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

DEPARTMENT OF CSE – IOT & CS INCLUDING BLOCK CHAIN TECHNOLOGY

COURSE STRUCTURE

For UG – R20

B. Tech - COMPUTER SCIENCE & ENGINEERING with Specialization

IOT & CS INCLUDING BLOCK CHAIN TECHNOLOGY

(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	Database Management Systems Lab	0	0	3	1.5
8.	PCC2204	R Programming 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	IoT Architecture and its Protocols	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. Compiler design 2. Software Engineering 3. Data warehousing &Data Mining 4. Micro Processors & Micro Controllers 5. Computer Graphics	3	0	0	3
6.	PCC3104	Network Programming Lab	0	0	3	1.5
7	PCC3105	Arduino 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	Introduction to Cybersecurity	3	1	0	3
2.	PCC3202	Cryptography &Network Security	3	0	0	3
3.	PCC3203	Block chain technologies	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	Cybersecurity Lab	0	0	3	1.5
7.	PCC3205	IoT Lab	0	0	3	1.5
8.	PCC3206	Cryptography &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.Software Testing Methodologies 2. Data Science 3. NoSQL Databases 4. Privacy and Security in IOT 5. Cloud Computing	3	0	0	3
2.	PEC4102	**Professional Elective courses – IV** 1. Object Oriented Analysis & Design Using UML 2. Malware Analysis & Reverse Engineering 3. Mean Stack Technologies 4. Cyber Crime Investigation and Digital Forensics 5.Intrusion Detection Systems	3	0	0	3
3.	PEC4103	**Professional Elective courses – V** 1. Deep Learning 2. Quantum Computing 3. DevOps 4. Machine Learning 5. Mobile and Wireless Security	3	0	0	3
4.	OEC4101	**Open Elective-III** Open Electives offered by other departments/ Social Network And Semantic Web (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 Organisational 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 Iot with CS including BC 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. Introduction to Cybersecurity 3. IoT Architecture and its Protocols 4. Artificial Intelligence
Open Elective III: 1. Big Data Analytics for IoT 2. Sensors and Actuator Devices for IoT 3. Cryptography and Network Security 4. Data Science	**Open Elective IV:** 1. Programming and Interfacing with Microcontrollers 2.Block Chain Technologies 3. Machine Learning 4. Distributed Computing

Minor Degree in IoT with CS Including BC offered to other branches

S. No	Year and Sem	Subject Title	L	T	P	C
1	II Year II Sem	Fundamentals of Cyber Security	3	1	0	4
2	III Year I Sem	IoT Architecture and its Protocols	3	0	2	4
3	III Year II Sem	Block chain and Crypto currencies Fundamentals	3	1	0	4
4	IV Year I Sem	Wireless Ad-hoc networks	3	1	0	4
5		02 MOOCS courses @ 2credits each ** 1. Introduction to Industry 4.0 and Industrial Internet of Things 2. Blockchain Architecture Design and Use Cases 3. Information Security-5-Secure Systems Engineering 4. Ethical Hacking 5. Introduction to Internet of Things				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 throughMOOCs. 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.**