



Dept: ECE-BTech (FT)
Mapping of COs and Pos
Regulation-2021

				Regula	ttion-2021													
Sem	Subject code	Subject name	cos	PO1	PO2	PO3	PO4	PO5	PO6	P07	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PS
Jelli	Subject code	Subject name																-
			CO1:To use appropriate words in a professional context	- 31	1	1	1	-1	3	3	3	1	3	-	3	-	-	
		Professional English	CO2:To gain understanding of basic grammatic structures and use them in right context.	1	1	1	1	1	3	3	3	1	3	1.7	3	-	-	
	211170	l l	CO3:To read and infer the denotative and connotative meanings of technical texts	2	3	2	3	2	3	3	3	2	3	3	3	-	23	
	211478	1	CO4:To write definitions, descriptions, narrations and essays on various topics	2	3	2	3	2	3	3	3	2	3	3	3	-		
-			AVG	1.6	2,2	1.8	2.2	1.5	3	3	3	1.6	3	3	3	-	-	
			CO1:Use the matrix algebra methods for solving practical problems.	3	3	1	1	0	0	0	0	2	0	2	3	7	-	
- 1			CO2:Apply differential calculus tools in solving various application problems.	3	3	1	1	0	0	0	0	2	0	2	3	-		
		Matrices and Calculus	CO3:Able to use differential calculus ideas on several variable functions.	3	3	1	1	0	0	0	0	2	0	2	3	-	-	-
	211485		CO4:Apply different methods of integration in solving practical problems. CO5:Apply multiple integral ideas in solving areas, volumes and other practical	3	3	1	1	0	0	0	0	2	0	2	3	-		
			problems. AVG			1	1											-
-			CO1:Understand the importance of mechanics.	3	3	7.	1	0	0	0	0	2	0	2	3			
			CO2:Express their knowledge in electromagnetic waves.	3	3	2		1	1	-	+	-	-	-	-	-	-	-
			CO3:Demonstrate a strong foundational knowledge in oscillations, optics and	3	3	2	1 2	2	- 1	-				-	1	-	-	-
		Engineering Physics	lasers.	0	J.		-	- 4				-	- 5		1	-		
			CO4:Understand the importance of quantum physics.	3	3	1	1	2	1			-	-	-			7	
	211498	3	CO5:Comprehend and apply quantum mechanical principles towards the formation of energy bands.	3	3	1	1	2	1	-	-	-	-5	-	-	-		
			AVG	3	3	1.6	1.2	1.8	1	-	-	-	-	145	1	-	-	
			CO1:To infer the quality of water from quality parameter data and propose suitable treatment methodologies to treat water.	3	2	2	1	-	1	1	-	-	-		1	-	-	
			CO2:To identify and apply basic concepts of nanoscience and nanotechnology in designing the synthesis of nanomaterials for engineering and technology applications.	2		3	1	-	2	2	-				-	-		
		Engineering Chemistry	CO3:To apply the knowledge of phase rule and composites for material selection requirements.	3	1	-	7	-	+		2		H)	(#)	-	-	-	
	2114981	4	CO4:To recommend suitable fuels for engineering processes and applications.	3	1	1	-		. 1	2		-	- 1	158	-	-		
			CO5:To recognize different forms of energy resources and apply them for suitable applications in energy sectors	3	1	2	1	-	2	2	2	-	25	-	2	12		
-			AVG	2.8	1.3	1.6	1	-	1.5	1.8	34		-	•	1.5		47	
			CO1: Develop algorithmic solutions to simple computational problems.	3	3	3	3	2	-	-	- 1	-	-	2	2	3	3	
			CO2: Develop and execute simple Python programs.	3	3	3	3	2	-	-	-	-	-	2	2	3	-	
		Problem Solving and		3	3	3	3	2	*	-	-			2	-	3	(2)	
		Python Programming	CO4: Decompose a Python program into functions.	2	2	-	2	2	-			-	-	1	-	3	-	
	2115081	5	CO5: Represent compound data using Python lists, tuples, dictionaries etc.	1	2	4	-	1	-	-		-	-	1		2		1
-SEM			CO6: Read and write data from/to files in Python programs	2	2	-	-	2	+:	-	-	-		1	-	2		14
-		ST SCHEEN	AVG	2	3	3	3	2	-	O.		-	-	2	2	3	3	W.
		Head Urthe	CO1 Develop algorithmic solutions to simple computational problems CO2 Develop and execute simple Python programs.	3	3	3	3	3	-	-		-	-	3	2	3	3 /	AU
A	NO DO	Problem Solving and	CO3. Implement programs in Python using conditionals and loops for solving	3	3	3	3	3		-	-		-	3 2	2	3	- V	
5	1	Pythen Programming Laboratory		3	2	-	2	2		-		-	-	School	- F 7m	BR	ABT	
a	(21150L1		CO5: Process compound data using Python data structures.	1	2	-	-	1		-			-	51001	of End	in 2ani	ATA	
1	TOIT	Tan S Tan	CQ6: Utilize Python packages in developing software applications.	2	+			2	+0	14	-	-		Fann	devis	2011	ly and	To
100	5	JENER OF LAN	AVG PRO SECTIV	2	3	3	3	2	-5		-	-	-	Scien	2	alana)	31/-3-	100

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Science and Technology (PRIST)

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		CO1:Understand the functioning of various physics laboratory equipment.	3	2	3	1 1	1	-						1		
		CO2:Use graphical models to analyze laboratory data.	3	3	2	1	1	-	-						-	
	Discourse of	CO3:Use mathematical models as a medium for quantitative reasoning and														
	Physics and Chemistry Laboratory	describing physical reality.	3	2	3	1	1	100		-	- 5	-	7			176
21149L17	Circinistry Edonatory	CO4:Access, process and analyze scientific information.	3	3	2	1	1	-	-		-		-	-	-	
211471.17		CO5:Solve problems individually and collaboratively.	3	2	3	1	1	-	- 2	-	-		1 12	2	-	- 2
		AVG	3	2.4	2.6	1	1									
		CO1:To listen to and comprehend general as well as complex academic information	3	3	3	3	1	3	3	3	3	3	3	3	-	94
		CO2:To listen to and understand different points of view in a discussion	3	3	3	3	1	3	3	3	3	3	3	3		
		CO3:To speak fluently and accurately in formal and informal communicative														
	Communication Lab		3	3	3	3	1	3	3	3	3	3	3	3	70	-
	-1	CO4:To describe products and processes and explain their uses and purposes clearly and accurately	3	3	3	3	1	3	3	3	3	3	3	3	_	
21147L18		CO5:To express their opinions effectively in both formal and informal discussions	3	3	3	3	1	3	3	3	3	3	3	3		-
		AVG	3	3	3	3	1	3	3	3	3	3	3	3	_	
		CO1:To compare and contrast products and ideas in technical texts.	3	9	3	3	3	3	3	3	2	3		3	-	
		CO2:To identify and report cause and effects in events, industrial processes		0	3		0	3	3	3	- 4	3	3	3	-	-
		through technical texts	3	3	3	3	3	3	3	3	2	3	3	3	-	-
	Professional English — II	CO3:To analyse problems in order to arrive at feasible solutions and communicate them in the written format	3	3.	3	3	3	3	3	3	2	3	3	3	-	74
21147521		CO4:To present their ideas and opinions in a planned and logical manner	3	3	3	3	2	3	3	3	2	3	3	3	-	-
	1 1 1 1 5	CO5:To draft effective resumes in the context of job search.	-	-		-	*	-	-		3	3	3	3		-
	it.	AVG	3	3	3	3	2.75	3	3	3	2.2	3	3	3	-	-
		CO1:Apply the concept of testing of hypothesis for small and large samples in real life problems.	3	3	1	1	1	0	0	0	2	0	2	3		-
		CO2:Apply the basic concepts of classifications of design of experiments in the field of agriculture.	3	3	4	1	1	0	0	0	2	0	2	3	243	-
		CO3:Appreciate the numerical techniques of interpolation in various intervals and apply the numerical techniques of differentiation and integration for engineering	3	3	1	1	1	0	0	0	2	0	2	3		
	Statistics and Numerical Methods	problems. CO4:Understand the knowledge of various techniques and methods for solving						,	J	J	- 4	0	2	3		
21148S22		first and second order ordinary differential equations.	3	3	1	1	1	0	0	0	2	0	2	3	-	-
21140322		CO5:Solve the partial and ordinary differential equations with initial and boundary conditions by using certain techniques with engineering applications.	3	3	1	1	1	0	0	0	2	0	2	3		()4
		AVG	3	3	1	1	1	0	0	0	2	0	2	3	7	
		CO1:know basics of crystallography and its importance for varied materials properties	3	-	1	2	28	-	-				-	-		-
		CO2:gain knowledge on the electrical and magnetic properties of materials and their applications	3	2	4	2		2	-		- 1	14	-	-	-	-
	Physics for Electronics	CO3:understand clearly of semiconductor physics and functioning of semiconductor devices	3	2	2		2		-		11-	-	-	-01	-	
21149S23B	Engineering	CO4:understand the optical properties of materials and working principles of various optical devices	3	1	1		3	2	3		-	-		1		
		CO5:appreciate the importance of nanotechnology and nanodevices	3		2	1		2			-			1		-
		AVG	3	2	1.4	1.5	2.5	2	3	-		-		1	-	-
		CO1:Use BIS conventions and specifications for engineering drawing.	3	1	2	- 1.5	2.5	2	3	_	-	3	-	2	2	2
		CO2:Construct the conic curves, involutes and cycloid.	3	1	2		2	-	-	-	-	3	-	2	2	2
		CO3:Solve practical problems involving projection of lines.	3	1	2	-	7	-	-	-	-	3	-	2	2	2
	Engineering Graphies	CO4:Draw the orthographic, isometric and perspective projections of simple		1						- 5	-					
21154\$24	garantig orașalto	solids.	3	1	2	-	2	2	-	7	-	3	-	2	2	2
		CO5:Draw the development of simple solids	3	1	2	-	2	-		-		3		2	2	2
		AVG	3	1	2		2	-	-	4	- 4	3	-	2	2	2
		CO1:Use BIS conventions and specifications for engineering drawing.														111
Mas	W	CO2:Construct the conic curves, involutes and cycloid.														14/
N 77 7	Electrical and	CO3:Solve practical problems involving projection of lines.												-	- 4	11
21153S25B	Instrumentation Engineering	CO4:Draw the orthographic, isometric and perspective projections of simple solids.													L.	lu
211000200	AT OF Elect	CO5:Draw the development of simple solids												DI	ANT	
Cana		AVG 14-2 CITU							1			School	of Ca	diam'r.		
	meanou Al	CO1 Apply the basic concepts of circuit analysis such as Kirchoff's laws, mesh	3	2	1	1	200	100		1		D4	el mi	meen	ilg and	Tect.
ronnaiyan	Circuit Analysis	current and node voltage method for analysis of DC and AC circuits.					75-5					Ponn	aivah	Ramai	Summer !	
	-	CO2: Apply suitable network theorems and analyze AC and DC circuits	3	3	2	2	100	-	-	1		Stoin	nos no	2 7	- Limit	HISPIL
		OO3: Analyze steady state response of any R, L and C circuits	3		3	3			-	-1		10	-	d len	HOLOGIA	/ (PR)

