

Scheme of Studies (Session 2025-2029)

Curriculum Model for BS in Computer Science

The generic structure for the BSCS program is in the following table.

Generic Structure for Computing Disciplines:

Areas	Credit Hours	Courses
Computing Core	46	14
Domain Core	18	06
Domain Elective	21	07
Mathematics & Supporting Courses	12	04
Elective Supporting Courses	03	01
General Education Requirement	30	12
Mandatory Internship	03*	01
Compulsory (Arabic) Course	03	01
Understanding of Holy Quran-I	01	01
Understanding of Holy Quran-II	01	01
Skills for Success	00	01
Totals	138	49

*3 credit hour internship course is offered in any summer semester (6-8weeks) after 4th semester, with the compulsion that student should not be enrolled in any other course. Internship will be registered and graded in 8th semester.

Mapping of BSCS Program on the Generic Structure:

#	Code	Pre-Req.	Course Title	Cr Hr
	Computing Core (46/137) 14 Courses			
1	BCS-1101		Programming Fundamentals	4(3-1)
2	BCS-1202	BCS-1101	Object Oriented Programming	4(3-1)
3	BCS-1203		Database Systems	4(3-1)
4	BCS-2306		Digital Logic Design	3(2-1)
5	BCS-2304	BCS-1101	Data Structures	4(3-1)
6	BCS-3510		Information Security	3(2-1)
7	BCS-3512		Computer Networks	3(2-1)
8	BCS-2409		Artificial Intelligence	3(2-1)
9	BCS-2408		Software Engineering	3(3-0)
10	BCS-2407		Computer Organization and Assembly Language	3(2-1)
11	BCS-2305		Operating Systems	3(2-1)
12	BCS-3511		Analysis of Algorithms	3(3-0)

13	BCS-4713		Final Year Project - I	2 (0-2)
14	BCS-4814	BCS-4713	Final Year Project - II	4(0-4)
Domain Core (18/137) 6 Courses				
15	BCS-3517		Theory of Automata	3(3-0)
16	BCS-3615	BCS-1203	Advance Database Management Systems	3(2-1)
17	BCS-4819		HCI and Computer Graphics	3(2-1)
18	BCS-4716		Computer Architecture	3(2-1)
19	BCS-3618		Compiler Construction	3(2-1)
20	BCS-4820		Parallel and Distributed Computing	3(2-1)
Domain Elective (21/137) 7 Courses *Students can register elective courses across the computing discipline				
21	BCS-3523		Mobile Application Development	3(2-1)
22	BCS-3529		Data Mining	3(3-0)
23	BCS-3534		Introduction to Data Science	3(2-1)
24	BCS-3539		Object Oriented Analysis and Design	3(3-0))
25	BCS-3627		Cloud Computing	3(3-0)
26	BCS-3630		Big Data Analytics	3(3-0)
27	BCS-3636		Digital Image Processing	3(3-0)
28	BCS-3639		Software Testing and Quality Assurance	3(3-0)
29	BCS-4725		Cyber Security	3(3-0)
30	BCS-4735		Game Development	3(2-1)
31	BCS-4737		Semantic Web	3(3-0)
32	BCS-4724		Deep Learning	3(2-1)
33	BCS-4819		Full Stack Web Development	3(2-1)
34	BCS-4833		Blockchain Applications	3(2-1)
Domain Elective (21/137) 7 Courses *Students can register elective courses across the computing discipline				
Mathematics & Supporting Courses				
35	MAT-2415		Multivariable Calculus	3 (3-0)
36	MAT-1215		Linear Algebra	3 (3-0)
37	STA-2320		Probability and Statistics	3 (3-0)
38	ENG-3607		Technical and Business Writing	3 (3-0)
Elective Supporting Courses				
39	ECO-3606		Economics	3 (3-0)
40	MBS-3609		Financial Accounting	3 (3-0)

General Education Requirement as per HEC UG Education Policy				
41	ICT-1126		Application of Information and Communication Technologies	3 (2-3)
42	ENG-1107		Functional English	3 (3-0)
43	ENG-1207		Expository Writing	3 (3-0)
44	MAT-1115		Quantitative Reasoning – 1 (Discrete Structures)	3 (3-0)
45	MAT-2315		Quantitative Reasoning – 2 (Calculus and Analytic Geometry)	3 (3-0)
46	ISL-4712		Islamic Studies/Ethics	2 (2-0)
47	PS-0017		Pakistan studies	2 (2-0)
48	MBS-4809		Social Sciences (Example: Introduction to Marketing)	2 (2-0)
49	PHY-1218		Natural Sciences (Applied Physics)	3(2-1)
50	HUM-4817		Arts and Humanities (Professional Practices)	2 (2-0)
51	SOC-2421		Civics and Community Engagement	2 (2-0)
52	ETRE-4708		Entrepreneurship	2 (2-0)

