COURSESTRUCTURE
&
DETAILEDSYLLABUS

(R20 Regulation)
For
Bachelor of Technology

I, II, III & IV B. Tech. (CSIT) with

Honors and Minors

(Applicable for Batches Admitted from 2020-2021)

Department of
COMPUTER SCIENCE & INFORMATION TECHNOLOGY

DEPARTMENT OF COMPUTER SCIENCE & INFORMATION TECHNOLOGY
Lendi Institute of Engineering and Technology
(Approved by A.I.C.T.E & Permanent Affiliated to JNTUK, Kakinada)
Accredited by NAAC with "A" Grade, Accredited by NBA
Jonnada (Village), Denkada (Mandal), Vizianagaram Dist – 535 005
Phone No. 08922-241111, 241112
E-Mail: lendi_2008@yahoo.com   Website: www.lendi.org

Lendi Institute of Engineering and Technology
COMPUTER SCIENCE & INFORMATION TECHNOLOGY(CSIT)
R20 Course Structure
Semester -I (First Year)

S. No.	Course code	Course Title	Category	L	T	P	Credits
		I Year - I Semester					
1	R20BSH-EN1101	Communicative English-1	HMSC	2	0	2	3
2	R20BSH-MA1101	Numerical Method and Ordinary Differential Equations	BSC	3	0	0	3
3	R20CSS-ES1101	Problem Solving and Programming using C	ESC	3	0	0	3
4	R20BSH-PH1101	Applied Chemistry	BSC	3	0	0	3
5	R20EEE-ES1101	Essentials of Electrical & Electronics Engineering	ESC	3	0	0	3
6	R20CSS-ES1102	Problem Solving and programming using C Lab	ESC	0	0	3	1.5
7	R20BSH-PH1101	Applied Chemistry Lab	BSC	0	0	3	1.5
8	R20EEE-ES1101	Essentials of Electrical & Electronics Engineering Lab	ESC	0	0	3	1.5
			Total	**14**	**0**	**11**	**19.5**

Category	Credits
Basic Science Course	7.5
Engineering Science Courses	9
Humanities, Social Science & Management	3
Total Credits	**19.5**

Semester -II (First Year)

S. No.	Course code	Course Title	Category	L	T	P	Credits
		I Year - II Semester					
1	R20BSH-MA1201	Linear Algebra and Multivariable Calculus	BSC	3	0	0	3
2	R20BSH-MA1202	Mathematical Methods	BSC	3	0	0	3
3	R20BSH-CH1201	Applied Physics	BSC	3	0	0	3
4	R20MEC-ES1201	Engineering Drawing	ESC	1	0	4	3
5	R20CSIT-ES1201	Data structures	ESC	3	0	0	3
6	R20BSH-EN1201	Communicative English -2	HMSC	0	0	3	1.5
7	R20BSH-BS1202	Applied Physics Lab	BSC	0	0	3	1.5
8	R20CSIT-ES1202	Data structures Using C Lab	ESC	0	0	3	1.5
9	R20BSH-MC1201	Environmental Science	MC	3	0	0	0
			Total	**16**	**0**	**13**	**19.5**

Category	Credits
Basic Science Course	10.5
Engineering Science Courses	7.5
Humanities, Social Science & Management	1.5
Total Credits	**19.5**

Semester III (Second year)