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		CO4: Analyze the transient response for any RC, RL and RLC circuits and frequency response of parallel and series resonance circuits.	3	3	3	3	-	-		1		1	-	-		-
		CO5: Analyze the coupled circuits and network topologies	3	3	3	2		-	-	1		1	-	-	4.7	14
		AVG	3	3	3	2	- 2	-	-	1		1	-	_	-	123
	Engineering Practices	CO1:Draw pipe line plan; lay and connect various pipe fittings used in common	3	-		-						-				_
	Laboratory	household plumbing work; Saw; plan; make joints in wood materials used in	3	- 2			1	. 1	1	-		-	-	2	2	1
	Datodatory	mouseriold plumbing work, Saw, plan, make joints in wood materials used in														
		common household wood work.														
			3	2	-	-	1	1	1					2	2	1
		CO2:Wire various electrical joints in common household electrical wire work.														
21154548		CO3:Weld various joints in steel plates using arc welding work; Machine various	3	2			1	1	1	3	-	-	-	2	2	1
21154L27		simple processes like turning, drilling, tapping in parts; Assemble simple	*	1			*	1	+				3 7	-		+
		mechanical assembly of common household equipments; Make a tray out of metal					4						/			
												1	1			
		sheet using sheet metal work.											100			
		CO4:Solder and test simple electronic circuits; Assemble and test simple	3	2	-	-	1	1	1			-	-	2	2	1
		electronic components on PCB.														
		AVG														
21153L28A	Circuits Analysis		3	2	1 1	1			14	1	-	1	-	-	-	
41133L26A	Laboratory	Design RL and RC circuits.														
			3	3	2	2			-	1		1			-	
		Verify Thevinin & Norton theorem KVL & KCL, and Super Position Theorems	0.		-	-						2 /	1			
												-				
		To gain hands- on experience in Thevenin & Norton theorem, KVL & KCL, and	3	3	3	3	-	* +:	-	1	*	- 1		-		-
		Superposition Theorems.														
		To understand the working of RL,RC and RLC circuits	3	3	3	3	-	-	-	1	-	1	-	-	-	-
		AVG	3	3	3	2		-	-	1		1 1	-	-	-	-
	Communication Lab		2	3	3	3	1	3 .	3	3	3	3	3	3		
	-II	CO1:Speak effectively in group discussions held in formal/semi formal contexts.	-		0	3		9 4	9	J	0	3	3	0		17
	1000															
		CO2:Discuss, analyse and present concepts and problems from various	2	3	3	3	-1	3	3	3	3	3	3	3		
		perspectives to arrive at suitable solutions														
21147L29		CO3:Write emails, letters and effective job applications.	2	2	3	3	1	3	3	3	3	3	3	3	(#K	- 1-
21147127			3	3	3	3	3	3	3	3	3	3	3	3		-
		CO4:Write critical reports to convey data and information with clarity and precision	0.50						-	-			_		0.035	
				-		-										
		CO5:Give appropriate instructions and recommendations for safe execution of	3	3	3	3	3	3	3	3	3	3	3	3	1.70	-
		tasks														
		AVG	2.4	2.8	3	3	1.8	3	3	3	3	3	3	3	-	- 1
	Random Processes	CO1:Explain the fundamental concepts of advanced algebra and their role in	3	3	0	0	0	0	0	0	3	0	0	2		
	and Linear Algebra	modern mathematics and applied contexts.						-	-				-			
	1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2		3	3	0	0	0		0			- 0		0		
		CO2:Demonstrate accurate and efficient use of advanced algebraic techniques.	9	0	U	U	0	0	0	0	3	0	0	2	-	3
200000000		CO3:Apply the concept of random processes in engineering disciplines.	3	3	0	0	0	0	0	0	3	0	0	2	-	-
21148S31B		CO4:Understand the fundamental concepts of probability with a thorough	3	3	0	0	0	0	0	0	3	0	0	2	-	-
		knowledge of standard distributions that can describe certain real-life				100	1000	3.5	× .		- 288	78				
		phenomenon,														
		CO5: Understand the basic concepts of one and two dimensional random	3	3	0	0	0	0	0	0	3	0	_	2		
		variables and	9	9	U	U	U	U	U	U	3	U	0	2		
			100	-												
	-	AVG	3	3	0	0	0	0	0	0	3	0	0	2	-	-
	Control Systems	CO1: Compute the transfer function of different physical systems.	3	3	3	2	2	2	-	-	720	-	2	3	3	3
	100		3	3	3	3	2	3	-		1.0		2	2	3	3
		CO2: Analyse the time domain specification and calculate the steady state error.	13	16				25					-		30 /	~
		CO3: Illustrate the frequency response characteristics of open loop and closed		2	3		-	0							0	-
21152S32			3	2	3	3	2	2	-				2	3	3	2
21132332		loop system response.														
		CO4: Analyse the stability using Routh and root locus techniques.	3	3	3	2	2	~ 2		-		-	2	2	3	3
		CO5: Illustrate the state space model of a physical system and discuss the	2	2	3	3	2	3	- 1	-	-	-	2	3	2	2
		concepts of sampled data control system	20000	27.0	100	- E	1000		***	11.00	17564		-		-	-
^		AVG	-2	3	3	3	2	2	. 1	20	- 2		2	2	2	3
~	C Programming and		3	-	-					-	-	-	2	3	3	3
			2	3	1	2	2	1	1	-	1	2	1	3	2	1
+ Hend	Data Structures	CO2 Apply advanced features of C in solving problems.	1	2	1	2	2	-	-		1	1	1	2	2	2
ENERGINA S			2	3	1	2	3	-	-		1	1	1	2	2	1
Departme	ent Of Elec	COS Write functions to implement linear and non-linear data structure operations.		7070		100										
A STATE OF THE STA		CO4:Suggest and use appropriate linear/non-linear data structure operations for	4	2	4	2	2	4	1		4	2	1	3	2	2
21152S33 -	nication El	solving a given problem.		-		-	-	7.5	1	2.5		-	16	3	4	-14
	The second second															JUN 1
War and the same of the same from	Ramajava	CO5 Appropriately use sort and search algorithms for a given application.	2	2	1	2	2	1	1		1	1	1	2	2	304
		CO6:Apply appropriate hash functions that result in a collision free scenario for	2	2	1	2	2	1	1	-	1	1	1	2	2	1/2 W
onnaiyan	A Technolo	data storage and retrieval.														
		AVG LIPER-A-gity	2	2	1	2	2	1	1		1	1	1	2	2	12
Science	de la company des		150				-	-	-		-	1750	-			
Science	diamond to		- 6:	-0-	0 .											
Science (Institution	*Digital Systems		3	2	2	2		. 2	1	1.	47	-00	100 0	Erioine	ee3na	and Ta
Science (Institution	*Digital Systems	COL Lies Boolean alrehra and simplification procedures relevant to digital locis	3	2	2	2		. Z				r		- ngii k	echily	and Te
Science (Institution	*Digital Systems		3	2	2	2		. 2		7.5		-80	100 0	Erigine van Ka	eeing	and Te

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			CO4: Analyse and design asynchronous sequential circuits	-	-	(2)	9	-			-			3	2	2	3	
			COS: Build logic gates and use programmable devices		3	3	3	-		1	-	-	-	2	2	3	3	
			AVG	3	2.6	2.6	2.3	-	2	-	-	-	-	2	2	3	3	
Г		Signals and Systems	CO1:determine if a given system is linear/causal/stable	3		3	-	3	2	-	-	-	-	-	3	-		
				3		3	-	-	2		-	-	-	-	3		3	
			CO2: determine the frequency components present in a deterministic signal .												7			
			CO3:characterize continuous LTI systems in the time domain and frequency	3	3	-	-	3	2		-	-			3	2	-	
	21152C35		domain															
	21152035			3	3	127	-	3	2		-	-			3	-2	3	1
			CO4:characterize discrete LTI systems in the time domain and frequency domain								1		1 22					
				3	3	100	3	3	2		-		-	-	3		3	1
			CO5:compute the output of an LTI system in the time and frequency domains														1 8	
			AVG	3	3	3	3	3	2	-	-		-	-	3	2	3	-
		Electronic Devices		3	3	3	3	2	1						1	2	1	+
		and Circuits	CO1: Explain the structure and working operation of basic electronic devices.	-70				-					18021	152		-		
			CO2: Design and analyze amplifiers.	3	2	2	3	2	2			-	-		1	2	1	+
	21152C36		CO3: Analyze frequency response of BJT and MOSFET amplifiers	3	3	3	2	1	2						1	2	1	_
			CO4: Design and analyze feedback amplifiers and oscillator principles.	9	3	2	3	2	2						1	2	1	_
			CO5: Design and analyze power amplifiers and supply circuits	2	0	3	2	2	1					-	1		1	+
			AVG	3	3		3		2					-		2		+
-		C Programming and	CO1:Use different constructs of C and develop applications	2	3	3	2	2	1	1	-	1	-	1	1	2	1	+
		Data Structures Lab	To the same reflection of the same develop applications	1		1			-	_	-		2	-	3	2	1	+
			CO2:Write functions to implement linear and non-linear data structure operations	1	2	1.0	2	2		-	-	1	1	1	2	2	2	
			CO3:Suggest and use the appropriate linear / non-linear data structure operations	2	3	1	-	-	-	-					-	-	-	+
	21152L37		for a given problem	2	3	1	2	3		*		1	1	1	2	2	1	
	21122431		CO4:Apply appropriate hash functions that result in a collision free scenario for	2	1			-				-	-		-		-	-
			data storage and Retrieval	2	1	-	1	1	-			2	1	1	2	2	3	
			CO5:Implement Sorting and searching algorithms for a given application		2	1			1	-		1					-	+
			AVG	2		1	2	2	3.10	1	-	1	2	1	3	2	2	+
-		Electronic Devices		- 2	2		2	2	- 1	1	-	1	1	1	2	2	2	+
		and Circuits Lab	CO1:Characteristics of PN Junction Diode and Zener diode.	2	2	3	3	2	1	-	-	-	-	-	1	2	1	1
		and Chodis Lab	CO2: Design and Testing of BJT and MOSFET amplifiers.	2	2	3	3	2	1		-	-	-	-	1	2	1	1
	21152L38		CO3:Operation of power amplifiers.	2		2		1	1		-	-	-	-	1	2	1	
			CO4: Design and analyze feedback amplifiers and oscillator principles.	-	20	(%)	2	3	1				-		1	2	1	
			CO5: Design and analyze power amplifiers and supply circuits	-1	-	-	-	2	1	1	-	7/27	-	-	1	2	1	
L			AVG	2	2	2.6	3	2	1	-	-		-	-	1	2	1	
		Professional	CO1:Use MS Word to create quality documents, by structuring and organizing		14	-	-	-2	(3)	9	-	-			- 2		-	T
		Development	content for their day to day technical and academic requirements															
			CORUM NO EVOES A COMMISSION OF THE COMMISSION OF	-	150	1.5	-	7.		*	*			-	-	1.5	-	
	21152L39		CO2:Use MS EXCEL to perform data operations and analytics, record, retrieve															
			data as per requirements and visualize data for ease of understanding															+
			CO3:Use MS PowerPoint to create high quality academic presentations by				2	-		-	-	-		-	-		12	
			including common tables, charts, graphs, interlinking other elements, and using															
H		771	media objects															
		Electromagnetic Fields	CO1: Relate the fundamentals of vector, coordinate system to electromagnetic	2	1	1	1	50	- 2	1		-	1	*	2		-	
		ricids	concepts															
			CO2: Analyze the characteristics of Electrostatic field	2	2	3	3	2	2	2		-	1	1	2	-	-	1
	21152C41		CO3: Interpret the concepts of Electric field in material space and solve the	2	2	3	2	2	2	1	-	-	1	1	2	12	-	
	21132C41		boundary conditions	-	-													-
			CO4: Explain the concepts and characteristics of Magneto Static field in material space and solve boundary conditions	2	2	3	2	2	2	1			1	1	2	-	-	
				-					-					-				+
			CO5: Determine the significance of time varying fields AVG	2	2	2	2	2	2	1	-	-	2	2	1		-	1
_			PANOE :	2	2	2	2	2	2	1	-	-	1	1	2	-	-	
		Linear Integrated Circuits	CO1 : Design linear and nonlinear applications of OP – AMPS	2	-	-		-						1		2	1	
		Circuits	CO2 : Design applications using analog multiplier and PLL	2	3	3	2	-	-	-		-	-	-	2	2	1	
Q	21152C42		CO3 : Design ADC and DAC using OP - AMPS	1	-		2	- 2		-	-	1	-	-	2	2	1	
,			CO4 : Generate waveforms using OP – AMP Circuits	1		- 5	2	-	-	-	-	1949	-	-	-	2	. 1	
		o Themarko	COS: Analyze special function ICs	1	2	3	3	-	-	-		. 4 :	-	.4	3	2	1	
	Head Of th	ALC: SENT THE SE	AVG ,	1.4	2.5	3	2.2	-		+	-	*		1	3	2	///1	
	www.cat O	Communication	CO1: Gain knowledge in amplitude modulation techniques	3	3	3	3	2	* 1	1				1	1	- 1	111-,	1
	partment O	Systems	CO2; Understand the concepts of Random Process to the design of	3	3	3	3	2	1	1	-		-	1	1	- /	WII	1
è	communical	ion Engine	communication systems													V	m	1
ħ	21152C43	ciounns li	GO3: Gain knowledge in digital techniques	3	3	3	3	3	1	1	-	-	-	1	1	-	-	
	aiyah Ran	rajayam II	CO4, Gain knowledge in sampling and quantization	3	3	3	3	3	1	1	-		-	1	1			T
	P To	chnology (COS. Understand the importance of demodulation techniques	3	3	3	3	2	1	1		-		1	1		-	1
	tence & Tel	ALLES AND A	AVGuaraity	3	3	3	3	2.5	1	1		-	-	1	1	73-77	134	1
THE STATE OF	ta. dian i laci	*Digital Signal	CO1: Apply DET for the analysis of digital signals and systems	3	3	3	3	2	2		-	-	-	1	1	3	3	+
8		Total Control		-	6	2	3	2	2				- 0	loneal.	of Hoo	n_2:nr	0 200	1
ě	NJAVUR - 6	Troccising	ICOZ.Design jir. and FIR filters	199														