Suggested Semester/Study Plan for BSCS

Semester Wise Breakdown

#	Code	Pre-Reqs	Course Title	Cr hr
Semester 1				
1	ICT-1126		Application of Information and Communication Technologies	3(2-1)
2	BCS-1101		Programming Fundamentals	4(3-1)
3	MAT-1115		Discrete Structures	3(3-0)
4	PS-0017		Pakistan studies	2 (2-0)
5	ENG-1107		Functional English	3(3-0)
6	MAT- 1116		*Pre-Algebra (Non-Credit)	0(0-0)
7	UHQ-1130		Understanding of Holy Quran-I	1(0-1)
8	SFS-1101		Skills for Success	0(0-0)
				16 (13-3)
*For those students who have not studied mathematics in intermediate				
Semester 2				
1	BCS-1202	BCS-1101	Object Oriented Programming	4(3-1)
2	BCS-1203		Database Systems	4(3-1)
3	ENG-1207		Expository Writing	3(3-0)
4	MAT-1215		Linear Algebra	3(3-0)
5	PHY-1218		Applied Physics	3(2-1)
6	MAT-1216		*Pre-Calculus (Non-Credit)	0(0-0)
				17 (14-3)
*For those students who have not studied mathematics in intermediate				
Semester 3				
1	BCS-2304	BCS-1101	Data Structures	4(3-1)
2	BCS-2305		Operating Systems	3(2-1)

3	BCS-2306		Digital Logic Design	3(2-1)
4	MAT-2315		Calculus and Analytical Geometry	3(3-0)
5	STA-2320		Probability and Statistics	3(3-0)
6	ARA-2301		Arabic	3(3-0)
				19 (16-3)
			Semester 4	
1	BCS-2407		Computer Organization and Assembly Language	3(2-1)
2	BCS-2408		Software Engineering	3(3-0)
3	BCS-2409		Artificial Intelligence	3(2-1)
4	BCS-2410		HCI and Computer Graphics	3(2-1)
5	MAT-2415		Multivariable Calculus	3(3-0)
6	SOC-2421		Civic and Community Engagement	2(2-0)
				17 (14-3)
*Student is eligible to apply for internship in any summer after 4th semester.				
			Semester 5	
1	BCS-3510		Information Security	3(2-1)
2	BCS-3511		Analysis of Algorithm	3(3-0)
3	BCS-3512		Computer Networks	3(2-1)
4	BCS-35xx		Domain Elective 1	3(2-1)
5	BCS-3517		Theory of Automata	3(3-0)
6	BCS-35xx		Domain Elective 2	3(3-0)
				18 (15-3)
			Semester 6	
1	BCS-3618		Compiler Construction	3(2-1)
2	BCS-3615	BCS-1203	Advance Database Management System	3(2-1)
3	BCS-36xx		Domain Elective 3	3(3-0)
4	BCS-36xx		Domain Elective 4	3(3-0)
5	ECO-3606		Economics	2(2-0)
6	ENG-3607		Technical and Business Writing	3(3-0)
				17(15-2)
			Semester 7	
1	BCS-4716		Computer Architecture	3(2-1)
2	BCS-4713		Final Year Project - I	2(0-2)
3	BCS-47xx		Domain Elective 5	3(3-0)
4	BCS-47xx		Domain Elective 6	3(2-1)
5	ETRE-4708		Entrepreneurship	2(2-0)
6	MBS-4709		Introduction to Marketing	3(3-0)
7	ISL-4712		Islamic Studies/Ethics	2(2-0)
				18 (14-4)
* Final Year Project term is used instead of Capstone Project.				
			Semester 8	
1	BCS-4814	BCS-4713	Final Year Project - II	4(0-4)
2	HUM-4817		Professional Practices	2 (2-0)
3	BCS-48xx		Domain Elective 7	3(2-1)
4	BCS-4820		Parallel Distributed Computing	3(2-1)

5	BCS-4822		Internship	3(3-0)
6	UHQ-4830		Understanding of Holy Quran-II	1(0-1)
				16 (09-7)
* For evaluation of Final Year Project-II, one credit hour will be marked by internal supervisor and three by external supervisor.				