S. No.	Course code	Course Title	Category	L	T	P	Credits
		II Year - I Semester					
1	R20BS-HM2101	Managerial Economics and Financial Accountancy	HSMC	3	0	0	3
2	R20CS-PC2102	Python Programming	PCC	3	0	0	3
3	R20BS-PC2103	Mathematical Foundations of Computer Science	ESC	3	0	0	3
4	R20CS-PC2104	Database Management Systems	PCC	3	0	0	3
5	R20EC-PC2105	Digital Logic Design	ESC	3	0	0	3
6	R20CS-PC2106	Python Programming LAB	PCC	0	0	3	1.5
7	R20CS-PC2107	Database Management Systems LAB	PCC	0	0	3	1.5
8	R20EC-PC2108	Digital Logic Design LAB	ESC	0	0	3	1.5
9	R20CST-SD2109	R- Programming (Skill Course)	SDC	1	0	2	2
10	R20BSH-MC2101	Constitution of India	MC	2	0	0	0
11	R20BSH-MC2104	Employability Skills-1	MC	0	0	3	0
12	R20BSH-MC1203	Community Service Project (Evaluation)	MC	0	0	0	0
			Total	**18**	**0**	**14**	**21.5**

Category	Credits
Humanities, Social Science & Management	3
Engineering Science Courses	7.5
Professional core Courses	9
Skill Development course*	2
Total Credits	**21.5**

Semester IV (Second year)

S. No.	Course code	Course Title	Category	L	T	P	Credits
		II Year - II Semester					
1	R20CS-PC2201	Computer Organization& Architecture	PCC	3	0	0	3
2	R20CST-PC2202	Object Oriented Analysis and Design (OOAD)	PCC	3	0	0	3
3	R20CS-PC2203	Object Oriented programming through Java (OOPs through Java)	PCC	3	0	0	3
4	R20CS-PC2204	Operating Systems	PCC	3	0	0	3
5	R20CS-PC2205	Probability and Statistics	BSC	3	0	0	3
6	R20CS-PC2206	Object Oriented programming through Java LAB	PCC	0	0	3	1.5
7	R20CS-PC2207	Operating Systems LAB	PCC	0	0	3	1.5
8	R20CST-PC2208	OOAD LAB	PCC	0	0	3	1.5
9	R20BS-HM2209	MATLAB for Computational Methods (Skill Oriented Course)	SDC	1	0	2	2
			Total	**16**	**0**	**11**	**21.5**
		Internship 2 Months (Mandatory) during summer vacation					

Category	Credits
Professional core Courses	16.5
Basic Science course	3
Skill oriented course *	2
Total Credits	**21.5**

Honors courses II Year - II Semester							
S. No.	Course code	Course Title	Category	L	T	P	Credits
1	R20CS-HDC2201	Data Communications(Track-1)	HC	3	1	0	4
2	R20CS-HCIS2201	Information Security (Track -2)	HC	3	0	2	4
3	R20CS-HCWF2201	Web UI Frame work (Track-3)	HC	3	0	2	4
4	R20CS-HCAP2201	Advanced Python Programming (Track-4)	HC	3	0	2	4
5		**MOOCS:** 1. Intrusion detection System (MOOCS), Track-1 2. CloudSecurity (MOOCS), Track-2 3. Django Framework (MOOCS), Track-3 4. Mongo DB (MOOCS), Track-4	MOC				2
Minor Course - 1							
Summer Internship – I (After 2nd Year – Evaluated in 3-1 Semester)							

Category	Credits
Honors Courses	4
MOOCS Course	2
Total Credits	**6**

Semester V (Third year)

S. No.	Course code	Course Title	Category	L	T	P	Credits
		III Year - I Semester					
1	R20CS-PC3101	Formal Languages and Automata Theory	PCC	3	0	0	3
2	R20CST-PC3102	Computer Networks	PCC	3	0	0	3
3	R20CST-PC3103	Web Technologies	PCC	3	0	0	3
4	R20CS-OE3104	**Open Elective Course** **1**. Artificial Intelligence (CSE) 2. Embedded Systems (ECE) 3. Computer Graphics(ME)	OEC	3	0	0	3
5	R20CST-PE3105	**Professional Elective Courses:** 1 Software Engineering 2.Advance data structures 3. Advanced Operating Systems	PEC	3	0	0	3
6	R20CS-PC3106	Computer Networks Lab	PCC	0	0	3	1.5
7	R20CST-PC3107	Web Technologies Lab	PCC	0	0	3	1.5
8	R20CS-PC3108	Employability Skills-2 (**soft skill course***)	SDC	1	0	2	2
9	R20BS-HM3109	Entrepreneurship & Incubation	MC	2	0	0	0
	Internship 2 Months (Mandatory) during summer vacation			0	0	0	1.5
			Total	**18**	**0**	**08**	**21.5**

