	Modern Programming Languages	3(2-3)
CS-436		Big Data Analytics	3(3-0)
CS-449		Cloud Computing	3(3-0)
CS-548		Semantic Web	3(3-0)
CS-553	CS-453	Object Oriented Analysis & Design	3(2-3)
CS-559		Natural Language Processing	3(3-0)
CS-566		Web Technologies	3(2-3)
CS-575	CS-323	Computer Graphics	3(2-3)
CS-601	CS-400	Data Base Administration & Management	4(3-3)
CS-665		E-Commerce	3(2-3)
CS-682		System Programming	3(2-3)
CS-692	CS-423	Visual Programming	3(2-3)
CS-693		Mobile Application Development	3(2-3)
CS-695	CS-423	Theory of Programming Language	3(2-3)
SE-446		Agent Based Software Engineering	3(3-0)
SE-502		Global Software Development	3(3-0)
SE-503		Information Systems Audit	3(3-0)
SE-516		Software Metrics	3(3-0)
SE-518		Topics in Software Engineering	3(3-0)
SE-556		Real Time Systems	3(3-0)
		Total (Any Five of the Above)	15

Semester 1

Course Code	Pre-Requisite	Course Title	Credit Hours
CS-300		Introduction to Information & Communication Technologies	3(2-3)
CS-323		Programming Fundamentals	4(3-3)
ENG-305		English Comprehension	3(3-0)
MTH-310		Calculus & Analytical Geometry	3(3-0)
IS-302		Islamic Studies/ Ethics	2(2-0)

Semester 2

Course Code	Pre-Requisite	Course Title	Credit Hours
CS-423	CS-323	Object Oriented Programming	4(3-3)
ENG-325		Communication & Presentation Skills	3(3-0)
CS-335		Discrete Structures	3(3-0)
CS-453		Software Engineering	3(3-0)
SSH-302		Pakistan Studies	2(2-0)
		University Elective-1	3(3-0)

Semester 3

Course Code	Pre-Requisite	Course Title	Credit Hours
CS-443	CS-323	Data Structures & Algorithms	4(3-3)
SE-454		Software Requirements Engineering	3(3-0)
CS-685		Human Computer Interaction	3(2-3)
MTH-435		Linear Algebra	3(3-0)
		University Elective-2	3(3-0)
		SE Supporting-I	3(3-0)

Semester 4

Course Code	Pre-Requisite	Course Title	Credit Hours
CS-400		Database Systems	4(3-3)
CS-583		Operating Systems	4(3-3)
STT-500		Statistics & Probability	3(3-0)
SE-440		Software Design & Architecture	3(2-3)
		University Elective-3	
		SE-Elective-1	

Semester 5

Course Code	Pre-Requisite	Course Title	Credit Hours
SE-540		Software Construction & Development	3(2-3)
CS-577		Computer Networks	4(3-3)
ENG-315		Technical & Business Writing	3(3-0)
PHY-403		Applied Physics	3(3-0)
		SE Supporting-2	
		SE-Elective-2	

Semester 6

Course Code	Pre-Requisite	Course Title	Credit Hours
SE-542		Software Quality Engineering	3(3-0)
CS-497		Information Security	3(3-0)
SSH-307		Professional Practices	3(3-0)
CS-666	CS-566	Web Engineering	3(2-3)
		SE Elective-3	
		SE Elective-4	

Semester 7

Course Code	Pre-Requisite	Course Title	Credit Hours
CS-698		Final Year Project-I	2(0-04)
CS-652	CS-453	Software Project Management	3(3-0)
		University Elective-4	
		SE Supporting-3	
		SE Elective-5	

Semester 8

Course Code	Pre-Requisite	Course Title	Credit Hours
SE-415		Software Re-Engineering	3(3-0)
CS-699	CS-698	Final Year Project-II	4(0-08)