JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA

Kakinada-533003, Andhra Pradesh (India)

Comparison of Program Structure R19 with R20

Program Code	Program Name	Total No. of Courses		No of Subjects			
		R19	R20	Added in (R20)	Deleted (R19)	Content revised more than 20%	Total Courses	Percentage %
05	B. Tech (CSE)	77	79	25	10	03	37	48%

Coordinator

REGISTRAR
J.N.T. University Kakinada
Kakinada-533003

HOD/Director

Head of the Department
Dept. of Computer Science & Engg
University College of Engineering
JNT University, Kakinada - 533 003

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA

Kakinada-533003, Andhra Pradesh (India)

Comparison of Course Structure R19 with R20

Program Code: 05   **Program Name: B. Tech –Computer Science & Engineering**   **Year: 1**   **Semester: 1**

R19						R20						Remarks		
Course code	Course name	L	T	P	C	Course code	Course name	L	T	P	C	New Course? (R20)	Deleted Course? (R19)	Content Revision %
BS1101	Mathematics-I	3	0	0	3	R20BS1101	Mathematics - I	3	0	0	3			10
HS1101	Communicative English	3	0	0	3	R20BS1102	Applied Chemistry	3	0	0	3			15
BS1102	Applied Chemistry	3	0	0	3	R20HS1101	Communicative English	3	0	0	3			10
ES1101	Essential of Electrical & Electronics Engineering	3	0	0	3	R20ES1101	Computer Engineering Workshop	1	0	4	3		Yes	15
ES1102	Engineering Drawing	1	0	3	2.5	R20ES1102	Problem solving and Programming using C	3	0	0	3		Yes	15
HS1102	English Communication Skills Lab-I	0	0	2	1	R20HS1102	English Communications skills Lab	0	0	3	1.5			10
BS1103	Applied Chemistry Lab	0	0	3	1.5	R20BS1103	Applied Chemistry Lab	0	0	3	1.5			10
ES1103	IT workshop	0	0	2	1	R20ES1103	Problem solving and Programming using C lab	0	0	3	1.5			10
ES1104	Essential of Electrical	0	0	2	1	R20MC1101	Yoga & Physical Fitness Activities	0	0	2	0			15

Course code	Course name	L	T	P	C
	& Electronics Engineering Lab				
MC1101	Environment Science	3	0	0	0
MC1102	Physical Fitness Activities	2	0	0	0

	TOTAL	18	0	12	19		TOTAL	13	0	15	19.5		3	

(continuing, the MC rows have additional remark): MC1101 — Yes

Program Code: 05   **Program Name: B.Tech –Computer Science & Engineering**   **Year : 1**   **Semester: 2**

R19						R20						Remarks		
Course code	Course name	L	T	P	C	Course code	Course name	L	T	P	C	New Course? (R20)	Deleted Course? (R19)	Content Revision %
BS1201	Mathematics-II	3	0	0	3	R20BS1201	Mathematics – II	3	0	0	3			10
BS1202	Mathematics-III	3	0	0	3	R20BS1202	Applied Physics	3	0	0	3			10
BS1203	Applied Physics	3	0	0	3	R20ES1201	Computer Organization	3	0	0	3	Yes		
ES1201	Problem Solving and Programming Using C	3	0	0	3	R20ES1202	Data Structures	3	0	0	3	Yes		
ES1202	Digital Logic Design	3	0	0	3	R20ES1203	Object Oriented Programming Through C++	3	0	0	3	Yes	Yes	
BS1204	Applied Physics Lab	0	0	3	1.5	R20ES1204	Data Structures lab	0	0	3	1.5			15
HS1201	English Communication Skills	0	0	3	1.5	R20BS1203	Applied Physics Lab	0	0	3	1.5		Yes	10

	Lab-II												
BS1205	Applied Physics Virtual Lab	0	0	2	0	R20ES1205	Object Oriented Programming Through C++ lab	0	0	3	1.5	Yes	
ES1203	Problem Solving and Programming Using C Lab	0	0	3	1.5	R20BS1204	Applied Physics Virtual Laboratory	0	0	2	0		15
HS1202	Engineering Exploration Project-Design Thinking (15 Hrs Per Semester)	0	0	0	0.5	R20MC1201	Constitution of India (AICTE suggested)	2	0	0	0		
MC1201	Constitution of India	3	0	0	0	R20PR1201	Engineering Exploration Project- Design Thinking	0	0	1	0		
	TOTAL	18	0	11	20		**TOTAL**	17	0	12	19.5	4	2