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	20022			3	3	2	2	2	2	-	-		-	1	1 1	1	2	Т
	21152C44		CO3: Characterize the effects of finite precision representation on digital filters															
- 1			CO4: Design multirate filters	3	3	2	2	3	1	0.2	-	-	-	1	1	2	2	
			CO5:Apply adaptive filters appropriately in communication systems	3	2	2	2	3	2	-			- 4	1	1	2	2	
-			AVG	3	3	2	2	2	2	- 4	-	-	-	1	1	2	2	
- Sem		*Networks and	CO1: Explain the Network Models, layers and functions.	3	3	3	3	2	2	-	-	-	-	1	1	3	3	
		Security*	CO2: Categorize and classify the routing protocols.	3	3	3	3	2	2		-	-	-	1	1	2	2	
	21152C45		CO3: List the functions of the transport and application layer.	3	3	2	2	2	2			-	-	1	1	1	2	
			CO4: Evaluate and choose the network security mechanisms.	3	3	2	2	3	- 1		-	-	-	1	1	2	2	
			CO5: Discuss the hardware security attacks and countermeasures.	3	2	2	2	3	2		-	-	-	1	1	2	2	
-			AVG	3	3	2	2	2	2	-	-	-	-	1	1	2	2	
		Environmental Sciences and	CO1:To recognize and understand the functions of environment, ecosystems and biodiversity and their conservation.	2	1	-		-	2	3	10.73	:70			- 2	-	1	
		Sustainability	CO2:To identify the causes, effects of environmental pollution and natural disasters and contribute to the preventive measures in the society.	3	2	-			3	3	-	-	-		- 2	-	-	
	21149846		CO3:To identify and apply the understanding of renewable and non-renewable resources and contribute to the sustainable measures to preserve them for future generations.	3	-	1		-	2	2	-	-	-		2	-	-	1
			CO4:To recognize the different goals of sustainable development and apply them for suitable technological advancement and societal development.	3	2	1	1	-	2	2		-			- 2	-		
			CO5:To demonstrate the knowledge of sustainability practices and identify green materials, energy cycles and the role of sustainable urbanization.	3	2	1			2	2	-	-	-		- 1	-	-	1
			AVG	2.8	1.8	1	1	-	2.2	2.4	-	-	-		1.8			1
		Linear Integrated	CO1 : Design linear and nonlinear applications of OP - AMPS	2	150	-	-	-	2.2	-	-	-	-	1	1.0	2	1	75.5
		Circuits Laboratory	CO2 : Design applications using analog multiplier and PLL	2	3	3	2			-				-		2	1	+
	21152L47		CO3 : Design ADC and DAC using OP - AMPS	1	-	-	2	-						-		2	1	+
	21132L47		CO4 : Generate waveforms using OP - AMP Circuits	1		-	2		-						-	2	1	+
			CO5 : Analyze special function ICs	1	2	3	3				-				3	2	1	+
			AVG	1.4	2.5	3	2.2		-	-	-			1	3	2	1	+
		Communication	CO1: Gain knowledge in amplitude modulation techniques	3	3	3	3	3	3	-			1	1	1	- 4		+
		Systems Laboratory	CO2: Understand the concepts of Random Process to the design of	3	3	3	3	3	2			-	1	1	1	-	1	+
			communication systems						-					-	1			
	21152L48		CO3: Gain knowledge in digital techniques	3	3	3	3	3	2				1	1	1	-		+
			CO4: Gain knowledge in sampling and quantization	3	3	3	3	3	3				1	1	1	-		+
			CO5: Understand the importance of demodulation techniques	3	3	3	3	3	2	-		-	1	1	1			+
			AVG	3	3	3	3	3	2.5				1	1	1			+
		*Wireless	CO1:Understand The Concept And Design Of A Cellular System.	3	2	2	3	3	1					-	1	3	1	+
		Communication *	CO2: Understand Mobile Radio Propagation And Various Digital Modulation Techniques.	3	3	2	1	3	2	12	-		-	-	-	3	1	1
	21152C51		CO3:Understand The Concepts Of Multiple Access Techniques And Wireless Networks .	3	3	3	3	2	2		-	-	-	-	1	3	_1	
	21132031		CO4:Characterize a wireless channel and evolve the system design specifications	2	3	2	2	2	2		-	-	1,57	-	1	2	1	
			CO5:Design a cellular system based on resource availability and traffic demands.	2	-	3	3	2	1	-	-	-	-	-	1	2	2	
			AVG	3	3	2	2	2	2	-		1.0			1	3	1	1
		VLSI and Chip	CO1: In depth knowledge of MOS technology	1	1	-	-	-		-	-	1.5	-	-	-	3	3	1
		Design	CO2: Understand Combinational Logic Circuits and Design Principles .	3	2	3	2	-		-	-	-	-	-	1	3	3	1
	21152C52		CO3: Understand Sequential Logic Circuits and Clocking Strategies	2	3	2	3	1	1		-	-	-	-	2	3	2	
			CO4: Understand Memory architecture and building blocks	-	-	1	1	-	120			-	-	-	3	3	3	1
m			CO5: Understand the ASIC Design Process and Testing	-	14	-	-	-	2		-	12	-	1		3	2	
			AVG	2	2	2	2	1	1.5	-		-	-	1	2	3	3	
		Transmission Lines	CO1: Explain the characteristics of transmission lines and its losses.	3	3	3	3	2	1	-	-	-	1		1	2	1	
		and RF Systems	CO2: Calculate the standing wave ratio and input impedance in high frequency transmission lines.	3	2	2	3	2	1.	-			1	*	1	2	1	
	21152C53		CO3: Analyze impedance matching by stubs using Smith Charts.	3	3	3	2	1	2				1		1	2	1	1
			CO4: Comprehend the characteristics of TE and TM waves.	3	3	2	3	2	1	- 1	-	1.0	1	-	1	2	1	
-	100 000	ne 62%	CO5: Design a RF transceiver system for wireless communication	3	2	3	2	2	1			(4)	1	-	1	2	1	8
CK.	Head Of	the Liepart	AVG 11,	3	3	3	3	2	1	-		2	1	-	1	2	1	
1	Dana dana and	VLSI Laboratory	CO1: Write HDL code for basic as well as advanced digital integrated circuit	2	-	-	-	-	-	-	-	-	-	-	-	2	13	1
1	Department		CO2: Import the logic modules into FPGA Boards	3	-3	1	1	-	-	2	-	-			-	2	1/1	
	Communic	otion Engli	CO3: Synthesize Place and Route the digital lps	1	2	2	2	-		-	-	-	-	1	1	2	2	1
on	21152L58	majayam	CO4: Design, Simulate and Extract the layouts of Digital & Analog IC Blocks using EDA tools 1 0 0	1 5	1	3	3	1	-	-	-	(4)	-	1	1	2 /	He c	de
	1 - 22 0 7	la cha cia ana	CO5: Test and Verification of IC design	3	3	3	3	1	-	-	-		-	C-1	-1	2	2	
	THER OF		AVG 11977	2.2	2.2	2.2	2.2	1	-		-	4	-		011	2	2 77	T
-			CQ1: Explain the architecture and features of 8051.	3		3		2								1.00	A COLUMN TO SERVICE AND ADDRESS OF THE PARTY	4

