



JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA
KAKINADA – 533 003, Andhra Pradesh, India

DEPARTMENT OF CSE – CYBER SECURITY

COURSE STRUCTURE

For UG – R20

B. Tech - COMPUTER SCIENCE & ENGINEERING with Specialization

Common to

- (i) CSE (CYBER SECURITY) – Branch Code:46**
- (ii) CYBER SECURITY – Branch Code:59**

(Applicable for batches admitted from 2020-2021)



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I Year – I SEMESTER

S. No	Course Code	Subjects	L	T	P	Credits
1	BS1101	Mathematics - I	3	0	0	3
2	BS1104	Applied Physics	3	0	0	3
3	HS1101	Communicative English	3	0	0	3
4	ES1101	Computer Engineering Workshop	1	0	4	3
5	ES1102	Programming for Problem Solving Using C	3	0	0	3
6	HS1102	English Communication skills Laboratory	0	0	3	1.5
7	BS1105	Applied Physics Lab	0	0	3	1.5
8	ES1103	Programming for Problem Solving Using C Lab	0	0	3	1.5
Total Credits						19.5

I Year – II SEMESTER

S. No	Course Code	Subjects	L	T	P	Credits
1	BS1202	Mathematics – II	3	0	0	3
2	BS1206	Applied Chemistry	3	0	0	3
3	ES1204	Problem Solving Using Python	3	0	0	3
4	ES1205	Basic Electrical & Electronics Engineering	3	0	0	3
5	ES1206	Digital Logic Design	3	0	0	3
6	ES1207	Problem Solving Using Python Lab	0	0	3	1.5
7	BS1207	Applied Chemistry Lab	0	0	3	1.5
8	ES1208	Digital Logic Design Lab	0	0	3	1.5
9	MC1203	Constitution of India	2	0	0	0
Total Credits						19.5



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II Year – I SEMESTER

S. No	Course Code	Course Title	L	T	P	C
1.	BSC2101	Mathematics – III	3	0	0	3
2.	PCC2101	Mathematical Foundations of Computer Science	3	0	0	3
3.	PCC2102	Data Structures	3	0	0	3
4.	PCC2103	Operating Systems	3	0	0	3
5.	PCC2104	Java Programming	3	0	0	3
6.	PCC2105	Data Structures Lab	0	0	3	1.5
7.	PCC2106	OS&UNIX Programming Lab	0	0	3	1.5
8.	PCC2107	Java Programming Lab	0	0	3	1.5
9.	SC2101	Free and Open Source Software	0	0	4	2
10.	MC2101	Essence of Indian Traditional Knowledge	2	0	0	0
TOTAL						21.5

II Year – II SEMESTER

S.No	Course Code	Course Title	L	T	P	C
1.	ESC2201	Computer Organization& Architecture	3	0	0	3
2.	BSC2201	Probability and Statistics	3	0	0	3
3.	PCC2201	Formal Languages & Automata Theory	3	0	0	3
4.	PCC2202	Database Management Systems	3	0	0	3
5.	HSMC2201	Managerial Economics and Financial Accountancy	3	0	0	3
6.	ESC2202	Computer Organization& Architecture Lab	0	0	3	1.5
7.	PCC2203	R Programming Lab	0	0	3	1.5
8.	PCC2204	Database Management Systems Lab	0	0	3	1.5
9.	SC2201	Android Application Development	0	0	4	2
TOTAL						21.5
	Minor courses (The hours distribution can be 3-0-2 or 3-1-0 also)		4	0	0	4
	Internship 2 Months (Mandatory) during summer vacation					



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III Year – I SEMESTER

S. No.	Course Code	Course Title	L	T	P	C
1	PCC3101	Computer Networks	3	0	0	3
2	PCC3102	Software Engineering	3	0	0	3
3.	PCC3103	Design and Analysis of Algorithms	3	0	0	3
4.	OEC3101	Open Elective-I Open Electives offered by other Departments/ Web Technologies (Job oriented course)	3	0	0	3
5.	PEC3101	Professional Elective Courses – I 1. Computer Graphics 2. Artificial Intelligence 3. Compiler Design 4. Advanced Data Structures 5. Principles of Programming Languages	3	0	0	3
6.	PCC3104	Network Programming Lab	0	0	3	1.5
7	PCC3105	Software Engineering Lab	0	0	3	1.5
8	SC3101	Web Application Development Using Full Stack – Frontend Development –Module -I	0	0	4	2
9.	MC3101	Environmental Science	2	0	0	0
		Summer Internship 2 Months (Mandatory) after second year (to be evaluated during V semester	0	0	0	1.5
		Total				21.5
		Minor courses	4	0	0	4



