JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA

Kakinada-533003, Andhra Pradesh (India)

Comparison of Program Structure R16 with R19

Program Code	Program Name	Total No. of Courses		No of Subjects			Total Courses	Percentage %
		R16	R19	Added in (R19)	Deleted (R16)	Content revised more than 20%		
1D	M.Tech – Computers & Communications Engineering	19	20	08	01	03	12	60
1D 14	M.Tech – Instrumentation & Control Engineering	19	20	09	01	06	12	60

Coordinator

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

HOD
15/11/2022

Program Code: 1D14   **Program Name:** M.Tech –I&CE   **Year : 1**   **Semester: 1**

R16						R19						Remarks		
Course code	Subjects	L	T	P	C	Course code	Course	L	T	P	C	New Course? (R19)	Deleted Course? (R16)	Content Revision %
CC101	Transducers and Sensors	4			3	CC101	Transducers and Sensors	3	0	0	3			30
CC102	Digital Control Systems	4			3	CC102	Digital Control Systems	3	0	0	3			20
CC103	Fiber Optic Sensors and Devices	4			3	CC103	1. Adaptive Control Systems 2. Soft computing Techniques 3. Fuzzy Based Control Systems 4. Artificial intelligence	3	0	0	3			20
CC104	Digital System Design	4			3	CC104	1. Fiber optic sensors and devices 2. VLSI Technology and design 3. Advanced digital signal processing 4. Digital system design	3	0	0	3			20
CC105	**Elective I** 1. Adaptive Control Systems	4			3	CC105	Research methodology and IPR	2	0	0	2	yes		

R16 Course code	Subjects	L	T	P	C	R19 Course code	Subjects	L	T	P	C	New Course? (R19)	Deleted Course? (R16)	Content Revision %
	2. Soft Computing Techniques 3. Cyber Security 4. Object Oriented Programming													
CC106	**Elective II** 1. Fuzzy Based Control Systems 2. VLSI Technology and Design 3. Advanced Digital Signal Processing	4			3	CC106	Transducers & Instrumentation Lab	0	0	4	2			10
CC107	Transducers & Instrumentation Lab			3	2	CC107	Digital control system simulation Lab	0	0	4	2	yes		
						CC108	Audit course-1	2	0	0	0	yes		
Total					**20**		Total				**18**			

Program Code: 1D14   **Program Name:** M.Tech –I&CE   **Year : 1**   **Semester: 2**

R16						R19						Remarks		
Course code	**Subjects**	**L**	**T**	**P**	**C**	**Course code**	**Subjects**	**L**	**T**	**P**	**C**	**New Course? (R19)**	**Deleted Course? (R16)**	**Content Revision %**
CC201	Data Acquisition Systems	4			3	CC201	Bio-Medical Engineering	**3**	**0**	**0**	**3**	**yes**		
CC202	Bio-Medical Instrumentation	4			3	CC202	Process Control Instrumentation	**3**	**0**	**0**	**3**			**30**
CC203	Process Control	4			3	CC203	1.Non Linear and Optimal	3	0	0	3			20

Code	Course					Code	Course	L	T	P	C			Marks
	Instrumentation						Control Systems 2. Control and guidance systems 3. Data Acquisition systems 4. Machine learning							
CC204	Embedded System Design	4			3	CC204	1. DSP Processors & Architecture 2. Analytical Instrumentation 3. Robotics 4. EMI / EMC	3	0	0	3			20
CC205	**Elective III** 1. Non Linear and Optimal Control Systems 2. PC Based Instrumentation 3. DSP Processors & Architecture	4			3	CC205	Bio-Medical Engineering Lab	0	0	4	2	yes		
CC206	**Elective IV** 1. EMI / EMC 2. Control and guidance systems 3. Analytical Instrumentation	4			3	CC206	Process Control Instrumentation Lab	0	0	4	2			10
CC207	Process Control Instrumentation Lab		3	2		CC207	Mini Project with Seminar	0	0	4	2	yes		
						CC208	Audit Course – 2	2	0	0	0	yes		
	Total credits			20							18			