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		and IOT Design*	CO2: Develop a model of an embedded system.	-	1 0	1 0			_		-		_	_	_	,		
			CO3: List the concepts of real time operating systems.	3	3	3	2	2	-	-	-	-	-	-		3	2	1
	21152S61		CO4: Learn the architecture and protocols of IoT.	3	3	2	2	2		-	-	-		-	-	2	1	1
			CO5: Design an IoT based system for any application.	3	3		2	2	-	-	-		-	-	- 7	3	3	2
			AVG	3	- 5	3	3	3	-	-	-	-	-	-	-	3	3	2
- sem		*Artificial	CO1: Use appropriate search algorithms for problem solving	3	3	2.6	2.2	2.2		-	-	-		-	- 2	2.8	2.2	1.
		Intelligence and	CO2: Apply reasoning under uncertainty	3	2	2	3	1	3	2	-	-	-	-	1	3	3	3
		Machine Learning*	CO3: Build supervised learning models	3	2	2	3	1	3	2	-	-	-	-	1	3	3	3
	21152S62			1	2	1	3	2	3	2	(*)		-	+	1	3	3	3
			CO4: Build ensembling and unsupervised models	1	2	3	1	3	3	2	-	-	7	-	1	3	3	3
			CO5: Build deep learning neural network models AVG	2	2	2	-	3	3	2	-			-	1	3	3	3
		Human Values and		2	2	2	2	2	3	2	-	-	-	-	1	3	3	3
		Ethics	CO1 : Identify the importance of democratic, secular and scientific values in harmonious functioning of social life	3	3 2	2	3	2	1		2574	-	1	-	1	2	1	1
	211 871		CO2 : Practice democratic and scientific values in both their personal and professional life.	3	3	3	2	1	2	2	1,47		1	-	1	2	1	1
			CO3 : Find rational solutions to social problems.	3	3 3	2	3	2	1	-	-		1	-	1	2	1	1
			CO4: Behave in an ethical manner in society		3 2	3	2	2	1	-		-	1	-	1	2	1	1
			CO5 : Practice critical thinking and the pursuit of truth.	3	3 3	3	3	2	. 1	-			1	-	1	2	1	_
			AVG	2		-	-			-		-			-			1
II - sem		Summer Internship	CO1:System-level design processes, verification and validation techniques,	1	1				-	-				-		2	3	2
			manufacturing and production processes in the firm or research facilities in the laboratory/research institute									1		100		3	3	3
			CO2: Analysis of industrial / research problems and their solutions	3	2	3	2		-		-	-	-	-	- 4	2		-
	21152INT76		CO3: Documentation of system specifications, design methodologies, process	2	3	2	3	1	1	-	-	-	-	-	2	3	2	3
			parameters, testing parameters and results		-								-			3	2375	3
			CO4: Preparing of technical report and presentation	-	-	1	1	-	-	-	-	-	- 5	-	3	3	3	2
			AVG	2	-		-	- 4	2			-	7	1	-	3	2	2
		Project Work	CO1: Formulate and analyze problem / create a new product/ process.		2	2	2	1	1.5		-	-		1	2	3	3	3
		1 Topos Prota		3	2	2	3	1	3	2	-	-		-	1	3	3	
II- Se.	21152P81		CO2: Design and conduct experiments to find solution	3	2	2	3	1	3	2	-	-	-		1	3	3	1
	21132101		CO3: Analyze the results and provide solution for the identified problem, prepare	1	2	1	3	2	3	2	-		-	-	1	3	3	
			project report and make presentation.												177			
-		10.77	AVG	2	-	1 -	-	-			-	-	-	-	14	2	3	2
		Optical Communication	CO1:Realize Basic Elements In Optical Fibers, Different Modes And	3	3	2	3	3	1	100	-	-	-	-	1	2	1	2
		Networks	Configurations.															
		NELWORKS	CO2:Analyze The Transmission Characteristics Associated With Dispersion And Polarization Techniques.	3	3	2	1	3	2	-		-	7.	150	2	2	2	2
	21152E54A		CO3:Design Optical Sources And Detectors With Their Use In Optical Communication System.	3	3	3	3	2	1.		-	+		-	1	2	2	2
			CO4: Construct Fiber Optic Receiver Systems, Measurements And Techniques.	3	3	2	2	2	1	-	-	-	(-)	-	1	2	1	2
			CO5:Design Optical Communication Systems And Its Networks.	3	2	3	3	2	-									_
			AVG	3	0	2	3	3	1	-		-	-	-	1	2	2	2
		4G /5G	CO1:To understand the evolution of wireless networks.	9		2	3			-	-	-	- 2		1	2	1	2
		Communication	CO2:To learn the concepts of 5G networks.	9		2 2	3	3 2		-	-	-	-	-	-	1		1 3
	DILLEGE CUD	Networks	CO3:To comprehend the 5G architecture and protocols.	0	-	3	2	1		-	-	2 (-	-	-	1		1 2
	21152E54B		CO4:To understand the dynamic spectrum management.	3	- 5	2	2	_	-	+	7	τ.		-		2	_	2 2
			CO5:To learn the security aspects in 5G networks	3	- 3	3	3	2		-	-		-	-		3	-	2 2
			AVG	3	- 2	3	3	2		-	-	-	*:	-	-	2		2 2
1		Software Defined	CO1: Describe the motivation behind SDN and its data plane (K2)	3	2.8	2.6	2.6			-	-		-	-	-	1.8	1.6	6 2
		Networks		3		3	3	3	-		-	-	-	-	3	3	2	3
		515501007	CO2: Identify the functions of control plane (K3)	3	3	3	2	2	2	-		-	-	-	3	3	2	2
	21152E55A		CO3: Apply SDN to networking applications (K3)	3	3	3	3	-1	2	-	-	-	-	-	3	2	3	3
	A10.000-0000000000		CO4: Apply various operations of network function virtualization	2	3	3	2	2	1	-	-	-	2	-	2	2		
			CO5: Explain various use cases of SDN	3	3	2	2	2	1	-	-	-	4	-	2	2		2
-			AVG	3	3	3	2	2	2	-	-		27		2	2	0	1
		Massive MIMO Networks	CO1: Understand and explain massive MIMO networks.	3	2	1 2	1	2	2		-	-	-	-	2	3	1	
			CO2: Analyze massive MIMO propagation channels and their capacity bounds	0	2	2	2	2	2						1	2	2	
A	NLI52E64C		CO3: Examine channel estimation techniques for single cell system.	3	2	2	2	2	2	57					-	-	M	-
X	132E104C	20.2	CO4: Analyze channel estimation techniques for multi cell system.	3	2	-	-				-	-	-	-	1	3	// /B	1
X	11890	It the Flore	CO5: Explain the concepts underlining the deployment of single and multicell	3	0	2	2	2	2	- ,	-	-		-	1	3	// 1	1
1	Departme	nt Of Elect	massive MIMO systems.		2	2	2	2	2	-	-	-		-	2	3	Viu	u
-	Camera			3	2.4	1.8	1.8	2	2	+	-		-	-	1.4	3	2	2
	onnalyan	Communication	CO1: The student would be able to appreciate the necessity and the design aspects of cooperative communication	3	3	3	2	1	1		-	7	•	-	2	3	3	1
		1 contributes	CO2: The student would be able to appreciate the necessity and the design						-							-		+
	Science &	Technolo	aspects of green wireless communication.	3	3	3	2	1 2	. 11		-	-		-	91	2		1

Shortfution Deenied to be University, 3 of the UGC am John Than JAVUR - 613 463, FARM MADEL

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Valiano, Thaniavar, 610

1	I.	F																
			CO3: The student would be able to evolve new techniques in wireless communication	3	2	2	1	2	1			-	-		2	2	1	1
			CO4: The students would be able to demonstrate the feasibility of using mathematical models using simulation tools.	3	3	3	3	2	1	-			27		2	3	1	2
	21152E65A					-							-	-		-		
	2113220374		CO5: The student would be able to demonstrate the impact of the green engineering solutions in a global, economic, environmental and societal context.	3	3	3	2	1	2		*		-	-	2	2	3	-1
			AVG	3	2.8	3 2.8	2	1.6	1.2	-	-		-	-	2	3	2	2
			CO1: Upon completion of the course, students will be able to have clear understanding of managerial functions like planning, organizing, staffing, leading & controlling.	3		-		2	1		-	2	2	-		2	1	1
		Principles of	CO2: Have same basic knowledge on international aspect of management.			1												
		Management	CO3: Ability to understand management concept of organizing.	-			2	-	-	-	-	- 0	-	-	-	2	1	-
	21160S72A		CO5: Ability to understand management concept of CONTROLLING		- 1	1	1	2		1	1	2	-	1	1	1	- 1	2
	5110001211		CO4: Ability to understand management concept of directing.	4			-	1	1	-			3	-	1	1	3.	1
			AVG	1.66	- 1	1	1.5	1.5	1	1	1	2	3	1	1	1.5	1	1.2
			CO1: Ability to apply TQM concepts in a selected enterprise.	100	3		1.0	1.0				-			3	2	-	3
			CO2: Ability to apply TQM principles in a selected enterprise.			1			3						3		2	3
		Total Quality	CO3: Ability to understand Taguchi's Quality Loss Function, Performance		2													
	211600000	Management	Measures and applyQFD, TPM, COQ and BPR.		2			3	2	3	2				3	3	2 .	
	21160S72B		CO4: Ability to apply QMS and EMS in any organization.			3			3	3	2							
			AVG		2.5	3		3	2.6	3	2	3			3	2.5	2	3
			CO1: Students would have gained knowledge on the various aspects of HRM	2	2	1	2	2	2	1	1	2	1	1	1	1	1	1
			CO2: Students will gain knowledge needed for success as a human resources professional.	3	3	2	3	2	2	2	2	3	1	2	1	1	2	1
		Human Resource	CO3: Students will develop the skills needed for a successful HR manager.	3	3	3	3	3	3	2	2	3	1	2	1	-1	2	1
		Management	CO4: Students would be prepared to implement the concepts learned in the	0						72								
	21160S72C		workplace,	3	3	2	3	3	2	2	2	2	1	1	1	1	1	1
			CO5: Students would be aware of the emerging concepts in the field of HRM	3 2.8	2.8	1	2	2	2	2	2	2	1	1	1	1	_1	1
			CO1: To impart knowledge on the concepts of Disaster, Vulnerability and Disaster	2.0	2.6	1.8	2.6	2.6	2.2	1.8	1.8	2.4	1	1.4	1	1	1.4	1
			Risk reduction (DRR)	3	3	2	3	-	170	2	2	7.5		2	-	2	-	1
			CO2: To enhance understanding on Hazards, Vulnerability and Disaster Risk Assessment prevention and risk reduction	3	3	3	3	-	-	2	1	25	121	2	-	2	-	1
		Disaster Management	CO3: To develop disaster response skills by adopting relevant tools and technology	3	3	3	3	-	*	2	2	-	-	92	2	2	-	1
Elective	21147MC51B		CO4: Enhance awareness of institutional processes for Disaster response in the country and	3	3	2	3	-	174	2	1		-	2	-	2		1
course			CO5: Develop rudimentary ability to respond to their surroundings with potential	3	3.	2	3	2	-	2	2	2	-	2		3	-	1
		4	avg	3	3	3	3		*	2	2	-	-	2	-	2	-	1
		Well Being with	CO1:Learn the importance of different components of health	3	3	3	3	-		2	1.		-	2		2	-	1
		Traditional Practices	CO2:Gain confidence to lead a healthy life	3	3	3	3			2	2	(4)	-	-	+	2	-	1
		(Yoga, Ayurveda and	CO3:Learn new techniques to prevent lifestyle health disorders	3	3	2	3	-	-	2	1	(4)		2	-	2	-	1
			CO1:Understand the importance of diet and workouts in maintaining health	3	3	2	3	-		2	2	270	-	2	-	3	-	1
			CO1:Understand the basic concept of safety. CO2:Obtain knowledge of Statutory Regulations and standards.	3	3	3	3	-	-	2	2	-	-	2		2	-	1
		Safety in	CO3:Know about the safety Activities of the Working Place,	3	3	3	3	2	-	2	1	-	-	2	-	2	-	1
		Engineering industry	CO4:Analyze on the impact of Occupational Exposures and their Remedies	3	3	2	3	-	-	2	2	-	-			2	-	1
	21147MC61E		CO5:Obtain knowledge of Risk Assessment Techniques	3	3	2	3	-	-	2	1	-	-	2	-	2	-	1
			avg	3	3	3	3	-	19	2	2	-	-	2	-	3	-	1
			CO1:Identify the satellite orbits	3	3	3	3	2	3	1	1		1	2	1		3	-
			CO2:Analyze the satellite subsystems	3	2	2	3	2	3	-	1		1	-	1	3	3	3
		Satellite	CO3:Evaluate the satellite link power budget	3	3	3	2	1	3			-	-	-	1	3	3	3
			CO4:Identify access technology for satellite	3	3	2	3	2	. 3	-		-	-		1	3	3	3
	21152E64B		CO5:Design various satellite applications	3	2	3	2	2	1		10		-	-	1	3	3	3
	TALL HOS	of Ofthat	avg	3	3	3	3	2	3	1	1	-	1		1	3	3	3
N	Dermi		CO1: To understand the principles of electromagnetic radiation.	3	2	2	3	1	3	2	-			-	1	3	3	3
5	, nehsu	ment Of El	CO2: To learn the atmospheric radiation interactions.	3	2	2	3	1	3	2	-		*	-	1	3	3	3
/	Cong	Remote Sensing	CO3: To study the laws of planetary motion.	1	2	1	3	2	3	2	-	-	-		1	3	3	3
	P(21152E66A)		CO4: To classify the different types of resolution.	1	2	3	1	3	3	2			-	-	1	3	3	3
	L CALLACTA S		CO5: To know the concepts of digital interpretation.	2	2	2	-	3	3	2	*	(#)	+		_1	3	3	3
	Carpyra		avg	2	2	2	2	2	3	2	-	7.	-	-	1/1	3	3	3
	" estable	Software Defined	CO1: Describe the motivation behind SDN and its data plane (K2)	3	3	3	3	3	2	-	-		Dollard	AFTIN	AV	3	To3-1	, 2
	THE CO	De Radio	CO2: Identify the functions of control plane (K3)	3	3	3	2	2	2	-			Chiles	The Park	W8 /	3	2/	2

