

BS Cyber Forensics and Security

Eligibility Criteria

- At least 50% marks in Intermediate (HSSC) examination with Mathematics or equivalent qualification with Mathematics, certified by IBCC.

OR

- At least 50% marks in Intermediate (HSSC) examination with Pre-Medical or equivalent qualification, certified by IBCC.

Note: “Students with pre-medical must have to pass deficiency courses of Mathematics of 6 credit hours in first two semesters.”

Distribution of Total Credit Hours

The distribution of credit hours for the proposed program follows the guidelines provided by HEC UGE policy 2023 and is given below.

Category or Area	Credit Hours	No. of Courses
Major-Breadth	63	21
Major-Depth (Electives)	12	04
Interdisciplinary	12	04
General Education	30	12
Mathematics & Supporting	12	04
Internship	03	01
Total Credit Hours	132	46

Major-Breadth Courses

Following is the list of major-breadth (core) courses that will serve as a foundation for BS Cyber Forensics & Security.

Sr. #	Code	Title	Cr. Hrs.
1	CS111	Programming Fundamentals	3-0-3
	CS111L	Programming Fundamentals Lab	0-1-1
2	CS112	Object Oriented Programming	3-0-3
	CS112L	Object Oriented Programming Lab	0-1-1
3	CS216	Data Structures	3-0-3
	CS216L	Data Structures Lab	0-1-1
4	CY102	Introduction to Cyber Security	2-0-2
	CY102L	Introduction to Cyber Security Lab	0-1-1
5	CS260	Computer Networks	2-0-2
	CS260L	Computer Networks Lab	0-1-1
6	CF	Introduction to Forensic Science	3-0-3
7	CY103	Information Assurance	3-0-3
8	CS226	Computer Organization and Assembly Language	2-0-2
	CS226L	Computer Organization and Assembly Language Lab	0-1-1
9	CS325	Operating Systems	2-0-2
	CS325L	Operating Systems Lab	0-1-1
10	CF	Digital Evidence Handling	2-0-2
	CF	Digital Evidence Handling Lab	0-1-1
11	SE101	Introduction to Software Engineering	3-0-3
12	CY223	Network Security	2-0-2
	CY223L	Network Security Lab	0-1-1

13	CY326	Social Media Forensics	2-0-2
	CY326L	Social Media Forensics Lab	0-1-1
14	CF	Introduction to Criminal Justice	3-0-3
15	CY321L	Computer Forensics	2-0-2
	CY321L	Computer Forensics Lab	0-1-1
16	CY322	Network Forensics	2-0-2
	CY322L	Network Forensics Lab	0-1-1
17	CY323	Smart Devices Forensics	2-0-2
	CY323L	Smart Devices Forensics Lab	0-1-1
18	CY256	Secure Software Design and Development	2-0-2
	CY256L	Secure Software Design and Development Lab	0-1-1
19	CY491	Final Year Project – I	0-1-1
20	CY492	Final Year Project – II	0-2-2
21	CY493	Final Year Project – III	0-3-3
Total:			63

Interdisciplinary Elective Courses

The following is the list of interdisciplinary courses for BS in Cyber Forensics & Security. Students can register any four.

Sr. #	Code	Title	Cr. Hrs.
1	CS230	Database Systems	2-0-2
	CS230L	Database Systems Lab	0-1-1
2	CS344	Artificial Intelligence	2-0-2
	CS344L	Artificial Intelligence Lab	0-1-1
3	EE123	Digital Logic Design	2-0-2

	EE123L	Digital Logic Design Lab	0-1-1
4	CY220	Reverse Engineering & Vulnerability Analysis	2-0-2
	CY220L	Reverse Engineering & Vulnerability Analysis Lab	0-1-1
5	CS 332	Design and Analysis of Algorithms	2-0-2
	CS 332L	Design and Analysis of Algorithms Lab	0-1-1
6	CS	Cloud and Distributed Computing	2-0-2
	CS	Cloud and Distributed Computing Lab	0-1-1

Important Note: Due to the advanced nature of the BS Cyber Forensics & Security program and research orientation, the instructor of a course can re-design the objectives and detailed contents of the course in consultation with the Chair Department.

General Education Courses

Following is the list of General Education courses for BS in Cyber Forensics & Security Program.

Sr. #	Code	Title	Pre-req	Cr Hrs
1	CS181	Application of Information and Communication Technologies		2-0-2
	CS181L	Application of Information and Communication Technologies Lab		0-1-1
2	EL170	Functional English		3-0-3
3	EL271	Expository Writing	EL170	3-0-3
4	MA216	Discrete Structure		3-0-3
5	MA110	Calculus and Analytical Geometry		3-0-3
6	HU124	Islamic Studies and Ethics		2-0-2
7	HU405	Ideology and Constitution of Pakistan		2-0-2
8	XXXXX	Social Sciences Related Course/Cyber Psychology		2-0-2
9	PH111	Applied Physics		2-0-2

	PH111L	Applied Physics Lab		0-1-1
10	CS470	Professional Practices		2-0-2
11	HU411	Civics and Community Engagements		2-0-2
12	BA353	Entrepreneurship		2-0-2
Total Cr Hrs:				30

Mathematics and Supporting Courses

Following is the list of Mathematics and supporting courses for BS in Cyber Forensics & Security Program.