Program Code: 05　　　　　**Program Name: B. Tech –Computer Science & Engineering**　　　**Year : 2**　　　**Semester: 1**

Course code	Course name	L	T	P	C	Course code	Course name	L	T	P	C	New Course ? (R20)	Deleted Course? (R19)	Content Revision %
	R19						R20						Remarks	
PCC2101	Mathematical Foundations of Computer Science	3	0	0	3	R20BS2101	Mathematics – III	3	0	0	3			10
PCC2102	Software Engineering	3	0	0	3	R20PC2101	Mathematical foundations of Computer Science	3	0	0	3		yes	
PCC2103	OOP Through Java	3	0	0	3	R20PC2102	Operating Systems	3	0	0	3		Yes	
PCC2104	Data Structures through C	3	0	0	3	R20PC2103	Advanced Java Programming	3	0	0	3	yes		
ES2101	Computer Organization	3	0	0	3	R20PC2104	Data Base Management Systems	3	0	0	3			10
ES2102	Computer Graphics	3	0	0	3	R20PC2105	Data Base Management Systems lab	0	0	3	1.5			15
PCC2105	OOP Through Java Lab	0	0	3	1.5	R20PC2106	Operating Systems & LINUX Lab	0	0	3	1.5		yes	
PCC2106	Data Structures through C Lab	0	0	3	1.5	R20PC2107	Advanced Java Programming Lab	0	0	3	1.5	yes		
MC2101	Essence of Indian Traditional Knowledge	3	0	0	0	R20SO2101	Mobile App Development	0	0	4	2	yes		
MC2102	Employability Skills-I*	3	0	0	0	R20MC2101	Research Methodology	2	0	0	0	yes		
	TOTAL	24	0	6	21		**TOTAL**	17	0	13	21.5	4	3	

Program Code: 05 **Program Name: B. Tech –Computer Science & Engineering** **Year : 2** **Semester: 2**

	R19					R20						Remarks		
Course code	Course name	L	T	P	C	Course code	Course name	L	T	P	C	New Course? (R20)	Deleted Course? (R19)	Content Revision %
BS2201	Probability and Statistics	3	0	0	3	R20BS2201	Probability and Statistics	3	0	0	3			10
PCC2201	Web Technologies	3	0	0	3	R20ES2201	Formal Languages and Automata theory	3	0	0	3			15
PCC2202	Operating Systems	3	0	0	3	R20PC2201	Computer Networks	3	0	0	3			25
PCC2203	Data Base Management Systems	3	1	0	4	R20PC2202	Python Programming	3	0	0	3	Yes		
PCC2204	Formal Languages and Automata Theory	3	0	0	3	R20HS2201	Managerial Economics and Financial Accountancy	3	0	0	3			10
PCC2205	Operating System & LINUX Lab	0	0	3	1.5	R20PC2203	R Programming lab	0	0	3	1.5	Yes		
PCC2206	Web Technologies Lab	0	0	3	1.5	R20PC2204	Python Programming Lab	0	0	3	1.5	Yes		
PCC2207	Data Base Management Systems Lab	0	0	3	1.5	R20PC2205	Computer Networks Lab	0	0	3	1.5			25
PR2201	Socially Relevant Projects (15 Hrs /Semester)	0	0	1	0.5	R20SO2201	Python Programming: NLP	0	0	4	2	Yes	Yes	
MC2201	Human Values & Professional Ethics	3	0	0	0									
MC2202	Physical Fitness Activities	0	0	2	0									
	TOTAL	18	1	12	21		TOTAL	15	0	13	21.5	4		

Program Code: 05   **Program Name: B. Tech –Computer Science & Engineering**   **Year : 3**   **Semester: 1**