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Science and Technology

21152E64A		CO3: Apply SDN to networking applications (K3)	3	3	3	3	1	2	-	-		-		3	2	3	T
		CO4: Apply various operations of network function virtualization	2	3	3	2	2	1	-				-	2	2	1	_
		CO5: Explain various use cases of SDN	3	3	2	2	2	1									_
		avg	3	3	3	2	2	2		-	-	-	-	2	2	2	_
	Wearable Devices	CO1: Describe the concepts of wearable system.	3	2	1	1	2	-			-	-	-	2	2	2	
		CO2: Explain the energy harvestings in wearable device.	3	2	1	1			-	1	-	-	-	-	1	*	
21152E65B		CO3: Use the concepts of BAN in health care.	3	2			2	-	-	1		-		-	1	-	
Z1132E03B		CO4: Illustrate the concept of smart textile	3		1	1	2 -	-	-	1	-	-		2	1	-	
		CO5: Compare the various wearable devices in healthcare system		2	1	1	2		19-1	1	-	-	1.2	-	1	-	
		avo	3	2	1	1	2	-	-	1	-	2(4)	-	-	1	-	
	Human Assist	CO1:Explain the principles and construction of artificial heart	3	2	1	1	2	-	-	1	-	(4)	-	-	1	125	П
	Devices	CO3: Independ unition and construction of artificial near	3	3	3	3	3	2	-	-		-	-	3	3	1	-
		CO2:Understand various mechanical techniques that improve therapeutic technology	3	3	3	2	2	3	-	-	-	-	-	2	2	2	Ī
21152E66B		CO3:Explain the functioning of the membrane or filter that cleanses the blood.	3	3	3	3	3	2	-		-		-	3	3	3	Ī
		CO4: Describe the tests to assess the hearing loss and development of wearable devices for the same.	3	3	1	1	3	2	-	-	-		-	2	3	1	Ī
		CO5:Analyze and research on electrical stimulation and biofeedback techniques in rehabilitation and physiotherapy	3	3	3	3	3	3		-		+	-	2	3	3	Ī
	3 473 to to	avg	3	3	2.6	2.4	2.8	2.4	1		-		-	2.4	2.8	2	-
	MEMS Design	CO1: Understand the basics of MEMS design aspects.	3	3	2	2	2	2	-	-	-		-	1	3	2	-
		CO2: Apply the knowledge in the development of electro static sensors and actuators.	3	3	3	2	2 *	2	-	-	-	-	-	2	3	2	Ī
1152E66C		CO3: Apply the knowledge in the development of thermal sensors and actuators.	3	3	3	2	2	2	-	-		-	-	2	3	2	
		CO4: Apply the knowledge in the development of piezoelectric sensors and actuators.	3	3	3	2	2	2	-	-	*		-	2	3	2	
		CO5: Apply the knowledge in the development of magnetic sensors and actuators.	3	3	3	2	2	2	-	-	-	-	-	2	3	2	
		avg	3	3	2.8	2	2	2									4
	Fundamentals of Nanoelectronics	CO1: Understand the basics of nano electronics including quantum wires, dots and wells	3	3	2	2	2	1	-	-		-	-	1.8	2	2 1	
		CO2: Use the mechanism behind quantum electronic devices	3	3	3	2	0	-									
1152E65C		CO3 : Analyze the key performance aspects of tunneling and superconducting	3	3	3		2	2	-	-	-	-	-	2	3	1	
11528050		nano electronic devices				2	2	2		7		-	1	2	3	1	
		CO4: Apply the knowledge in the development of nanotubes and nanostructure devices	3.	3	3	3	3 -	3	-	-	-	-	-	2	3	1	
	Assessed Cont.	avg	3	3	2.6	2.2	2.2	2	-	-	-	-	-	2	2.8	1	A
	Avionics Systems	CO1:Explain the principles and construction of artificial heart	3	3	3	3	3	2		-		-	-	3	3	1	4
		CO2:Understand various mechanical techniques that improve therapeutic technology	3	3	3	2	2	3	-	-		-	-	2	2	2	1
1152E54C		CO3:Explain the functioning of the membrane or filter that cleanses the blood.	3	3	3	3	3	2	-		-	-	- 5	3	3	3	1
		CO4: Describe the tests to assess the hearing loss and development of wearable devices for the same.	3	3	1	1	3	2	-	- H	-	-	*	2	3	1	1
		CO5:Analyze and research on electrical stimulation and biofeedback techniques in rehabilitation and physiotherapy	3	3	3	3	3	3			-	-	-	2	3	3	1
		avg															4

1 - low, 2 - medium, 3 - high, '-' - no correlation

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S of the UGC Act, 1958)
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Vallam, Thanjayur-613 403.



Dept: ECE-BTech (FT)

Mapping of COs and Pos

			magnetic fields • understand the relation between the fields under time varying situations • understand principles of prop										
the	19152Н13Р	Digital Electronics	introduce number systems and codes introduce basic postulates of Boolean algebra and shows the correlation between Boolean expressions introduce the methods for simplifying Boolean expressions outline the formal procedures for the analysis and des		1	✓	✓	✓	✓			~	✓
Dep	19152H14P	ment. Electronic Circuits - I	The methods of biasing transistorsDesign of simple	1	1	1	✓.	1	1	Mu	went	1	1

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Mapping of COs and Pos

			amplifier circuits • Mid – band analysis of amplifier circuits using small - signal equivalent circuits to determine gain input impedance and output impedance • Method of calculating cutoff fre									
Co	19152H15P	Signals and Systems tment incs and incsding	 To study the properties and representation of discrete and continuous signals. To study the sampling process and analysis of discrete systems using z-transforms. To study the analysis and synthesis of discrete time 		✓	*	√	had of	Le	uu	y	✓

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Dept: ECE-BTech (FT)

Mapping of COs and Pos

			systems.• To study the properties									
II	19148S21P	Numerical Methods	• The roots of nonlinear (algebraic or transcendental) equations, solutions of large system of linear equations and eigenvalue problem of a matrix can be obtained numerically where analytical methods fail to give solution. • When huge amounts of experimen	*	~	✓	✓	✓			~	~
Heed Coparino	19152S22P	Electrical Engineering and Control Systems	To understand the operation of Electrical machines and transformers To understand the open loop and closed loop	4	1	1	·	√	1	Mu	anyl	-

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Dept: ECE-BTech (PT)

Mapping of COs and Pos

			(feedback) systems To understand time domain and frequency domain analysis of control systems required for stability analysis. To unde									
Ara	19152Н23Р	Linear Integrated Circuits	 To introduce the basic building blocks of linear integrated circuits. To teach the linear and nonlinear applications of operational amplifiers. To introduce the theory and applications of analog multipliers and PLL. To teach the theory of ADC and 	4	1	1	✓	✓	1		~	✓
Head Of Department	19152H24P	Electronic Circuits - II	• The advantages and method of analysis of feed	1	1	1	√.	1	1	Xluny	1 1	1

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Dept: ECE-BTech (PT)

Mapping of COs and Pos

			back amplifiers • Analysis and design of RC and LC oscillators, tuned amplifiers, wave shaping circuits, multivibrators, blocking oscillators and time based generators. • The advantages and method of analysi										
Heappar	19152H25P	Transmission Lines and Waveguides	• To become familiar with propagation of signals through lines • Understand signal propagation at Radio frequencies• Understand radio propagation in guided systems• To become familiar with resonators • To become	✓	✓	1	✓	✓	Scho	ol of En	DEAN gineering an	und	-

Ponnaiven Denominative of Ponnaiven Density (Institution THANJAVUR - 613 403, TAMIL NADU.

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Dept: ECE- BTech (FT)

Mapping of COs and Pos

			familiar with propagation of sig									
III	19148S31BP	Probability and Random Processes	Have a fundamental knowledge of the basic probability concepts. Have a well – founded knowledge of standard distributions which can describe real life phenomena. Acquire skills in handling situations involving more than one random variable and funct	✓	-	1	✓	1			1	1
da B	19152H32P	Microprocessor Interfacing and Applications	 To introduce the architecture and programming of 8085 microprocessor. To introduce the interfacing of peripheral devices with 8085 	~	~	✓	· ·	~	✓	All	lucy	<u>(</u>

Communication Engineering
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Dept: ECE-BTech (FT)

Mapping of COs and Pos

			microprocessor. • To introduce the architecture and programming of 8086 microprocessor. • To introduce the applications,											
	19152Н33Р	Digital Signal Processing	To study DFT and its computation To study the design techniques for digital filters To study the finite word length effects in signal processing To study the non-parametric methods of power spectrum estimations To study the fundamentals of digit	1	1	1		4	~				~	4
tha Depart	19152H34P	Communication Theory	To provide various Amplitude modulation and demodulation	1	1	1	j	1	1	X	Mu	of	1	1

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Dept: ECE-BTech (FT)

Mapping of COs and Pos

			systems. To provide various Angle modulation and demodulation systems. To provide some depth analysis in noise performance of various receiver. To study some basic information theory with so										
W Head (19152L35P	Digital Signal Processing and Microprocessor Lab	Carryout basic signal processing operations Design and Implement the FIR and IIR Filters in DSP Processor for performing filtering operation over real-time signals Interface different I/Os with processor Generate waveforms using	1	~	~	4	✓	✓	School (Muu of Engineen	unf	*

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Dept: ECE-BTech (PT)

Mapping of COs and Pos

			Microprocessors •										
IV	19152H41P	Digital Communication	To study pulse modulation and discuss the process of sampling, quantization and coding that are fundamental to the digital transmission of analog signals. To learn baseband pulse transmission, which deals with the transmission of pulse-amplitude, modu	✓	~	√	-	√	~			~	✓
Atha Tord Of	19152H42P	Antenna and Wave Propagation	 To study radiation from a current element. To study antenna arrays To study aperture antennas To learn special antennas such as frequency 	1	1	1	1	1	√	W	LUM	L. Test	✓

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Dept: ECE-BTech (FT)

Mapping of COs and Pos

		independent and broad band antennas. • To study radio wave propagation. • To study radiation from a current e									
Aha	H43P Computer Networks	 To introduce the students the functions of different layers. To introduce IEEE standard employed in computer networking. To make students to get familiarized with different protocols and network components. To introduce the students the functions o 	✓	✓	1	✓	~	-		lun	

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Dept: ECE- BTech (FT) Mapping of COs and Pos

	19152E44AP	High Speed Networks	Students will get an introduction about ATM and Frame relay. Students will be provided with an up-to-date survey of developments in High Speed Networks. Enable the students to know techniques involved to support real-time traffic and congestion cont	1	1	~		✓	✓			1	
Depar	19152E44BP ad Of the Departs tment Of Electron	ics and	 To study the parametric methods for power spectrum estimation. To study adaptive filtering techniques using LMS algorithm and to study the applications of adaptive filtering. To study 	~	√	~	~	~	✓	X	lunery		✓

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Dept: ECE-BTech (PT)

Mapping of COs and Pos

			multirate signal processing fundamentals. • To study the analysis										
	19152E44CP	Speech Processing	 To introduce the models for speech production To develop time and frequency domain techniques for estimating speech parameters To introduce a predictive technique for speech compression To understand speech recognition, synthesis and speaker ident 	✓	1	4	✓	√	✓				✓
W Read Beparim Commit	19152E44DP Of the Department and OI Electronics	Fuzzy Logic and Neural Networks	To introduce the ideas of fuzzy sets, fuzzy logic and use of heuristics based on human experience To become	~	√	1	√	√	4	ý.	Kumpl	_	~

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Dept: ECE-BTech (FT)

Mapping of COs and Pos

			familiar with neural networks that can learn from available examples and generalize to form appropriate rules for inferencing systems • To prov										
A had	19152E44FP	Digital Audio Engineering	 Analyze the type of dither. Analyze the recording and transmission principles in digital audio. Analyze the various compression techniques. Design and analyze the digital audio editing. Analyze the various application of digital audio. Analyze 	✓	✓	✓	✓	✓	✓	✓	llu	up	*

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Dept: ECE-BTech (PT)

Mapping of COs and Pos

	19152L45P	Networks and Communication Lab	• Communicate between two desktop computers• Implement the different protocols• Implement and compare the various routing algorithms• Use the simulation tool.• Simulate & validate the various functional modules of a communication system• Apply variou	✓	~	~	✓	✓	*		~	
V Head Departm	19152H51P Of the Department of Electronic	Optical Communication and Networks	 To learn the basic elements of optical fiber transmission link, fiber modes configurations and structures. To understand the different kind of losses, signal distortion in 	1	1	1	1	1	4	Dun	mf -	✓

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Dept: ECE-BTech (PT)

Mapping of COs and Pos

19152H52P	Microwave Engineering	optical wave guides and other signal degradation factors. Design optimization o • To study passive microwave components and their S- Parameters. • To study Microwave semiconductor devices & applications. • To study Microwave sources and amplifiers. • To study passive microwave components and their S- Parameters. • T	4	*	*	✓	~	~		~	*
19152H53Pm	VLSI Design	To learn the basic CMOS circuits. To learn the CMOS process	1	1	1	~	1	School	Mullin	1	1

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Dept: ECE-BTech (FT)