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III Year – II SEMESTER

S. No.	Course Code	Course Title	L	T	P	C
1	PCC3201	Cryptography and Network Security	3	0	0	3
2.	PCC3202	Machine Learning	3	0	0	3
3.	PCC3203	Introduction to Cyber Security	3	0	0	3
4.	PEC3201	Professional Elective Courses-II (NPTEL/SWAYAM) Duration: 12 Weeks Minimum *Course/subject title can't be repeated	3	0	0	3
5.	OEC3201	Open Elective-II Open Electives offered by other Departments/ Web Services (Job Oriented Course)	3	0	0	3
6.	PCC3204	Cyber Security Lab	0	0	3	1.5
7.	PCC3205	Machine Learning Lab	0	0	3	1.5
8.	PCC3206	Cryptography and Network Security Lab	0	0	3	1.5
9.	SC3201	Web Application Development Using Full Stack - Frontend Development –Module -II	0	0	4	2
10.	MC3201	Employability Skills	2	0	0	0
		Total				21.5
		Minor courses	4	0	0	4
		Minor courses through SWAYAM	0	0	0	2
	Industrial/Research Internship (Mandatory) 2 Months during summer vacation					



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IV Year – I SEMESTER

S. No.	Course Code	Course Title	L	T	P	C
1	PEC4101	Professional Elective courses – III 1. Internet Of Things 2. Data Science 3. Distributed Systems 4 Information Coding Techniques 5. Mobile and Wireless Security	3	0	0	3
2.	PEC4102	Professional Elective courses – IV 1. Cyber Crime Investigation and Digital Forensics 2. Cloud Computing 3. Mean Stack Technologies 4. Ad-hoc and Sensor Networks 5. Malware Analysis & Reverse Engineering	3	0	0	3
3.	PEC4103	Professional Elective courses – V 1.Cyber Laws and Security Policies 2. Intrusion Detection and Prevention System 3.BigData Analytics 4. Data Privacy 5.Ethical Hacking	3	0	0	3
4.	OEC4101	Open Elective-III Open Electives offered by other Departments/ DevOps (Job Oriented Course)	3	0	0	3
5.	OEC4102	Open Elective-IV Open Electives offered by other Departments/ Multimedia And Rich Internet Applications (Job Oriented Course)	3	0	0	3
6.	HSMC4101	Humanities and Social Science Elective 1.Universal Human Values 2. Human Resources Development 3. Business Intelligence 4. Management And Organizational Behaviour 5. Strategic Management	3	0	0	3
7.	SC4101	Multimedia Application Development	0	0	4	2
8		Industrial/Research Internship 2 Months (Mandatory) after third year (to be evaluated during VII semester)	0	0	0	3
Total credits						23
Minor courses			4	0	0	4
Minor courses through SWAYAM			0	0	0	2



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IV Year – II SEMESTER

S. No	Category	Code	Course Title	Hours per week			Credits
1	Major Project	PROJ	Project Project work, seminar and internship in industry	-	-	-	12
INTERNSHIP (6 MONTHS)							
Total Credits							12

Open Electives to be offered by Cyber Security for Other Branches:

Open Elective I: 1. Data Structures 2. Computer Networks 3. Data Base Management Systems 4. Problem Solving using Python	Open Elective II: 1. Operating Systems 2. Web Technologies 3. Introduction to Cyber Security 4. Artificial Intelligence
Open Elective III: 1. Big Data analytics 2. Cloud Computing 3. Cryptography and Network Security 4. Data Science	Open Elective IV: 1. Cyber Crime Investigation and Digital Forensics 2. Malware Analysis & Reverse Engineering 3. Machine Learning 4. Distributed systems

Minor Degree in Cyber Security offered to other branches

S.No	Year and Sem	Subject Title	L	T	P	C
1	II Year II Sem	Introduction to Cyber Security	3	1	0	4
2	III Year I Sem	Ethical Hacking	3	0	2	4
3	III Year II Sem	Data Encryption and Network Security	3	1	0	4
4	IV Year I Sem	Digital Forensics	3	1	0	4
5		02 MOOCS courses @ 2credits each** 1. Information Security & Secure Systems Engineering 2. Privacy And Security In Online Social Media 3. Computational Number Theory & Cryptography 4. Social Networks				4
Grand Total						20

Note: Out of the 20 Credits, 16 credits shall be earned by specified courses listed above. In addition to the 16 credits, students must pursue at least 2 courses through MOOCs. The courses must be of minimum 8 weeks in duration. Student can register at any time after the completion of II B.Tech. I Sem.

****Choose 02 MOOCS courses @ 2credits each from SWAYAM/NPTEL.**