Category	CREDITS
Professional core Courses	12
Professional Elective courses	3
Open Elective Course	3
soft skill course*	2
Summer Internship	1.5
TOTAL CREDITS	**21.5**

S. No.	Course code	Course Title	Category	L	T	P	Credits
		Honors courses III Year - I Semester					
1	R20CS-HCTP3101	TCP/IP Protocol Suite (Track-1)	HC	3	1	0	4
2	R20CST-HCBT3102	BlockChain Technologies(Track -2)	HC	3	1	0	4
3	R20CS-HCAJ3103	AngularJS Framework (Track-3)	HC	3	1	0	4
4	R20CST-CNLP3104	Natural Language Processing (Track-4)	HC	3	1	0	4
5	R20CST-MOC3101	**MOOCS:** 1. Introduction to Packet Tracer Tool (MOOCS),Track-1 2. Web Security (MOOCS),TRACK-2 3. Mobile UI Framework (MOOCS),TRACK-3 4. Data Visualization (MOOCS),TRACK-4	MOC				2

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Category	CREDITS
Honors Courses	4
MOOCS Course	2
TOTAL CREDITS	**6**

Semester VI (Third year)

III Year - II Semester							
S. No.	Course code	Course Title	Category	L	T	P	Credits
1	R20CST-PC3201	DataWarehousing and DataMining	PCC	3	0	0	3
2	R20CS-PC3202	Compiler Design	PCC	3	0	0	3
3	R20CST-PC3203	Software Testing Methodologies	PCC	3	0	0	3
4	R20CS-PE3204	**Professional Elective courses:** 1. Design and Analysis Algorithms 2.Advanced Computer Networks 3. Web Services	PEC	3	0	0	3
5	R20CS-OE3205	Open Elective Course**:** 1. Operation Research (S&H) 2. Industrial Internet of Things (IoT)(ECE) 3. Machine Learning (ME/CSE)	OEC	3	0	0	3
6	R20CST-PC3206	DWDM Lab	PCC	0	0	3	1.5
7	R20CS-PC3207	Compiler Design Lab	PCC	0	0	3	1.5
8	R20CST-PC3208	Software Testing Methodologies Lab	PCC	0	0	3	1.5
9	R20CS-SD3209	Django Framework (Skill advanced course)	SDC	1	0	2	2
10	R20BS-HM3210	Intellectual Property Rights (IPR) Mandatory course (AICTE)	MC	2	0	0	0
Internship 2 Months (Mandatory) during summer vacation				0	0	0	0
			Total	**18**	**0**	**11**	**21.5**

Category	CREDITS
Professional core Courses	13.5
Professional Elective courses	3
Open Elective Course	3
Skill advanced course	2
TOTAL CREDITS	**21.5**

S. No.	Course code	Course Title	Category	L	T	P	Credits
	Honors courses III Year - II Semester						
1	R20CS-HCWN3201	Wireless Sensor Networks (Track-1)	HC	3	1	0	4
2	R20CST-HCCL3202	Secure Coding (Track -2)	HC	3	1	0	4
3	R20CS-HC3203	.NET Framework (Track-3)	HC	3	1	0	4
4	R20CST-HCEDS3204	Mathematical Essentials of Data Science (Track-4)	HC	3	1	0	4
			Total				

Category	CREDITS
Honors Courses	4
TOTAL CREDITS	**4**

Semester VII (Fourth year)