Mapping of COs and Pos

	191_E54_P	Elective II	technology. To learn techniques of chip design using programmable devices. To learn the concepts of designing VLSI subsystems. To learn the concepts of modeling a digital system using H									
Head Departm	19149E54AP	Environmental Science and Engineering	 Public awareness of environmental is at infant stage. Ignorance and incomplete knowledge has lead to misconceptions Development and improvement in standard of living has lead to serious 	1	~	1	~	1	√ DI	Mu	und	

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Dept: ECE-BTech (FT)

Mapping of COs and Pos

	19152E54BP	Optoelectronic Devices	environmental disasters• Public awareness of environmental is a • To know the basics of solid state physics and understand the nature and characteristics of light. • To understand different methods of luminescence, display devices and laser types and their applications. • To learn the principle of optical	✓	✓	✓	✓.	✓	✓					✓	
	19152E54DP	Digital Image	• To study the image fundamentals and mathematical transforms	4	✓	✓	·	√	✓	✓	✓	1	*		1
 Depair 	ad Of the Departs tment Of Electron	Processing next ics and pering	necessary for image processing. • To study the image enhancement								a pis	DEA	Mu N and Tec	my	

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Dept: ECE-BTech (FT)

Mapping of COs and Pos

			techniques To study image restoration procedures. To study the image compression procedures. To study the image segmentati									
0	19152E54EP	Engineering Acoustics	 To provide mathematical basis for acoustics waves To introduce the concept of radiation reception absorption and attenuation of acoustic waves. To present the characteristic behaviour of sound in pipes, resonators and filters. To introduce the pro 	✓	1	✓	4	✓	THAN	Kuu	w/	

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School: ENGINEERINGAND TECHNOLOGY Dept: ECE-BTech (FT)

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	19152E54FP	Software Engineering	 Identify the key activities in managing a software project. Compare different process models. Concepts of requirements engineering and Analysis Modeling. Apply systematic procedure for software design and deployment. Compare and contrast the 	4	✓	~	~	~	√	~	✓			
than Dopa	19152L55P	Optical Communication and Microwave Lab	 Analyze the performance of simple optical link. Test microwave and optical components. Analyse the mode characteristics of fiber Analyse the 	4	1	1	1	1	1			Mun	nf.	

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Dept: ECE-BTech (FT)

Mapping of COs and Pos

			radiation of pattern of antenna. Analyze the performance of simple optical link. Test microwave and op												
VI	19152Н61Р	Mobile and Wireless Communication	• It deals with the fundamental cellular radio concepts such as frequency reuse and handoff. This also demonstrates the principle of trunking efficiency and how trunking and interference issues between mobile and base stations combine to affect the overal	1	1	✓	✓	1	✓				*		
Department Commun	19152H62P*	Medical Electronics	To study the methods of recording various biopotentials To study how to measure biochemical and	4	4	√	✓	√		M	lu	nf.	~	1	

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Dept: ECE-BTech (FT)

Mapping of COs and Pos

		various physiological information • To understand the working of units which will help to restore normal functioning • To understand the use of radiation f									
19152H63P	Micro Controller and Embedded systems	• To study 8051 architecture • To write assembly language programming • To study the embedded architecture and real time applications. • To study 8051 architecture • To write assembly language programming • To study the embedded architecture and	✓	✓	✓	✓	→	✓		DEA	

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Dept: ECE-BTech (FT)

Mapping of COs and Pos

			real time												
	191E64_P	Elective III													
	19160E64AP	Principles Of Management	• Upon completion of the course, students will be able to have clear understanding• Managerial functions like planning, organizing, staffing, leading & controlling and have same basic knowledge on international aspect of management• Upon completion of t						1	1	1		✓		
Depa		1 1 m. market	 Overview of satellite systems in relation to other terrestrial systems. Study of satellite orbits and 	4	1	1	✓	✓	√	✓	1	1	ille	Muy	yĽ.

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Ponnalyah Ramajayam Institute of
Science and Technology (NIST)

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Dept: ECE-BTech (FT)

Mapping of COs and Pos

		launching. • Study of earth segment and space segment components • Study of satellite access by various users. • Study of DTH and compression standar											
19152E64CP	Robotics	 The course has been so designed to give the students an overall view of the mechanical components and mathematics associated with the same. Actuators and sensors necessary for the functioning of the robot. The course has been so designed to give the 	1	✓	√	✓-	✓	~	√	✓	Lu	unf	

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School of Engineering and Teck

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Dept: ECE-BTech (PT)

Mapping of COs and Pos

	19152E64DP	Remote sensing	 Principles of Remote Sensing and GIS Analysis of RS and GIS data and interpreting the data for modeling applications Principles of Remote Sensing and GIS Analysis of RS and GIS data and interpreting the data for modeling applications 	✓	✓	~	į.	✓	✓			~	
	19150E64FP	Transducer Engineering	to model and analyze transducers	1	1	1	1	1	1			1	1
9	19152L65P	VLSI and Embedded systems Lab	Write HDL code for basic as well as advanced digital integrated circuit Import the logic modules into FPGA Boards Synthesize Place and Route the digital IPs Write programs	√	√	1	1	1	4		LU	enf	1

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School of Engineering and Tech Ponnaiyah Ramajayam Institute of Science and Technology (PRIST)

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Dept: ECE-BTech (FT)

Mapping of COs and Pos

			in ARM for a specific Application • Interface memory, A/D and D/A convertor											
VII	19160S71P	Total Quality Management	• The student would be able to apply the tools and techniques of quality management to manufacturing and services processes.						√	√	√	✓	~	*
Depart	19152H72P	Wireless Networks	 To understand physical as wireless MAC layer alternatives techniques. To learn planning and operation of wireless networks. To study various wireless LAN and WAN concepts. To understand WPAN and geolocation systems. 	√	✓	✓	√-	✓			Sch	MUL DEA	unf National	

Communication and the of Ponnaiyah Remous and the of soundings (FRIST)

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Ponnaiyan Ramajayam Institute at Science and Technology (PRIST)

Deemed to be University

Vallam, Thanjayar-b: 03.



Dept: ECE-BTech (FT)

Mapping of COs and Pos

	19152Н73Р	Telecommunication Switching and Networks	 To introduce the concepts of Frequency and Time division multiplexing. To introduce digital multiplexing and digital hierarchy namely SONET / SDH To introduce the concepts of space switching, time switching and combination switching, example of a sw 	4	✓	✓	✓	✓					
	191E74_P	Elective IV											
a D	19152E74AP Head Of the Decomposition of the Composition of the Compos	Power Electronics	 To study about power electronic circuits for voltage and current control and protection. To learn the switching characteristics of transistors and 	1	1	1	1	1	1		Heu	unj	Č

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Ponnaived Rasmayam Institute o Science and Technology (PRIST)

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Dept: ECE-BTech (PT)

Mapping of COs and Pos

			SCRs. Series and parallel functions of SCRs, Programmable triggering methods of SCR. • To learn controll										
	19152E74BP	Advanced Microprocessors	To introduce the concepts in internal programming model of Intel family of microprocessors. To introduce the programming techniques using MASM, DOS and BIOS function calls. To introduce the basic architecture of Pentium family of processors. To in	✓	~	√	~	*	~			~	
₹c:	19152E74CP	Electromagnetic Interference and Compatibility	• To understand EMI Sources, EMI problems and their solution methods in PCB level /	1	1	1	~	1	1	Du	und	-	1

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School of Engineering and Teck,
Ponnaiyah Ramajayam Institute of
Science and Technology (PRIST)
Deemed to be University
Vallam, Thanfavur-5
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Dept: ECE-BTech (FT)

Mapping of COs and Pos

		Subsystem and system level design. • To measure the emission. immunity level from different systems to couple with the prescribed EMC standards										
19152E74DP	Solid State Electronic Drives	 To learn crystal structures of elements used for fabrication of semiconductor devices. To study energy band structure of semiconductor devices. To understand fermi levels, movement of charge carriers, Diffusion current and Drift current. To study 	1	~	√	1	1	· · · · · · · · · · · · · · · · · · ·	sh	Um	1	

Communication Engineering
Indivah Ramajayam Institute of
Technology (PRIST)
To be University
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School of Engineering and Teeh
Ponnaiyah Ramajayam Institute at
Science and Technology (Firist)
Deemed to be University
Vallam, Thanjayur - 613 403.



School: ENGINEERINGAND TECHNOLOGY

Dept: ECE-BTech (PT)

Mapping of COs and Pos

	19152E74FP	Space TimeWireless Communication	 Design and analyze the channel characterization. Analyze the capacity of random MIMO channel. Design and analyze the order diversity and channel variability. Analyze the multiple antenna coding and receivers. Analyze the MIMO multi user detectio 	✓	~	*	4	~	~					
the	19152P75P Jond Of the Deps fortment Of Electro communication En-	n insulated	• apply fundamental and disciplinary concepts and methods in ways appropriate to their principal area of study. •	~	~	✓	✓.	~	✓	1	- 1	lu	my	-

- A Technology (PRIS - med to be University (PC Act.1956) - 3, TAMIL, NAC

Ponnaiyan Remail And Analy (PRIST)
Deomad to be University
Vallam, Thanjavur-613 40d,



School: ENGINEERINGAND TECHNOLOGY

Dept: ECE-BTech (FT)

Mapping of COs and Pos

demonstrate skill and knowledge of
current
information and
technological
tools and
techniques
specific to the
professional field
of study.•

School of Engineering and Teck. Ponnaiyah Ramajayam institute of Science and Tacheclogy (PRIST) Desmad to be University Vailam, Than, 2017-013, 403.

Head Of the Department Department Of Electronics and Communication Engineering Ponnaiyah Ramajayam Institute of The & Technology (PRIST) " Peamed to be University

= UGC Act.1958) = 403, TAMIL NADI4.



Dept:ECE(M.TECH COMM.SYS REG2019-FT)

School:E&T

Mapping of COs and POs

Sem	Course Code	Title of the Course	COs							POS					
	Couc	Course		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
	19248S11B	Applied	• Concepts on												
		mathematics	vector spaces,												
		for Electronics	linear												
		Engineering	transformation,												
			inner product												
			spaces, eigen												
			values and												
			generalized												
			eigenvectors.												
			 Apply various 												
			methods in linear												
			algebra to solve												
			system of linear												
1			equations.												
			 Could develop a 												
			fundamental												
			understanding of												
			linear												
			programming												
			models, able to												
			develop a linear												
			programming												
			model from												
			problem												
			description, apply												
			the simplex	_					1						
			method for	✓	✓	٠	/ 🗸	/ ₁	∕ √		\checkmark	✓	\checkmark		



		solving linear programming problems.	JAV OR	C-013.	-03-12	MIL N				
		prooferns.								
19271H12	Statistical Signal Processing	 Formulate time domain and frequency domain description of Wide Sense Stationary process in terms of matrix algebra and relate to linear algebra concepts. State Parseval's theorem, W-K theorem, principle of orthogonality, spectral factorization theorem, Widrow-Hoff LMS algorithm and Shannon's sampling theorem, and define linear prediction, linear estimation, sample autocorrelation, periodogram, bias and consistency. 	✓	•					· •	



J				• Explain various	TOP VOI	C-313.	+03 - 12		200		Ī				ĺ	l
				noise types, Yule-												
				Walker algorithm, parametric and												
				non-parametric												
				methods, Wiener												
				and Kalman												
				filtering, LMS												
				and RMS												
				algorithms,												
				Levinson Durbin												
				algorithm,												
				adaptive noise												
				cancellation and												
				adaptive echo												
				cancellation,												
				speed verses												
				convergence												
				issues, channel												
				equalization,												
				sampling rate												
				change, subband												
				coding and												
				wavelet												
				transform.												
	Г	19271H13	Modern Digital	• Develop the												
			Communicatio	ability to												
			n Systems	understand the												
			,	concepts of signal												
				space analysis for												
				coherent and non-												
				coherent												
				receivers.												
				• Conceptually												
				appreciate												
				different	✓	✓	•	/ /	/ _v	/ v	/	√ ✓	✓	✓ ✓	•	
				uniterent	v	v	v	v	v	•		v v	v	v		