Normal range for credit hours is 15-18 in each semester, and it may be up to maximum of 24 credit hours in a semester.

Curriculum Model for BS in Information Technology

The generic structure for the BSIT program is in the following table.

Generic Structure for Computing Disciplines:

Areas	Credit Hours	Courses
Computing Core	46	14
Domain Core	18	06
Domain Elective	21	07
Mathematics & Supporting Courses	12	04
Elective Supporting Courses	03	01
General Education Requirement	30	12
Mandatory Internship	03*	01
Compulsory (Arabic) Course	03	01
Understanding of Holy Quran-I	01	01
Understanding of Holy Quran-II	01	01
Skills for Success	00	01
Totals	138	49

*3 credit hour internship course is offered in any summer semester (6-8weeks) after 4th semester, with the compulsion that student should not be enrolled in any other course. Internship will be registered and graded in 8th semester.

Mapping of BSIT Program on the Generic Structure:

#	Code	Pre-Req.	Course Title	Cr Hr
	Computing Core (46/137) 14 Courses			
1	BIT-1101		Programming Fundamentals	4(3-1)
2	BIT-1202	BIT-1101	Object Oriented Programming	4(3-1)
3	BIT-1203		Database Systems	4(3-1)
4	BIT-2306		Digital Logic Design	3(2-1)

5	BIT-2304	BIT-1101	Data Structures	4(3-1)
6	BIT-3510		Information Security	3(2-1)
7	BIT-3512		Computer Networks	3(2-1)
8	BIT-2409		Artificial Intelligence	3(2-1)
9	BIT-2408		Software Engineering	3(3-0)
10	BIT-2407		Computer Organization and Assembly Language	3(2-1)
11	BIT-2305		Operating Systems	3(2-1)
12	BIT-3511		Analysis of Algorithms	3(3-0)
13	BIT-4713		Final Year Project - I	2 (0-2)
14	BIT-4814	BIT-4713	Final Year Project - II	4(0-4)
Domain Core (18/137) 6Courses				
15	BIT-3517		Web Technologies	3(2-1)
16	BIT-3615		DB Administration and Management	3(2-1)
17	BIT-4819		System and Network Administration	3(2-1)
18	BIT-4716		Information Technology Infrastructure	3(2-1)
19	BIT-3618		Cyber Security	3(2-1)
20	BIT-4820		Parallel and Distributed Computing	3(2-1)
	Domain Elective (21/137) 7 Courses			
	<i>*Students can register elective courses across the computing discipline</i>			
21	BIT-3525	BIT-1203	Distributed Database System	3(2-1)
22	BIT-3526		Data Mining	3(3-0)
23	BIT-3534		Introduction to Data Science	3(2-1)
24	BIT-3528		Virtual system and Services	3(3-0)
25	BIT-3630		Cloud Computing	3(3-0)
26	BIT-3634		Network Security	3(3-0)
27	BIT-3631		Game Development	3(2-1)
28	BIT-3635		HCI and Computer Graphics	3(2-1)
29	BIT-4736		Wireless Networks	3(3-0)
30	BIT-4737		Software Project Management	3(3-0)
31	BIT-4738		Enterprise System	3(3-0)
32	BIT-4739		Security of IoTs	3(3-0)
33	BIT-4819		Mobile Application Development	3(2-1)
34	BIT-4823		Blockchain Applications	3(2-1)
Mathematics & Supporting Courses				
28	MAT-2415		Multivariable Calculus	3 (3-0)
29	MAT-1215		Linear Algebra	3 (3-0)
30	STA-2320		Probability and Statistics	3 (3-0)
31	ENG-3607		Technical and Business Writing	3 (3-0)
Elective Supporting Courses				

32	ECO-3606		Economics	3 (3-0)
	MBS-3609		Financial Accounting	3 (3-0)
General Education Requirement as per HEC UG Education Policy				
33	ICT-1126		Application of Information and Communication Technologies	3 (2-1)
34	ENG-1107		Functional English	3 (3-0)
35	ENG-1207		Expository Writing	3 (3-0)
36	MAT-1115		Discrete Structures	3 (3-0)
37	MAT-2315		Calculus and Analytic Geometry	3 (3-0)
38	ISL-4712		Islamic Studies/Ethics	2 (2-0)
39	PS-0017		Pakistan Studies	2 (2-0)
40	MBS-4709		Introduction to Marketing	2 (2-0)
41	PHY-1218		Applied Physics	3(2-1)
42	HUM-4817		Professional Practices	2 (2-0)
43	SOC-2421		Civics and Community Engagement	2 (2-0)
44	ETRE-4708		Entrepreneurship	2 (2-0)