							Total **credits**				

Program Code: 1D14   **Program Name:** M.Tech –I&CE   **Year : 2**   **Semester: 1**

R16					R19						Remarks		
Course code	Subjects	L	P	C	Course code	Subjects	L	T	P	C	New Course? (R19)	Deleted Course ? (R16)	Content Revision %
CC301	Comprehensive Viva-Voce			2	CC301	1. MEMS & Nano Technology 2. Internet of Things 3. Embedded System Design 4. Intelligent and Smart Instrumentation 5. MOOCs-1 (NPTEL/SWAYAM)	3	0	0	3	yes		
CC302	Seminar – I			2	CC302	1. Business Analytics 2. Industrial Safety 3. Operations Research	3	0	0	3	yes		

						4. Cost Management of Engineering Projects 5. Composite Materials 6. Waste to Energy 7. MOOCs-2 (NPTEL/SWAYAM)- Any 12 Week Course on Engineering/ Management/ Mathematics offered by other than parent department						
CC303	Project Work Part – I			16	CC303	Dissertation Phase -I /Industrial Project **(to be continued and evaluated next semester)**	0	0	20	10		
Total credits				**20**	**Total credits**					**16**		

Program Code: 1D14 **Program Name: M**.Tech – I&CE **Year : 2** **Semester: 2**

Course Code	Subjects	L	P	C	Course Code	Subjects	L	T	P	C	New Course? (R19)	Deleted Course? (R16)	Content Revision %
	R16					**R19**					**Remarks**		
CC401	Seminar – II			2	CC401	Project/ Dissertation Phase-II **(continued from III semester)**	0	0	32	16		yes	
CC402	Project Work Part - II			18									
	Total credits			**20**		**Total credits**				**16**			

R16						R19						Remarks		
Course code	**Subjects**	**L**	**T**	**P**	**C**	**Course code**	**Course**	**L**	**T**	**P**	**C**	**New Course? (R19)**	**Deleted Course? (R16)**	**Content Revision %**
CC101	Digital System Design	4			3	CC101	Advanced Digital Signal Processing	3	0	0	3			20
CC102	Advanced Computer Architecture	4			3	CC102	Digital Data Communications	3	0	0	3			20
CC103	Wireless Communications and Networks	4			3	CC103	1. Transform Techniques 2. Statistical Signal Processing 3. Detection and Estimation Theory 4. Smart Antennas	3	0	0	3			20
CC104	Digital Data Communications	4			3	CC104	1. Coding Theory & Techniques 2. Cognitive Radio 3. Soft Computing Techniques 4. Artificial Intelligence	3	0	0	3			20

Course code	Subjects	L	T	P	C	Course code	Subjects	L	T	P	C	New Course? (R19)	Deleted Course? (R16)	Content Revision %
CC105	**Elective I** I. Data Base Management Systems II. Information Theory and Coding Techniques III. Big Data Analytics	4			3	CC105	Research methodology and IPR	2	0	0	2	yes		
CC106	**Elective II** I. Internet Protocols II. Image & Video Processing III. Objective Oriented Programming	4			3	CC106	Advanced Communications Laboratory	0	0	4	2			10
CC107	System Design & Data Communications Lab			3	2	CC107	Advanced Digital Signal Processing lab	0	0	4	2	yes		
						CC108	Audit course-1	2	0	0	0	yes		
Total					**20**		Total				**18**			

Program Code: 1D   **Program Name:** M.Tech −C&SP   **Year : 1**   **Semester: 2**

R16						R19						Remarks		
Course code	**Subjects**	**L**	**T**	**P**	**C**	**Course code**	**Subjects**	**L**	**T**	**P**	**C**	**New Course? (R19)**	**Deleted Course? (R16)**	**Content Revision %**
CC201	Advanced Operating Systems	4			3	CC201	Image & Video Processing	**3**	**0**	**0**	**3**			**25**
CC202	Advanced Computer Networks	4			3	CC202	DSP Processors and Architectures	**3**	**0**	**0**	**3**			**25**
CC203	Advanced Digital Signal Processing	4			3	CC203	1. Adaptive Signal	3	0	0	3			20