Sr. #	Code	Title	Cr. Hrs.
1	MA105	Multivariable Calculus	3-0-3
2	MA201	Linear Algebra	3-0-3
3	MA301	Probability and Statistics	3-0-3
4	EL400	Technical and Business Writing	3-0-3
Total:			12

Semester Wise Study Plan

The semester-wise study plan for BS in Cyber Forensics & Security is as follows.

S. #.	Course Code	Course Title	Pre-Req	Credit Hours
Semester – I				
1	EL170	Functional English	-	3-0-3
2	CY102	Introduction to Cyber Security	-	2-0-2
3	CY102L	Introduction to Cyber Security Lab	-	0-1-1
4	CS181	Application of Information and Communication Technologies	-	2-0-2

5	CS181L	Application of Information and Communication Technologies Lab	-	0-1-1
6	CS111	Programming Fundamentals	-	3-0-3
7	CS111L	Programming Fundamentals Lab	-	0-1-1
8	HU124	Islamic Studies and Ethics	-	2-0-2
9	MA114*	Foundational Mathematics (non-credit)	-	3-0-3
Semester Cr. Hrs.				12-3-15
*For Pre-medical students only				
Semester – II				
1	CF	Introduction to Forensic Science	-	3-0-3
2	SE101	Introduction to Software Engineering	-	3-0-3
3	CS112	Object Oriented Programming	CS111, CS111L	3-0-3
4	CS112L	Object Oriented Programming Lab	CS111, CS111L	0-1-1
5	CS260	Computer Networks	-	2-0-2
6	CS260L	Computer Networks Lab	-	0-1-1
7	PH111	Applied Physics	-	2-0-2
8	PH111L	Applied Physics Lab	-	0-1-1
9	MA118*	Pre-Calculus (non-credit)	-	3-0-3
Semester Cr. Hrs.				13-3-16
*For Pre-medical students only				
Semester – III				
1	CY103	Information Assurance	-	3-0-3
2	CS216	Data Structures	CS112, CS112L	3-0-3
3	CS216L	Data Structures Lab	CS112, CS112L	0-1-1
4	MA110	Calculus and Analytical Geometry	-	3-0-3

5	CS226	Computer Organization and Assembly Language	EE123, EE123L	2-0-2
6	CS226L	Computer Organization and Assembly Language Lab	EE123, EE123L	0-1-1
7		Interdisciplinary Elective-I	-	2-0-2
8		Interdisciplinary Elective-ILab	-	0-1-1
Semester Cr. Hrs.				13-3-16
Semester – IV				
1	CS325	Operating Systems	-	2-0-2
2	CS325L	Operating Systems Lab	-	0-1-1
3	CY256	Secure Software Design and Development	SE101	2-0-2
4	CY256L	Secure Software Design and Development Lab	SE101	0-1-1
5	CF	Digital Evidence Handling	-	2-0-2
6	CF	Digital Evidence Handling Lab	-	0-1-1
7	CY223	Network Security	CS260, CS260L	2-0-2
8	CY223L	Network Security Lab	CS260, CS260L	0-1-1
9	MA105	Multivariable Calculus	-	3-0-3
10	EL271	Expository Writing	EL170	3-0-3
Semester Cr. Hrs.				14-4-18

Summer Semester				
1	CY 490	Internship (6-8 weeks)*	-	0-3-3

*Under exceptional circumstances, a student can undertake the internship after 5th, 6th or 7th semester (with the approval by the Chair Dept.).

Semester – V				
1	CY321	Computer Forensics	-	2-0-2
2	CY321L	Computer Forensics Lab	-	0-1-1
3	MA301	Probability and Statistics	-	3-0-3
4		Domain Elective I	-	2-0-2
5		Domain Elective I Lab	-	0-1-1
6	CYXXX	Domain Elective II	-	2-0-2
7	CYXXX	Domain Elective II Lab	-	0-1-1
8	CY323	Smart Devices Forensics	-	2-0-2
9	CY323L	Smart Devices Forensics Lab	-	0-1-1
10	EL400	Technical and Business Writing	-	3-0-3
Semester Cr. Hrs.				14-4-18