Suggested Semester/Study Plan for BSIT

#	Code	Pre-Reqs	Course Title	Cr hr
Semester 1				
1	ICT-1126		Application of Information and Communication Technologies	3(2-1)
2	BIT-1101		Programming Fundamentals	4(3-1)
3	MAT-1115		Discrete Structures	3(3-0)
4	PS-0017		Pakistan Studies	2 (2-0)
5	ENG-1107		Functional English	3 (3-0)
6	MAT-1116		*Pre-Algebra (Non-Credit)	0 (0-0)
7	UHQ-1130		Understanding of Holy Quran-I	1(0-1)
8	SFS-1101		Skills for Success	0(0-0)
				16 (13-3)
*For those students who have not studied mathematics in intermediate				
Semester 2				
1	BIT-1202	BIT-1101	Object Oriented Programming	4(3-1)
2	BIT-1203		Database Systems	4(3-1)
3	ENG-1207		Expository Writing	3(3-0)
4	MAT-1215		Linear Algebra	3(3-0)
5	PHY-1218		Applied Physics	3(2-1)
6	MAT-1216		*Pre-Calculus (Non-Credit)	0(0-0)
				17 (14-3)
*For those students who have not studied mathematics in intermediate				
Semester 3				

1	BIT-2304	BIT-1101	Data Structures	4(3-1)
2	BIT-2305		Operating Systems	3(2-1)
3	BIT-2306		Digital Logic Design	3(2-1)
4	MAT-2315		Calculus and Analytical Geometry	3(3-0)
5	STA-2320		Probability and Statistics	3(3-0)
6	ARA-2301		Arabic	3(3-0)
				19 (16-3)
			Semester 4	
1	BIT-2407		Computer Organization and Assembly Language	3(2-1)
2	BIT-2410		Computer Networks	3(2-1)
3	BIT-2408		Software Engineering	3(3-0)
4	BIT-2409		Artificial Intelligence	3(2-1)
5	MAT-2415		Multivariable Calculus	3(3-0)
6	SOC-2421		Civic and Community Engagement	2(2-0)
				17 (14-3)
*Student is eligible to apply for internship in any summer after 4th semester.				
			Semester 5	
1	BIT-3510		Information Security	3(2-1)
2	BIT-3511		Analysis of Algorithm	3(3-0)
3	BIT-3512		System and Network Administration	3(2-1)
4	BIT-35xx		Domain Elective 1	3(2-1)
5	BIT-3517		Web Technologies	3(2-1)
6	BIT-35xx		Domain Elective 2	3(3-0)
				18 (14-4)
			Semester 6	
1	BIT-3618		Information Technology Infrastructure	3(2-1)
2	BIT-3615		DB administration and Management	3(2-1)
3	BIT-36xx		Domain Elective 3	3(3-0)
4	BIT-36xx		Domain Elective 4	3(2-1)
5	ECO-3606		Economics	2(2-0)
6	ENG-3607		Technical and Business Writing	3(3-0)
				17(14-3)
			Semester 7	
1	BIT-4716		Cyber Security	3(2-1)
2	BIT-4713		Final Year Project - I	2(0-2)
3	BIT-47xx		Domain Elective 5	3(3-0)
4	BIT-47xx		Domain Elective 6	3(3-0)
5	ETRE-4708		Entrepreneurship	2(2-0)
6	MBS-4709		Introduction to Marketing	3(3-0)
7	ISL-4712		Islamic Studies/Ethics	2(2-0)
				18(15-3)
* Final Year Project term is used instead of Capstone Project.				
			Semester 8	

1	BIT-4814	BIT-4713	Final Year Project - II	4(0-4)
2	HUM-4817		Professional Practices	2(2-0)
3	BIT-48xx		Domain Elective 7	3(2-1)
4	BIT-4820		Parallel Distributed Computing	3(2-1)
5	BIT-4822		Internship	3(3-0)
6	UHQ-4830		Understanding of Holy Quran-II	1(0-1)
				16 (09-7)
* For evaluation of Final Year Project-II, one credit hour will be marked by internal supervisor and three by external supervisor.				

Normal range for credit hours is 15-18 in each semester, and it may be up to maximum of 24 credit hours in a semester.