	•	1110	IANA O	- OI 3	TUJ- 12	TATE IA								
		Equalization												
		techniques												
		• Possess												
		knowledge on												
		different block												
		codes and												
		convolutional												
		codes.												
		• Comprehend the												
		generation of												
		OFDM signals												
		and the												
		techniques of												
		multiuser												
		detection.												
19271S14	Communication													-
192/1514	Communicatio													
	n Protocol	network and user												
	Engineering	requirements and												
		the type of												
		channel over												
		which the												
		network has to												
		operate, the												
		student would be												
		in a position to												
		apply his												
		knowledge for												
		identifying a												
		suitable routing												
		algorithm,												
		implementing it												
		and analyzing its												
		performance.												
		• The student												
		would also be												
		able to design a	✓	✓	•	∕ √	✓ ✓	✓	✓	✓	′ √	✓ ✓		





1 1	•	1	THAI	NJAVUI	R-6134	103 - TA	MILN	ADU	1	ı		1	i	i
			so understand											
			why standard											
			protocols are											
			designed the way											
			that they are											
			• Be able to solve											
			problems for the											
			design of											
			multimedia											
			applications on											
			Internet.											
	19271E16B	Digital Image	• Explain the											
		Processing	fundamentals											
			digital image											
			processing.											
			• Describe image											
			various											
			segmentation and											
			feature extraction											
			techniques for											
			image analysis.											
			• Discuss the											
			concepts of image											
			registration and									l		
			fusion.	<u>√</u>	✓	1	<u>/</u>	<u></u> 1	<u> </u>	<u> </u>	/√	v	<u> </u>	
	19271E16C	LASER	Recognize and											
		Communicati	classify the											
		on	structures of											
			Optical fiber and											
			types.											
			• Discuss the											
			channel											
			impairments like											
			losses and											
			dispersion.						l	l				
			 Analyze 	✓	✓	1	<u>/</u>	<u> </u>	<u>/_</u> ,	/,	<u>/_</u> √	v		



		various coupling					abo					
		losses.										
		• Classify the										
		Optical sources										
		and detectors and										
		to discuss their										
		principle.										
		• Familiar with										
		Design										
		considerations of										
		fiber optic										
		systems.										
		To perform										
		characteristics of										
		optical fiber,										
		sources and										
		detectors, design										
		as well as conduct										
		experiments in										
		software and										
		hardware, analyze										
		the results to										
		provide valid										
		conclusions.										
19271E16D	MEMS and	Ability to										
	NEMS	understand the										
		operation of										
		micro devices,										
		micro systems										
		and their										
		applications										
		Ability to design										
		the micro										
		devices, micro										
		systems using the	✓	✓	٠ .	/√	<u> </u>	/ <u> </u>	/v	/√	 ✓	



		MEMS fabrication			103-12	WILNA	ш							
		process.												
		Gain a												
		knowledge of												
		basic approaches												
		for various sensor												
		design												
		Gain a												
		knowledge of												
		basic approaches												
		for various												
		actuator design												
		Develop												
		experience on												
		micro/nano												
		systems for												
		photonics .												
		Gain the technical												
		knowledge												
		required for												
		computer-aided												
		design,												
		fabrication,												
		analysis and												
		characterization												
		of nano-												
		structured												
		materials, micro-												
		and nano-scale												
		devices.												
19271L19	Communicatio	Measure and												
	n Systems Lab	analyze various												
	- I	transmission line												
		parameters.	✓	✓	•	/ /	<u> </u>	/ /	✓	✓	<u> </u>	<u>√</u>		



•		_	IIIA	NJAVU	K-013	4U3 - IA	TAIL 143	DU	i	1	1	1		1 1
			• Design											
			Microstrip patch											
			antennas.											
			• Implement the											
			adaptive filtering											
			algorithms											
			 To generate and 											
			detect digital											
			communication											
			signals of various											
			modulation											
			techniquesusing											
			MATLAB.											
	19271CRS	Research Led	a. Exposure to											
		Seminar	various research											
			domains											
			b. Acquaintance											
			with languages of											
			research											
			c. Development											
			of research											
			aptitude								√			
		L		l	5	SEMEST	ER-II		ı			ı		
						LIVILOI	LIC II							
	19271H21	Mobile	Discuss cellular											
		Communicatio	radio concepts.•											
		n Networks	Identify various											
			propagation											
			effects.• To have											
			knowledge of the											
			mobile system											
			specifications.•											
			Classify multiple											
			access techniques											
ll II			in mobile	✓	√	•	/ /	✓ ✓	✓	✓	•	/ /		
1	1					•							1	1



		communication. •											
		Outline cellular											
		mobile											
		communication											
		standards.Analyze											
		various											
		methodologies to											
		improve the											
		cellular capacity											
19271H22	Advanced	Capability to											
	Microwave	design											
	Systems	Microwave											
		circuits.											
		• To be able to											
		analyze											
		microwave											
		integrated											
		circuits.	✓	✓	,	/ /	^ 1		√	′ √	′ √	∕ √	
19271H23	Fiber Optic	Design and											
	Networking	Analyze Network											
		Components											
		Assess and											
		Evaluate optical											
		networks											
			~	_	ļ ,	/ •	,	/ /	✓	′ √	′ √	∕ √	✓
				EI	ECT	IVE II	-						
					32301	. ,	-						
19271E24A	High Speed	• The student											
	Switching	would be able to											
	Architecture	identify suitable											
	7 Hemiceture	switch											
		architectures for a											
		specified											
		networking											
		scenario and	✓	✓	•	/ /	· ,	/ ,	/ v	/		✓	



		demonstrate its blocking performance. • The student would be in a position to apply his knowledge of									
		switching technologies, architectures and buffering strategies for designing high speed communication networks and									
		analyse their performance									
19271E24B	DSP Processor Architecture and Programming	 Become Digital Signal Processor specialized engineer DSP based System Developer 	√	✓	,	∕_ ✓	<u> </u>	<i></i>	/ _ √		
19271E24C	Digital Speech Processing	 Model speech production system and describe the fundamentals of speech. Extract and compare different speech parameters. Choose an 	√	✓				<i>′</i> ,	/ ✓	√	



-	•	THA	NJAVUI	R-6134	403 - TA	MILN	ADU		ı	ii		
		appropriate										
		statistical speech										
		model for a given										
		application.										
		• Design a speech										
		recognition										
		system.										
		• Use different										
		text analysis and										
		speech synthesis										
		techniques.										
19271E24D	ASIC and FPGA	 Demonstrate 										
	Design	VLSI tool-flow										
		and appreciate										
		FPGA										
		architecture.										
		• Understand the										
		issues involved										
		in ASIC design,										
		including										
		technology										
		choice, design										
		management,										
		tool-flow,										
		verification,										
		debug and test,										
		as well as the										
		impact of										
		technology										
		scaling										
		on ASIC										
		design.										
			./			/	/	/			l	
]		• Understand the	✓	√	1	<u> </u>	1	/ <u>~</u>	 ✓ ✓	✓		



		THAT	NAA(NJAVUI	2-6134	MEDI	MILN	ADII						
		algorithms used											
		for ASIC											
		construction											
		• Understand the											
		basics of System											
		on Chip, On											
		chip											
		communication											
		architectures											
		like											
		AMBA,AXI											
		and utilizing											
		Platform based											
		design.											
		• Appreciate											
		high											
		performance											
		algorithms											
		available for											
		ASICs											
19271E25A	Digital	Apply basic											
	Communicati	principles of											
	on Receivers	digital											
		communication											
		techniques.											
		• Discuss on											
		receivers for											
		AWGN & Fading channel											
		• Describe various											
		synchronization											
		techniques.											
		• Design adaptive											
		equalization	✓	✓	•	/ /	· •	/ /	٠,	✓ ✓	•		
	I		,	,	•	•		• •			•	l	



			algorithms to satisfy the evolving demands in digital communication.	NJAVUI	C-6132	103 - TA	MIL N	ADO					
19	9271E25B	Soft Computing	 Knowledge on concepts of soft computational techniques. Able to apply soft computational techniques to solve various problems. Motivate to solve research oriented problems. 	✓	✓		<i>/</i> ,/		<i>'</i>	✓ ✓			
19	9271E25C	Communicati on Network Security	 Explain digital signature standards Discuss authentication Explain security at different layers 	√	·	,	.			 · _ •	· •	< >	
1	19271L26	Communicatio n Systems Lab - II	• Apply knowledge to identify a suitable architecture and systematically design an RF system.	√	✓	,	∕ √		✓ ✓	/	√	,	



		THA	NJAVUI	8-6134	103 - TA	MILN	ADU						
		Comprehensively											
		record and report											
		the measured											
		data, and would											
		be capable of											
		analyzing,											
		interpreting the											
		experimentally											
		measured data											
		and produce the											
		meaningful											
		conclusions.											
		• Design and											
		develop											
		microstrip filters.											
192TECWR	Technical	Selecting a											
	Writing	subject,											
	/Seminars	narrowing the											
		subject into a											
		topic											
		2. Stating an											
		objective.											
		3. Collecting the											
		relevant											
		bibliography											
		(atleast 15 journal											
		papers)											
		4. Preparing a											
		working outline.											
		5. Studying the											
		papers and											
		understanding the											
		authors											
		contributions and											
		critically											
		analysing each						√	· .	✓ ✓	✓		
 L				l l				•			,		



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		paper. 6. Preparing a working outline										
		7. Linking the										
		papers and										
		preparing a draft										
		of the paper.										
		8. Preparing										
		conclusions based										
		on the reading of										
		all the papers.										
		9. Writing the										
		Final Paper and										
		giving final										
		Presentation										
19271CRM	Research	a. Understanding										1
192/1CKW	Methodology	research questions										
	Methodology	and tools										
		b. Experience in										
		scientific writings										
		c. Practice in										
		various aspects of										
		scientific										
		publications										
		d. Inculcation of										
		research ethics					√	√ ✓	′ √			
19271CBR	Participation in	a. Hands on										1
1,2,1021	Bounded	exposure to										
	Research	problem solving										
	11000001	tools in										
		contemporary										
		researchb.										
		Evolution of										
		research										
		intuitiveness and										
		orientationc.					✓	✓ ✓	∕ √			



THANJAVUR-613403-TAMILNADU	, ,
Familiarity with	
cutting edge	
research trends	
III 19271H31 Wireless • Familiar with	
Sensor the latest 4G	
Networks networks and	
LTE LTE	
• Understand	
about the wireless	
IP architecture	
and LTE network	
architecture.	
• Familiar with	
the adaptive link	
layer and network	
layer graphs and	
protocol.	
• Understand	
about the mobility	
management and management and	
cellular network.	
• Understand	
about the wireless	
sensor network	
architecture and	
its concept.	
its concept.	