R19						R20						Remarks		
Course code	Course name	L	T	P	C	Course code	Course name	L	T	P	C	New Course? (R20)	Deleted Course? (R19)	Content Revision %
PCC3101	Data Warehousing and Data Mining	3	0	0	3	R20PC3101	Compiler Design	3	0	0	3			15
PCC3102	Computer Networks	3	0	0	3	R20PC3102	Design analysis of Algorithms	3	0	0	3			15
PCC3103	Compiler Design	3	0	0	3	R20PC3103	Data Mining Techniques	3	0	0	3			15
PCC3104	Artificial Intelligence	3	0	0	3	R20OE3101	**Open Elective-I** Open Electives offered by other departments/Optimization Techniques(Job oriented course)	3	0	0	3	Yes		
PE3101	**Professional Elective-I** 1. Principles of Programming Languages 2. Digital Image Processing 3. Advanced Unix Programming 4. Advanced Computer Architecture 5. Object Oriented analysis and design	3	0	0	3	R20PE3101	**Professional Elective-I** 1. Artificial Intelligence 2. Software project Management 3. Distributed Systems 4. Advanced Unix Programming	3	0	0	3	Yes		

Code	Course	L	T	P	C	Code	Course	L	T	P	C			
PCC3105	Computer Networks & Compiler Design Lab	0	0	3	1.5	R20PC3104	Data Mining Techniques with R Lab	0	0	3	1.5			10
PCC3106	AI Tools & Techniques Lab	0	0	3	1.5	R20PC3105	Compiler Design Lab	0	0	3	1.5	Yes		
PCC3107	Data Warehousing and Data Mining Lab	0	0	3	1.5	R20SO3101	Animation course: Animation Design	0	0	4	2	Yes		
PR3101	Socially Relevant Projects(15 Hrs /Semester)	0	0	1	0.5	R20MC3101	Employability Skills-I	2	0	0	0			
MC3101	Employability Skills-II*	3	0	0	0		**Summer Internship 2 Months(Mandatory) after second year(to be evaluated during V semester**	0	0	0	1.5			
MC3102	Physical Fitness Activities	0	0	2	0									
	TOTAL	18	0	12	20		**TOTAL**	17	0	10	21.5	4		
							Honours/Minor courses	4	0	0	4	2		
							Honours/Minor courses	4	0	0	4			

Program Code: 05   **Program Name:B.Tech –Computer Science & Engineering**   **Year : 3**   **Semester: 2**

R19						R20						Remarks		
Course code	Course name	L	T	P	C	Course code	Course name	L	T	P	C	New Course? (R20)	Deleted Course? (R19)	Content Revision %
PCC3201	Machine Learning using Python	3	0	0	3	R20PC3201	Machine Learning	3	0	0	3			25
PCC3202	Design and Analysis of Algorithms	3	0	0	3	R20PC3202	Big Data Analytics	3	0	0	3			15
HS3201	Universal Human Values 2: Understanding Harmony	3	0	0	3	R20PC3203	Cryptography Network Security	3	0	0	3			10
PE3201	**Professional Elective-II** 1. Operations Research 2. Advanced computer Networks 3. Mobile Application and Development 4. Distributed Systems	3	0	0	3	R20PE3201	**Professional Elective-II** 1.Mobile Computing 2.Mean Stack Development 3.Object oriented Analysis and Design 4.Network Programming	3	0	0	3	Yes		
PE3202	**Professional Elective-III** 1. Software Project Management 2. Network Programming 3. Design patterns 4. MOOCS-NPTEL/SWAYAM **Duration: 12 Weeks Minimum**	3	0	0	3	R20OE3201	**Open Elective-II** Open Electives offered by other departments/Natural Language Processing (Job Oriented Course)	3	0	0	3	Yes		
OE3201	**Open Elective-I**(Inter Disciplinary)	3	0	0	3	R20PC3204	Big Data Analytics lab	0	0	3	1.5			
PCC3203	Machine Learning using Python Lab	0	0	3	1.5	R20PC3205	Machine Learning using Python Lab	0	0	3	1.5			20
PCC3204	Data Analytics using R lab	0	0	3	1.5	R20PC3206	Cryptography Network Security Lab	0	0	3	1.5			
MC3201	IPR & Patenting	3	0	0	0	R20SO3201	Data Science: MEAN Stack	0	0	4	2	Yes		

						Technologies Module I- Angular Js, Node Js, Mongo Db/APSSDC suggested courses							
					R20MC3201	Employability skills-II	2	0	0	0	Yes		
	TOTAL	21	0	6	21	**TOTAL**	1	0	13	21.5	4		
						Honors/Minor courses	4	0	0	4			
						Honors/Minor courses through SWAYAM	2	0	0	2			

