Faculty of Engineering
School of Information, Security and Data Science
Department of Information Technology

Degree : B. Tech. (Hons.) Computer Science and Engineering (Cyber Security)
Total Credits : 178(160+*18)

Annexure III

Third Semester						Fourth Semester					
Code	Subject Name	L	T	P	C	Code	Subject Name	L	T	P	C
MEE22XX[i]	Engineering Economics	3	0	0	3	MAS21XX	Statistics & Probability	3	0	0	3
MBB21XX	Management of Technology	3	0	0	3	ICS2201	Operating Systems	3	1	0	4
ICS2101	Computer System Architecture	3	0	0	3	ICS2202	Relational Database Management Systems	3	0	0	3
ICS2102	Data Structures and Algorithms	3	1	0	4	ICS2240	Number Theory and Cryptography	3	1	0	4
ICS2103	Cyber Security Essentials	3	1	0	4	ICS2220	Data Communication and Networks	3	1	0	4
ICS2120	Object-Oriented Programming	3	0	0	3	XXXXX	Open Elective 1	3	0	0	3
ICS2130	Data Structures and Algorithms Lab	0	0	2	1	ICS2230	Relational Database Management Systems Lab	0	0	2	1
ICS2131	Object-Oriented Programming Lab	0	0	2	1	ICS2231	Operating Systems Lab	0	0	2	1
ICS2132	Cyber Security Essentials Lab	0	0	2	1	ICS2232	Data Communication and Networks Lab	0	0	2	1
ICS2170	Project-based Learning 1	0	0	2	1	ICS2270	Project-based Learning 2	0	0	2	1
	Total	18	3	6	24		Total	18	3	8	25
	Total Contact Hours (L+T+P)	**27 Hours**					**Total Contact Hours (L+T+P)**	**29 Hours**			

Fifth Semester						Sixth Semester					
Code	Subject Name	L	T	P	C	Code	Subject Name	L	T	P	C
ICS3101	Design and Analysis of Algorithms	3	1	0	4	ICS3201	Information and Network Security	3	1	0	4
ICS3102	Vulnerability Assessment and Penetration Testing	3	1	0	4	XXXXX	Machine Learning for Cyber Security	3	0	0	3
ICS3120	Artificial Intelligence for Cyber Security	3	1	0	4	XXXXX	Program Elective 5	3	0	0	3
XXXXXX	Program Elective 2	3	0	0	3	XXXXX	Program Elective 6	3	0	0	3
XXXXXX	Program Elective 3	3	0	0	3	XXXXX	Open Elective 3	3	0	0	3
XXXXXX	Open Elective 2	3	0	0	3	ICS3210	Professional Practice	0	0	0	1
ICS3130	Design and Analysis of Algorithms Lab	0	0	2	1	ICS3230	Information and Network Security Lab	0	0	2	1
ICS3131	Vulnerability Assessment and Penetration Testing Lab	0	0	2	1	ICS3231/ICS3232	Digital Forensics Lab / Web Application Security Lab	0	0	2	1
ICS3170	Project-based Learning 3	0	0	2	1	ICS3270	Project-based Learning 4	0	0	6	3
ICS3180	Research Methodology	0	0	2	1	ICS3280	Malware Analysis	3	0	0	3
	Total	18	3	8	25		Total	18	1	10	25
	Total Contact Hours (L+T+P)	**29 Hours**					**Total Contact Hours (L+T+P)**	**29 Hours**			

Seventh Semester						Eighth Semester					
Code	Subject Name	L	T	P	C	Code	Subject Name	L	T	P	C
XXXXXX	Program Elective 7	3	0	0	3	ICS4270	Major Project	0	0	0	12
XXXXXX	Program Elective 8	3	0	0	3	ICS4280	Honors Project	0	0	0	8
XXXXXX	Open Elective 4	3	0	0	3						
XXXXXX	Open Elective 5	3	0	0	3						
ICS4170	Internship (Industry or Research)	0	0	0	1						
ICS4180	Responsible AI and Ethical Hacking	3	0	0	3						
ICS4181	Intrusion Detection Systems	3	0	0	3						
	Total	18	0	0	19		Total	0	0	0	20
	Total Contact Hours (L+T+P)	**18 Hours**					**Total Contact Hours (L+T+P)**				

A. Core Courses

1. ICS 2101 : Computer System Architecture (Semester III)
2. ICS 2102 : Data Structures and Algorithms (Semester III)
3. ICS 2103 : Cyber Security Essentials (Semester III)
4. ICS 2201 : Operating Systems (Semester IV)
5. ICS 2202 : Relational Database Management Systems (Semester IV)
6. ICS 3101 : Design and Analysis of Algorithms (Semester V)
7. ICS 3102 : Vulnerability Assessment and Penetration Testing (Semester V)
8. ICS 3201 : Information and Network Security (Semester VI)

B. Flexible Core Courses

1. Flexible Core 1 : ICS 2120 : Object-Oriented Programming (Semester III)
2. Flexible Core 2 : ICS 2220 : Data Communications and Networks (Semester IV)
3. Flexible Core 3 : ICS 3120 : Artificial Intelligence for Cyber Security (Semester IV)

C. Program Electives

Program Electives			
Semester IV	**Semester V**	**Semester VI**	**Semester VII**
Program Elective 1 • ICS 2240 : Number Theory and Cryptography	**Program Elective 2** • ICS 3140 : IoT Security • ICS 3141 : Block Chain Technologies • ICS 3142: Theory of Computation **Program Elective 3** • ICS 3143 : Secure Coding • ICS 3144 : Cloud Security • ICS 3145 : Software Engineering	**Program Elective 4** • ICS 3240 : Machine Learning for Cyber Security **Program Elective 5** • ICS 3242 : Digital Forensics • ICS 3243 : Web Application Security **Program Elective 6** • ICS 3244 : Database Security • ICS 3245 : Android Security	**Program Elective 7** • ICS 4140 : Quantum Computing and Security • ICS 4141 : Cyber Law and Polices **Program Elective 8** • ICS 4142 : Deep Learning • ICS 4143 : Soft Computing Techniques • ICS 3244 : Compiler Design

D. Honors Electives

1. ICS3180 : Research Methodology (Semester V)
2. ICS3280 : Malware Analysis (Semester VI)
3. ICS4180 : Responsible AI and Ethical Hacking (Semester VII)
4. ICS4181 : Intrusion Detection Systems (Semester VII)
5. ICS4280 : Honors Project (Semester VIII)

[i] Statistics & Probability: CSE, AIML, SEEC students will take in 3rd semester. Engineering Economics: SIT, SCCE, All Core (-) SEEC will take in 3rd semester. In 4th semester, these courses are switched.