S. No.	Course code	Course Title	Category	L	T	P	Credits
		IV Year - I Semester					
1	R20CS-PE4101	**Professional Elective courses** 1.Software Architecture & Design Patterns 2. Soft Computing 3.Software Project Management	PEC	3	0	0	3
2	R20CS-PE4102	**Professional Elective courses** 1.Big Data Analytics 2. Cryptogrphy & Network Security 3. E-commerce	PEC	3	0	0	3
3	R20CS-PE4103	**Professional Elective courses** 1.Cloud Computing 2. Advanced Computer Architecture 3.Distributed Systems	PEC	3	0	0	3
4	R20CS-OE4104	**Open Elective Courses:** 1.Human Computer Interaction(ME) 2. Fault Tolerant Computing (ECE) 3. Optimization Techniques(S&H)	OEC	3	0	0	3
5	R20CST-OE4105	**Open Elective Courses/ Job oriented elective** 1.Scripting Languages (CSE) 2.Robotics (ME) 3. Mobile Computing (ECE)	OEC	3	0	0	3
6	R20BS-HM4106	**Management Science/(MOB)** **1. Universal Human Values & Understanding Harmony**	HMSC	3	0	0	3
7	R20BS-HM4107	**TensorFlow (Skill advanced course) ***	SDC	1	0	2	2
		Industrial/Research Internship 2 Months(Mandatory) after third Year(to be evaluated during VII Semester		0	0	0	3
			Total	**19**	**0**	**2**	**23**

Category	CREDITS
Professional Elective courses	9
Open Elective Course	6
Humanities, Social Science & Management	3
Skill advanced course	2
Industrial/Research Internship	3
TOTAL CREDITS	**23**

S. No.	Course code	Course Title	Category	L	T	P	Credits
Honors courses IV Year - I Semester
1	R20CS-HCIT4101	Internet of Things (IoT) (Track-1)	HC	3	1	0	4
2	R20CST-HCDF4102	Digital Forensics (Track -2)	HC	3	1	0	4
3	R20CS-HCJF4103	Java Enterprise Framework (Track-3)	HC	3	1	0	4
4	R20CS-HCDL4104	Deep Learning (Track-4)	HC	3	1	0	4
			Total				

Category	CREDITS
Honors Courses	4
TOTAL CREDITS	**4**

Semester VIII (Fourth year)

S. No.	Course code	Course Title	Category	L	T	P	Credits
IV Year - II Semester
1	R20CS-PROJ4201	Project Project work, seminar and internship in industry	**PCC**	**0**	**0**	**0**	**12**
		INTERNSHIP(6 MONTHS)
							Total 12

HONOR DEGREE IN COMPUTER SCIENCE AND INFORMATION TECHNOLOGY

**Honor Degree in COMPUTER SCIENCE AND INFORMATION TECHNOLOGY
(Track-I: Networks)**

S.No	Course Code	Subject Title	Category	L	T	P	C
1	R20CS-HCDC2201	Data Communication	HC	3	1	0	4
2	R20CS-HCTP3102	TCP/IP Protocol Suite	HC	3	1	0	4
3	R20CS-HCWN3203	Wireless Sensor Networks	HC	3	1	0	4
4	R20CS-HCIT4104	Internet of Things	HC	3	1	0	4
5		02 MOOCS courses @ 2credits each **Intrusion Detection Systems**	MOC				4
					Grand Total		20

(Track-II: Security)

S.No	Course Code	Subject Title	Category	L	T	P	C
1	R20CS-HCIS2201	Information Security	HC	3	1	0	4
2	R20CST-HCCL3102	Blockchain Technologies	HC	3	1	0	4
3	R20CS-HCBT3203	Secure Coding	HC	3	1	0	4
4	R20CST-HCDF4104	Digital Forensics	HC	3	1	0	4
5		02 MOOCS courses @ 2credits each **Cloud Security**	MOC				4
					Grand Total		20

(Track III: Web Frameworks)

