

## BS Cyber Security Scheme of Studies

### Semester I

S No	Course Code	Course Title	Pre-req	Cr Hrs
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.	MA216	Discrete Structures	-	3-0-3
10.	<b>MA114*</b>	<b>Foundational Mathematics (non-credit)</b>	-	3-0-3
<b>Total Cr Hrs</b>				<b>15-3-18</b>
<b>Total Contact Hours:24</b>				

\* For Premedical students

### Semester II

S. No	Course Code	Course Title	Pre-req	Cr Hrs
1. _	SE101	Introduction to Software Engineering	-	3-0-3
2. _	CS112	Object Oriented Programming	CS111,CS111L	3-0-3
3. _	CS112L	Object Oriented Programming Lab	CS111,CS111L	0-1-1
4. _	EE123	Digital Logic Design	-	2-0-2
5. _	EE123L	Digital Logic Design Lab	-	0-1-1
6. _	PH111	Applied Physics	-	2-0-2
7. _	PH111L	Applied Physics Lab	-	0-1-1
8. _	MA201	Linear Algebra	-	3-0-3
9. _	<b>MA118*</b>	<b>Pre-Calculus (non-credit)</b>	-	3-0-3
<b>Total Cr Hrs</b>				<b>13-3-16</b>
<b>Total Contact Hours: 22</b>				

\* For Premedical students

### Semester III

S. No	Course Code	Course Title	Pre-req	Cr Hrs
1.	CY371	Information Assurance	-	3-0-3
2.	CS260	Computer Networks	-	2-0-2
3.	CS260L	Computer Networks Lab	-	0-1-1
4.	CS216	Data Structures	CS112,CS112L	3-0-3
5.	CS216L	Data Structures Lab	CS112,CS112L	0-1-1
6.	MA110	Calculus and Analytical Geometry	-	3-0-3
7.	CS226	Computer Organization and Assembly Language	EE123,EE123L	2-0-2
8.	CS226L	Computer Organization and Assembly Language Lab	EE123,EE123L	0-1-1
9.	SSXXX	Social Science Elective	-	2-0-2
<b>Total Cr Hrs</b>				<b>15-3-18</b>
<b>Total Contact Hours: 24</b>				

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#### Semester IV

S. No	Course Code	Course Title	Pre-req	Cr Hrs
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. _	CY223	Network Security	CS260,CS260L	3-0-3
6. _	CY223L	Network Security Lab	CS260,CS260L	0-1-1
7.	CYXXX	Cyber Security Elective I	-	2-0-2
8. _	CYXXXL	Cyber Security Elective I Lab	-	0-1-1
9. _	MA105	Multivariable Calculus	MA110	3-0-3
<b>Total Cr Hrs</b>				12-4-16
<b>Total Contact Hours: 24</b>				

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### Summer Semester

S. No	Course Code	Course Title	Pre-req	Cr Hrs
1. _	CY 490	Internship (6-8 weeks)*	-	0-3-3

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

### Semester V

S. No	Course Code	Course Title	Pre-req	Cr Hrs
1.	CY 334	Digital Forensics	-	2-0-2
2.	CY 334L	Digital Forensics Lab	-	0-1-1
3.	CS426	Parallel and Distributed Computing	CS325,CS325L	2-0-2
4.	CS426L	Parallel and Distributed Computing Lab	CS325,CS325L	0-1-1
5.	EL271	Expository Writing	EL170	3-0-3
6.	CS344	Artificial Intelligence	-	2-0-2
7.	CS344L	Artificial Intelligence Lab	-	0-1-1
8.	CYXXX	Cyber Security Elective II	-	2-0-2
9.	CYXXX	Cyber Security Elective II Lab	-	0-1-1
10.	HU411	Civics and Community Engagements	-	2-0-2
<b>Total Cr Hrs</b>				<b>13-4-17</b>
<b>Total Contact Hours: 25</b>				

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### Semester VI

S. No	Course Code	Course Title	Pre-req	Cr Hrs
1.	CS130	Database Systems	-	3-0-3

2. _	CS130L	Database Systems Lab	-	0-1-1
3. _	CYXXX	Cyber Security Elective III	-	2-0-2
4. _	CYXXXL	Cyber Security Elective III Lab	-	0-1-1
5. _	CYXXX	Cyber Security Elective IV	-	2-0-2
6. _	CYXXXL	Cyber Security Elective IV Lab	-	0-1-1
7. _	EL400	Technical and Business Writing	-	3-0-3
8. _	BA353	Entrepreneurship	-	2-0-2
9. _	CY491	Final Year Project-I	<b>List A*</b>	0-1-1
<b>Total Cr Hrs</b>				12-4-16
<b>Total Contact Hours: 24</b>				

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### Semester VII

S. No	Course Code	Course Title	Pre-req	Cr Hrs
1.	MA301	Probability and Statistics	-	3-0-3
2.	XXXXX	Supporting Elective	-	3-0-3
3. _	CS332	Design and Analysis of Algorithms	CS216,CS216L	3-0-3
4. _	CYXXX	Cyber Security Elective V	-	2-0-2

5. _	CYXXXL	Cyber Security Elective V Lab	-	0-1-1
6. _	CYXXX	Cyber Security Elective VI	-	2-0-2
7. _	CYXXXL	Cyber Security Elective VI Lab	-	0-1-1
8. _	CY492	Final Year Project –II	CY491	0-2-2
<b>Total Cr Hrs</b>				13-4-17
<b>Total Contact Hours: 25</b>				

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#### Semester VIII

S. No	Course Code	Course Title	Pre-req	Cr Hrs
1. _	CS470	Professional Practices	-	2-0-2
2. _	CYXXX	Cyber Security Elective VII	-	2-0-2
3. _	CYXXXL	Cyber Security Elective VII Lab	-	0-1-1
4. _	HU405	Ideology and Constitution of Pakistan	-	2-0-2
5. _	CS215	Information Security	-	2-0-2
6. _	CS215L	Information Security Lab	-	0-1-1
7. _	CY493	Final Year Project – III	CY492	0-3-3
<b>Total Cr Hrs</b>				8-5-13

**Total Contact Hours: 23**

**Total No. of Credit Hours: 134**

**Total No. of Courses: 46**

**\*List A**

**Pre-requisites for CY-491 Final Year Project-I**

S No	Course Code	Course Title	Pre-req	Cr Hrs
1.	CS111	Programming Fundamentals	-	3-0-3
2.	CS111L	Programming Fundamentals Lab	-	0-1-1
3.	CS112	Object Oriented Programming	CS111,CS111L	3-0-3
4.	CS112L	Object Oriented Programming Lab	CS111,CS111L	0-1-1
5.	CS216	Data Structures	CS112,CS112L	3-0-3
6.	CS216L	Data Structures Lab	CS112,CS112L	0-1-1
7.	CS325	Operating Systems	-	2-0-2
8.	CS325L	Operating Systems Lab	-	0-1-1
9.	CY102	Introduction to Cyber Security	-	2-0-2
10.	CY102L	Introduction to Cyber Security Lab	-	0-1-1
11.	CS260	Computer Networks	-	2-0-2

12. _	CS260L	Computer Networks Lab	-	0-1-1
13. _	CY223	Network Security	CS260,CS260L	3-0-3
14. _	CY223L	Network Security Lab	CS260,CS260L	0-1-1

Total Credits = 130