Semester – VI				
1	MA201	Linear Algebra	-	3-0-3
2	BA353	Entrepreneurship	-	2-0-2
3	CYXXX	Domain Elective III	-	2-0-2
4	CYXXXL	Domain Elective III Lab	-	0-1-1
5	CS	Interdisciplinary Elective-II	-	2-0-2
6	CS	Interdisciplinary Elective -II Lab	-	0-1-1
7	HU411	Civics and Community Engagements	-	2-0-2
8	CF	Introduction to Criminal Justice	-	3-0-3
9	CY491	Final Year Project-I	-	0-1-1
Semester Cr. Hrs.				15-3-17
Semester – VII				

1	CY326	Social Media Forensics	-	2-0-2
2	CY326	Social Media Forensics Lab	-	0-1-1
3	CYXXX	Domain Elective IV	-	2-0-2
4	CYXXXL	Domain Elective IV Lab	-	0-1-1
5	CY322	Network Forensics	CY223, CY223L	2-0-2
6	CY322	Network Forensics Lab	-	0-1-1
7	SSXX/ PY317	Social Science Elective/Cyber Psychology	-	2-0-2
8	MA216	Discrete Structures	-	3-0-3
9	CY492	Final Year Project –II	-	0-2-2
Semester Cr. Hrs.				11-5-16
Semester – VIII				
1	CS470	Professional Practices		2-0-2
	C	Interdisciplinary Elective-III	-	2-0-2
	CL	Interdisciplinary Elective-III Lab	-	0-1-1
2	C	Interdisciplinary Elective IV	-	2-0-2
3	CL	Interdisciplinary Elective IV Lab	-	0-1-1
4	HU405	Ideology and Constitution of Pakistan		2-0-2
5	CY493	Final Year Project – III		0-3-3
Semester Cr. Hrs.				8-5-13
Total Credit Hours:				

*Semester wise course distribution might be changed, if need arises.

Major Depth Courses (Electives)

The following is a list of elective courses. New elective courses may be added to this list. A student can study any five courses from the list given below:

S. #.	Course Code	Course Title	
1.	CFXXX	Operating System Forensics	2-0-2
	CFXXXL	Operating System Forensics Lab	0-1-1
2.	CFXXX	Digital Forensics Incident Detection & Response (DFIR)	2-0-2
	CFXXXL	Digital Forensics Incident Detection & Response (DFIR)	0-1-1
3.	CFXXX	Cyber Laws and Compliance	3-0-3
4.	CFXXX	Malware Forensics	2-0-2
	CFXXXL	Malware Forensics Lab	0-1-1
5.	CFXXX	Audio Forensics	2-0-2
	CFXXXL	Audio Forensics Lab	0-1-1
6.	CFXXX	Cloud Forensics	2-0-2
	CFXXXL	Cloud Forensics Lab	0-1-1
7.	CFXXX	Multimedia Forensics	2-0-2
	CFXXXL	Multimedia Forensics Lab	0-1-1
8.	CFXXX	Drones Forensics	2-0-2
	CFXXXL	Drones Forensics Lab	0-1-1
9.	CFXXX	Cybercrime and Criminal Justice	3-0-3

10.	CFXXX	Incident Response Technologies	2-0-2
	CFXXXL	Incident Response Technologies Lab	0-1-1
11.	CFXXX	Financial & White-Collar Crimes Investigations	3-0-3
12.	CFXXX	Ethical Issues in Forensics	3-0-3
13.	CY302	Human Behavior in Cyber Security	3-0-3
14.	CFXXX	Artificial Intelligence in Forensics	2-0-2
	CFXXXL	Artificial Intelligence in Forensics Lab	0-1-1
15.	CFXXX	Open-Source Intelligence Techniques	2-0-2
	CFXXXL	Open-Source Intelligence Techniques Lab	0-1-1
16.	CFXXX	Automotive Forensics	3-0-3
17.	CY212	Cryptology	2-0-2
	CY212L	Cryptology Lab	0-1-1
18.	CF	eDiscovery Forensics and Moot Courts	2-0-2
	CFXXXL	eDiscovery Forensics and Moot Courts Lab	0-1-1
19.	CF	Server Environments and Architectures	2-0-2
	CFXXXL	Server Environments and Architectures Lab	0-1-1
20.	CFXXX	Criminal Evidence	3-0-3
21.	CFXXX	Intelligence Analysis	2-0-2
	CFXXXL	Intelligence Analysis Lab	0-1-1
22.	CFXXX	International Cyber Conflicts	3-0-3

23.	CFXXX	National Cybersecurity Challenge Problem	0-3-3
24.	CFXXX	Supervisory Control and Data Acquisition (SCADA) Forensics	3-0-3
25.	CFXXX	Forensic Professional Practice	3-0-3
26.	CFXXX	Forensic Accounting and Fraud Detection	3-0-3
27.	CFXXX	IoT Forensics	2-0-2
	CFXXXL	IoT Forensics Lab	0-1-1