							Processing 2. Speech Processing 3. Radar Signal Processing 4. VLSI Signal Processing							
CC204	Optical Communications and Networks	4			3	CC204	1. High Performance Networks 2. Optical Networks 3. Wireless Sensor Networks 4. Network Security & Cryptography	3	0	0	3			20
CC205	**Elective III** I. EMI / EMC II. Internet of Things III. Soft Computing Techniques IV. Cyber Security	4			3	CC205	Image and Video Processing Lab	0	0	4	2	yes		
CC206	**Elective IV** I. Embedded System Design II. Radar Signal Processing III. Network Security & Cryptography	4			3	CC206	DSP Processors Lab	0	0	4	2			10
CC207	Advanced Communications Lab		3	2	CC207	Mini Project with Seminar	0	0	4	2	yes		

				CC208	Audit Course – 2	2	0	0	0	yes		
Total credits				**20**					**18**			
					Total **credits**							

Program Code: 1D   **Program Name:** M.Tech –C&SP   **Year : 2**   **Semester: 1**

R16					R19						Remarks		
Course code	Subjects	L	P	C	Course code	Subjects	L	T	P	C	New Course? (R19)	Deleted Course ? (R16)	Content Revision %
CC301	Comprehensive Viva-Voce	4		2	CC301	1. Adhoc Wireless Networks 2. Embedded System Design 3. Machine Learning 4. Internet of Things 5. MOOCs-1 (NPTEL/SWAYAM)	3	0	0	3	yes		

CC302	Seminar – I	4		2	CC302	1. Business Analytics 2. Industrial Safety 3. Operations Research 4. Cost Management of Engineering Projects 5. Composite Materials 6. Waste to Energy 7. MOOCs-2 (NPTEL/SWAYAM)- Any 12 Week Course on Engineering/ Management/ Mathematics offered by other than parent department	3	0	0	3	yes		
CC303	Project Work Part – I	4		16	CC303	Dissertation Phase -I /Industrial Project **(to be continued and evaluated next semester)**	0	0	20	10			
Total credits				**20**		**Total credits**				**16**			

Program Code: 1D   **Program Name: M**.Tech – C&SP   **Year : 2**   **Semester: 2**

R16					R19						Remarks		
Course Code	Subjects	L	P	C	Course Code	Subjects	L	T	P	C	New Course? (R19)	Deleted Course? (R16)	Content Revision %
CC401	Seminar – II			2	CC401	Project/ Dissertation Phase-II **(continued from III semester)**	0	0	32	16		yes	
CC402	Project Work Part - II			18									
	Total credits			**20**		**Total credits**				**16**			

Program Code: 1D   **Program Name:** M.Tech – VLSI&ES   **Year : 1**   **Semester: 1**

R16						R19							Remarks		
Course code	**Subjects**	**L**	**T**	**P**	**C**	**Course code**	**Course**	**L**	**T**	**P**	**C**	**New Course? (R19)**	**Deleted Course? (R16)**	**Content Revision %**
CC101	Digital System Design	4			3	CC101	Digital System Design	3	0	0	3			20
CC102	Advanced Computer Architecture	4			3	CC102	Embedded Real Time Operating Systems	3	0	0	3			20
CC103	Wireless Communications and Networks	4			3	CC103	1. Embedded – C 2. Scripting Languages 3. Image & Video Processing 4. Communication Buses and Interfaces	3	0	0	3			20
CC104	Digital Data Communications	4			3	CC104	1. Design of fault tolerance & testing 2. Hardware Software Co-Design 3.Synthesis and Optimization of Digital Circuits 4. CMOS Analog & Digital IC Design.	3	0	0	3			20
CC105	**Elective I** I. Data Base Management Systems	4			3	CC105	Research methodology and IPR	2	0	0	2	yes		