S.No	Course Code	Subject Title	Category	L	T	P	C
1	R20CS-HCWF2201	Web UI Framework	HC	3	1	0	4
2	R20CS-HCAJ3102	Angular JS Framework	HC	3	1	0	4
3	R20CS-HCNF3203	.Net Framework	HC	3	1	0	4
4	R20CS-HCJF4104	J2EE Framework	HC	3	1	0	4
5		02 MOOCS courses @ 2credits each **Django Framework**	MOC				4
					Grand Total		20

(Track IV: Data Science)

S.No	Course Code	Subject Title	Category	L	T	P	C
1	R20CS-HCAP2201	Advanced Python Programming	HC	3	1	0	4
2	R20CST-NLP3102	Natural Language Processing	HC	3	1	0	4
3	R20CST-HCDS3203	Mathematical Essentials for Data Science	HC	3	1	0	4
4	R20CS-HCDL4104	Deep Learning	HC	3	1	0	4
5		02 MOOCS courses @ 2credits each **Mongo DB**	MOC				4
			Grand Total				20

MINOR DEGREE IN COMPUTER SCIENCE AND INFORMATION TECHNOLOGY

Minor Degree in COMPUTER SCIENCE AND INFORMATION TECHNOLOGY

(Track-I: Programming & Web Development)

S.No	Course Code	Subject Title	Category	L	T	P	C
1	R20CS-MNPP2201	Python Programming	MN	3	1	0	4
2	R20CS-MNJP3102	OOPS through Java	MN	3	1	0	4
3	R20CS-MNAJ3203	Angular JS	MN	3	1	0	4
4	R20CS-MNNT4104	.Net	MN	3	1	0	4
5		02 MOOCS courses @ 2credits each **SQL Programming**	MOC				4
			Grand Total				20

(Track II: Data Science)

S.No	Course Code	Subject Title	Category	L	T	P	C
1	R20CS-MNAI2201	Artificial Intelligence Principles and Techniques	MN	3	1	0	4
2	R20CS-MNDM3102	Data Mining	MN	3	1	0	4
3	R20CS-MNML3203	Machine Learning	MN	3	1	0	4
4	R20CS-MNDL4104	Deep Learning	MN	3	1	0	4
5		02 MOOCS courses @ 2credits each **Natural Language Processing**	MOC				4
			Grand Total				20

(Track III: Networks)

S.No	Course Code	Subject Title	Category	L	T	P	C
1	R20CS-MNDC2201	Data Communication	MN	3	1	0	4
2	R20CS-MNTP3102	TCP/IP Protocol Suite	MN	3	1	0	4
3	R20CS-MNWN3203	Wireless Sensor Networks	MN	3	1	0	4
4	R20CS-MNIT4104	Internet of Things	MN	3	1	0	4
5		02 MOOCS courses @ 2credits each **Intrusion Detection Systems**	MOC				4
					Grand Total		20

(Track- IV: Security)

S.No	Course Code	Subject Title	Category	L	T	P	C
1	R20CS-MNIS2201	Information Security	MN	3	1	0	4
2	R20CST-MNCL3102	Cyber Laws	MN	3	1	0	4
3	R20CS-MNBT3203	Blockchain Technologies	MN	3	1	0	4
4	R20CS-MNDF4104	Digital Forensics	MN	3	1	0	4
5		02 MOOCS courses @ 2credits each **Cloud Security**	MOC				4
					Grand Total		20

S.No.	Category	Code	Breakup of Credits (As per APSCHE)
1	Humanities and social science including Management courses	HSMC	10.5
2	Basic Science courses	BSC	21
3	Engineering science courses	ESC	24
4	Professional core Courses	PCC	51
5	Open Elective Courses	OEC	12
6	Professional Elective Courses	PEC	15
7	Internship, seminar, project wok	PROJ	16.5
8	Mandatory courses	MC	Non-credit
9	Skill Oriented Courses	SDC	10
	Total Credits		160