Program Code: 05　　　　　　**Program Name:B.Tech –Computer Science & Engineering**　　**Year : 4**　　**Semester: 1**

Cours e code	Course name	L	T	P	C	Course code	Course name	L	T	P	C	New Course? (R20)	Deleted Course? (R19)	Content Revision %
	R19						**R20**					**Remarks**		
PCC4 101	Cryptography and Network Security	3	0	0	3	R20PE4101	**Professional Elective-III** 1.Cloud Computing 2.Neural Networks and Soft Computing 3.Ad-hoc and Sensor Networks 4.Cyber Security & forensics	3	0	0	3	Yes		
PCC4 102	Big Data Analytics	3	0	0	3	R20PE4102	**Professional Elective-IV** 1. Deep Learning Techniques 2. Social Networks &Semantic Web 3. DevOps 4.MOOCS-NPTEL/SWAYAM	3	0	0	3	Yes		
PE4 101	**Professional Elective-IV** 1. Mobile Computing 2. Mean Stack Development 3. Internet of Things 4. Parallel Computing	3	0	0	3	R20PE4103	**Professional Elective-V** 1.Block-Chain Technologies 2.Wireless Network Security 3.Ethical Hacking 4.MOOCS-NPTEL/SWAYAM	3	0	0	3	Yes		
PE4 102	**Professional Elective-V**	3	0	0	3	R20OE4101	**Open Elective-III** Open Electives	2	0	2	3	Yes		

| OE4 101 | **Open Elective-II** (Inter Disciplinary) | 3 | 0 | 0 | 3 | | 1. Cloud computing
2. Social Networks &Semantic web
3. Ad-hoc and Sensor Networks
4. Cyber Security & Forensic | | | | | | | |

Code	Course	L	T	P	C	Code	Course	L	T	P	C			
							offered by other departments/ Secure Coding Techniques (Job Oriented Course)							
OE4 101	**Open Elective-II** (Inter Disciplinary)	3	0	0	3	R20OE4102	**Open Elective-IV** Open Electives offered by other departments/ Computational Thinking (Job Oriented Course)	2	0	2	3	Yes		
PCC4 103	Big Data Analytics Lab	0	0	3	1.5	R20HSS4101	Universal Human Values 2: Understanding Harmony	3	0	0	3			
PCC4 104	Cryptography & Network Security Lab	0	0	3	1.5	R20SO4101	PYTHON: Deep Learning /APSSDC offered Courses	0	0	4	2	Yes		
PR4 101	Project-I	-	-	-	2	R20PR4101	**Industrial/Research Internship 2 months (Mandatory) after third year (to be evaluated during VII semester**	0	0	0	3			
PR4 102	Industrial Training / Internship/Research Project in National Laboratories/Academic Institutions	0	0	0	1							Yes		
MC4 101	Physical Fitness Activities	0	0	2	0									

	TOTAL	1 5	0	8	2 1		**TOTAL**	16	0	8	23	7		
						Honours/Minor courses	4	0	0	4			
						Honours/Minor courses through SWAYAM	2	0	0	2			

Program Code: 05　　　　　**Program Name: B. Tech –Computer Science & Engineering**　　　**Year : 4**　　　**Semester: 2**

R19						R20						Remarks		
Course code	Course name	L	T	P	C	Course code	Course name	L	T	P	C	New Course? (R20)	Deleted Course? (R19)	Content Revision %
PE4201	**Professional Elective-VI** 1. MOOCSNPTEL/SWAYAM * 2. Natural Language Processing 3. Deep Learning Techniques 4. Neural Networks and Soft Computing	3	0	0	3	R20PR4201	Project Project work, seminar and internship in industry	0	0	0	12	Yes		
PE4202	**Professional Elective-VII** 1. MOOCS-NPTEL/SWAYAM * 2. Wireless Network Security 3. Ethical hacking 4. Digital Marketing	3	0	0	3							Yes	Yes	
OE4201	**Open Elective-II** (Inter Disciplinary)	3	0	0	3									
PR4201	Project-II	-	-	-	8									
	TOTAL	9	0	0	17		**TOTAL**				12	2	1	