CC106	**Elective II** I. Internet Protocols II. Image & Video Processing III. Objective Oriented Programming	4			3	CC106	Digital System Design Lab	0	0	4	2	yes		
CC107	System Design & Data Communications Lab			3	2	CC107	Embedded Real Time Operating Systems Lab	0	0	4	2			
						CC108	Audit course-1	2	0	0	0	yes		
Total					**20**		Total				**18**			

Program Code: 1D **Program Name:** M.Tech – VLSI&ES **Year : 1** **Semester: 2**

R16						R19						Remarks		
Course code	Subjects	L	T	P	C	Course code	Subjects	L	T	P	C	New Course? (R19)	Deleted Course? (R16)	Content Revision %
CC201	Advanced Operating Systems	4			3	CC201	Low Power VLSI Design	**3**	**0**	**0**	**3**			**30**
CC202	Advanced Computer Networks	4			3	CC202	Embedded System Design	**3**	**0**	**0**	**3**			**30**
CC203	Advanced Digital Signal Processing	4			3	CC203	1. System on Chip Design 2. Advanced Processors & Controllers 3. Embedded Networks 4.Micro Electro Mechanical	3	0	0	3			20

Code	Subject					Code	Subject	L	T	P	C			
							Systems (MEMS) Design							
CC204	Optical Communications and Networks	4			3	CC204	1.Semiconductor Memory Design and Testing. 2.VLSI Signal Processing 3.Algorithems for VLSI Design 4.CMOS RF Circuit Design	3	0	0	3			20
CC205	**Elective III** I. EMI / EMC II. Internet of Things III. Soft Computing Techniques IV. Cyber Security	4			3	CC205	VLSI Laboratory	0	0	4	2			
CC206	**Elective IV** I. Embedded System Design II. Radar Signal Processing III. Network Security & Cryptography	4			3	CC206	Embedded Systems Laboratory	0	0	4	2	yes		
CC207	Advanced Communications Lab		3	2		CC207	Mini Project with Seminar	0	0	4	2	yes		
						CC208	Audit Course – 2	2	0	0	0	yes		
	Total credits			**20**							**18**			
							Total **credits**							

R16					R19						Remarks		
Course code	**Subjects**	**L**	**P**	**C**	**Course code**	**Subjects**	**L**	**T**	**P**	**C**	**New Course? (R19)**	**Deleted Course ? (R16)**	**Content Revision %**
CC301	Comprehensive Viva-Voce	4		2	CC301	1.CMOS Mixed Signal Circuit Design 2.Artificial Intelligence 3.Machine Learning 4.Internet of Things MOOCs-1 (NPTEL/SWAYAM)	3	0	0	3	yes		
CC302	Seminar – I	4		2	CC302	1. Business Analytics 2. Industrial Safety 3. Operations Research 4. Cost Management of Engineering Projects 5. Composite Materials 6. Waste to Energy 7. MOOCs-2 (NPTEL/SWAYAM)-	3	0	0	3	yes		

					Any 12 Week Course on Engineering/ Management/ Mathematics offered by other than parent department							
CC303	Project Work Part – I	4		16	CC303	Dissertation Phase -I /Industrial Project **(to be continued and evaluated next semester)**	0	0	20	10		
Total credits				**20**	**Total credits**					**16**		

Program Code: 1D　　　　　　**Program Name: M**.Tech – VLSI&ES　　　　　　**Year : 2**　　　　**Semester: 2**

R16					R19						Remarks		
Course Code	**Subjects**	**L**	**P**	**C**	**Course Code**	**Subjects**	**L**	**T**	**P**	**C**	**New Course? (R19)**	**Deleted Course? (R16)**	**Content Revision %**
CC401	Seminar – II			2	CC401	Project/ Dissertation Phase-II **(continued from III semester)**	0	0	32	16		yes	
CC402	Project Work Part - II			18									
	Total credits			**20**		**Total credits**				**16**			

Coordinator　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　**Chairman, Board of Studies**