			NJAVUI	R-6134	103 - 17	MILL	ADU		,					
19271E32A	Software	• Compare MAC												
	Defined	and network layer												
	Radio	design for												
		software defined												
		radio												
		• Discuss												
		cognitive radio												
		for Internet of												
		Things and				1	1_		l l					
		M2Mtechnologies	√	√	1	/ ·		\checkmark	✓	✓	✓	✓		
19271E32B	Satellite	• Discuss satellite												
	Communicati	navigation and												
	on	global positioning												
		system												
		Outline deep												
		space networks												
		and inter												
		planetary		I		l _	1							
		missions	✓	✓	1	/ ·		✓	✓	✓	✓	✓	✓	
19271E32C	CDMA	Analyze MIMO												
	Systems	system.												
		• Discuss												
		millimeter wave												
		communication.												
		Demonstrate												
		software defined												
		radio and							Į.	ا		_		
		cognitive radio.	✓	✓		/	/	✓_✓	√	√	_✓	_ ✓		
	Speech	 Identify the 												
	Processing	various temporal,												
	and Synthesis	spectral and												
		cepstral features												
		required for												
		identifying speech												
		units – phoneme,	-					1		.		_		
19271E25D		syllable and word	✓	✓	1	/ .		\checkmark \checkmark	✓	✓	✓	✓		



		Determine and		- 015	103-12	MILN								
		apply Mel-												
		frequency cepstral												
		coefficients for												
		processing all												
		types of signals												
		• Justify the use												
		of formant and												
		concatenative												
		approaches to												
		speech synthesis												
		• Identify the apt												
		approach of												
		speech synthesis												
		depending on the language to be												
		processed												
		• Determine the												
		various encoding												
		techniques for												
		representing												
		speech.												
						ELECTI	/E V	1.	<u> </u>					
19271E33A	Wavelets and	• The students												
	Multi	will be able to												
	Resolution	apprehend the												
	Processing	detailed												
		knowledge about												
		the Wavelet												
		transforms& its		,										
		applications.	✓	✓	٧	/ /	1	/	✓	✓	1	/ √	✓	



1 400-4-00-		THAI	NJAVUE	t-6134	03 - TA	MILN	ADU	1 1	1	Í	I	ĺ	j i	I
19271E33B	High	• Diagnose												
	performance	problems and												
	Communicati	make minor												
	on Networks	repairs to												
		computer												
		networks using												
		appropriate												
		diagnostics												
		software												
		• Demonstrate												
		how to correctly												
		maintain LAN												
		computer systems												
		Maintain the												
		network by												
		performing												
		routine												
		maintenance tasks												
		Apply network												
		management tools	✓	✓	v	/ _•		√ _ ✓	✓	✓ ✓	✓	✓		
19271E33C	Advanced	• The student will												
1,2,12,55	Microprocess	be able to work												
	ors and	with suitable												
		microprocessor /												
	Microcontroll	microcontroller												
	ers	for a specific real												
		world application.	~	~	l	/ •			√	√	· ·	/ /	√	
19271E33D	Reconfigurabl	1. Identify the	•		Ĭ	•			•	•	Ť	•		
172/11/331		need for												
	e computing													
		reconfigurable												
		architectures												
		2. Discuss the												
		architecture of												
		FPGAs												
		3. Point out the	✓	✓	v	/ v		✓ ✓	✓	✓ ✓	✓	✓		



	•	THA	NJAVUI	R-6134	03 - TA	MILN	ADU			i	i	1	i i
		salient features of different reconfigurable architectures 4. Build basic modules using any HDL 5. Develop applications using any HDL and appropriate tools 6. Design and build an SoPC for a particular application	NJAVOI	c-6134	03 - TA	MILN	ADU						
					į.	ELECTIV	'E VI						
19271E34A	Simulation of Communicati on Networks	Apply Monte Carlo simulation Discuss Lower Layer and Link Layer Wireless Modeling Compare channel modeling and mobility modeling	√	√	•	′ √			· •	· •	 	√	



100715245	Lx 6 12 1	THA	NJAVUI	C-6134	403 - 12	MILI	IADU	1	1 1	1	1	İ	1	ĺ
19271E34B		• Explain												
	Imaging	computer aided												
		tomography												
		• Discuss												
		ultrasonic												
		systems												
		• Outline												
		magnetic												
		resonance			,		L	1		, ,				
		imaging	✓	✓	1	<u>/</u> ·	<u>/</u>	<u>√_</u> v	<u>/ </u>	<u> </u>	✓	✓		
19271E34C	Mobile	 Identify 												
	ADHOC	different issues in												
	networks	wireless ad hoc												
	networks	and sensor												
		networks.												
		• To analyze												
		protocols												
		developed for ad												
		hoc and sensor												
		networks.												
		 To identify and 												
		address the												
		security threats in												
		ad hoc and sensor												
		networks.												
		• Establish a												
		Sensor network												
		environment for												
		different type of												
			✓	./	,	/	/	./	/ .	/ /	_/	✓		
19271E34D	Ultra Wide	applications.	v		'			<u>vv</u>	` 			v		
194/1E34D		radio technology												
	Band	that can use a												
	Communicati	very low energy												
	on	level for short-			<u>,</u>	L		1			, ,			
		range, high-	✓	✓	1	/ •	/	✓	✓	✓	✓	✓	✓	



į i	THANJAVUI	R-613403-T	AMILNADU	1 1	1	1	1 1
1	bandwidth						
1	communications						
	over a large						
	portion of the						
	radio spectrum						
Project P	hase – The student						
I	should be able to:						
	• Apply						
	fundamental and						
	disciplinary						
	concepts and						
	methods in ways						
	appropriate to						
	their principal						
	area of study.						
	Demonstrate						
	skill and						
	knowledge of						
	current						
	information and						
	technological						
	tools and						
	techniques						
	specific to the						
	professional field						
	of study.						
	• Use effectively						
	oral, written and						
	visual						
	communication.						
	• Identify,						
	analyze, and solve						
	problems						
	creatively through						
10071007	sustained critical						
19271P35	investigation.			√			



19	9271CSR	Participation in Scaffolded Research(Desi gn/Societal Project)	Integrate information from multiple sources. Demonstrate an awareness and application of appropriate personal, societal, and professional ethical standards. Practice the skills, diligence, and commitment to excellence needed to engage in lifelong learning. a. Sensitization of social needs for innovation b. Team work towards interdisciplinary synchronous research strategy c. Development of critical thinking and synergistic research approach.				→				
1	9271P41	Project Phase – II	The student should be able to:		SEM	1 V					
			• Apply				✓				



									1
		fundamental and							
		disciplinary							
		concepts and							
		methods in ways							
		appropriate to							
		their principal							Ì
		area of study.							Ì
		• Demonstrate							
		skill and							Ì
		knowledge of							
		current							
		information and							
		technological							
		tools and							Ì
		techniques							Ì
		specific to the							
		professional field							
		of study.							Ì
		• Use effectively							
		oral, written and							Ì
		visual							
		communication.							
		• Identify,							
		analyze, and solve							
		problems							Ì
		creatively through							Ì
		sustained critical							Ì
		investigation.							Ì
		• Integrate							Ì
		information from							Ì
		multiple sources.							
		• Demonstrate an							1
		awareness and							1
		application of							1
		appropriate							1
		personal, societal,							1



and professional						
ethical standards.						
• Practice the						
skills, diligence,						
and commitment						
to excellence						
needed to engage						
in lifelong						
learning.						



Dept:ECE(M.TECH COMM.SYS-PT REG2019)

Mapping of COs and POs

Sem	Course	Title of	COs						POS	5					
	Code	the Course		DO4	D04	200	DO 4	DO 5	D 0.6	D0=	Dog	Dog	PO	P O	D044
				PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	10	11	PO12
						SEM-	[
I	19248S11 BP	Applied mathematic s for Electronics Engineerin g	 Concepts on vector spaces, linear transformation, inner product spaces, eigen values and generalized eigenvectors. Apply various methods in linear algebra to solve system of linear equations. Could develop a fundamental understanding of linear programming models, able to develop a linear programming model from problem description, apply the simplex method for solving linear programming problems. 	`											



		THANIA	VUR-	613403-	TAMIL	NADU								
19271C12	Statistical	• Formulate time domain	~	~			-/		_	_	-		_	
P	Signal	and frequency domain		_	Ĭ	•	•	•		_	Ĭ	Ĭ		
	Processing	description of Wide												
		Sense Stationary process												
		in terms of matrix												
		algebra and relate to												
		linear algebra concepts.												
		• State Parseval's												
		theorem, W-K theorem,												
		principle of												
		orthogonality, spectral												
		factorization theorem,												
		Widrow-Hoff LMS												
		algorithm and Shannon's												
		sampling theorem, and												
		define linear prediction,												
		linear estimation, sample												
		auto-correlation,												
		periodogram, bias and												
		consistency.												
		• Explain various noise												
		types, Yule-Walker												
		algorithm, parametric												
		and non-parametric												
		methods, Wiener and												
		Kalman filtering, LMS												
		and RMS algorithms,												
		Levinson Durbin												
		algorithm, adaptive												
		noise cancellation and												
		adaptive echo												
		cancellation, speed												
		verses convergence												
		issues, channel												
		equalization, sampling												
		rate change, subband												



		coding and wavelet transform.								
19271C13 P	Modern Digital Communic ation Systems	 Develop the ability to understand the concepts of signal space analysis for coherent and noncoherent receivers. Conceptually appreciate different Equalization techniques Possess knowledge on different block codes and convolutional codes. Comprehend the 	~		\	~	•	~	•	



		generation of OFDM signals and the techniques of multiuser detection.									
19271L14 P	Communic ation Systems Lab - I	• Measure and analyze various transmission line parameters.• Design Microstrip patch antennas.• Implement the adaptive filtering algorithms• To generate and detect digital communication signals of various modulation techniquesusing MATLAB.	~				~	~			
19271CRS P	Research Led Seminar	a. Exposure to various research domains b. Acquaintance with languages of research c. Development of research aptitude				✓			✓		
				SEM-II							



	1		THANJA	VUR-	613403-	TAMIL	NADU	J	i	i	i	i	1	ı		i
192	71C21	Mobile	 Discuss cellular radio 													
	P	Communic	concepts.													
		ation	 Identify various 													
		Networks	propagation effects.													
			• To have knowledge of													
			the mobile system													
			specifications.													
			• Classify multiple													
			access techniques in													
			mobile communication.													
			Outline cellular mobile													
			communication													
			standards.													
			Analyze various													
			methodologies to													
			improve the cellular													
			capacity													
102	271C22	Advanced	Capability to design	~	~	•	<u> </u>		<u> </u>		•	~	~		~	
	P	Microwave	Microwave circuits.													
	Г		• To be able to analyze													
		Systems														
			microwave integrated				_					Į				
102	271L24	Communia	circuits.	~	~	•	•		√	√	~	~	~			
		Communic	• Apply knowledge to													
	P	ation	identify a suitable													
		Systems	architecture and													
		Lab - II	systematically design an													
			RF system.													
			• Comprehensively													
			record and report the													
			measured data, and													
			would be capable of													
			analyzing, interpreting													
			the experimentally													
			measured data and													
			produce the meaningful													
			conclusions.	~	~	•	· •		✓	√	~	~	~	/ ,	✓	



_	-	THANJA	VUR-	613403-	TAMIL	NADU		-		
		 Design and develop 								
		microstrip filters.								
19271TEC	Technical	Selecting a subject,								
WRP	Writing	narrowing the subject								
,,,,,,,	/Seminars	into a topic								
	/ Schimars	2. Stating an objective.								
		3. Collecting the								
		relevant bibliography								
		(atleast 15 journal								
		papers)								
		4. Preparing a working								
		outline.								
		5. Studying the papers								
		and understanding the								
		authors contributions								
		and critically analysing								
		each								
		paper.								
		6. Preparing a working								
		outline								
		7. Linking the papers								
		and preparing a draft of								
		the paper.								
		8. Preparing conclusions								
		based on the reading of								
		all the papers.					✓			



		9. Writing the Final Paper and giving final Presentation						
19271CR MP	Research Methodolo gy	a. Understanding research questions and tools b. Experience in scientific writings c. Practice in various aspects of scientific publications d. Inculcation of research ethics			~			
19271CB RP	Participatio n in Bounded Research	a. Hands on exposure to problem solving tools in contemporary researchb. Evolution of research intuitiveness and orientationc. Familiarity			∨			



 _		THANJA		613403-				_						
		with cutting edge												
		research trends												
				SEM	-III		<u> </u>		l					
19271C31	Communic	Given the network and												
P	ation	user requirements and												
	Protocol	the type of channel over												
	Engineerin	which the network has to												
	g	operate, the student												
	8	would be in a position to												
		apply his knowledge for												
		identifying a suitable												
		routing algorithm,												
		implementing it and												
		analyzing its												
		performance.												
		• The student would also												
		be able to design a new												
		algorithm or modify an												
		existing algorithm to												
		satisfy the evolving												
		demands in the network												
		and by the user											_	
10051535		applications.	~	✓	•	< <	✓	~	~	•	< v	✓		
19271C32	Advanced	Ability to understand												
P	Radiation	antenna concepts												
	Systems	• Ability to design												
		antenna for various												
		applications												
		Knowledge of modern												
		antenna design	~	✓	•	< <	✓	· ~	~	•	/ v	✓		



	1	THANJA	VUR-	613403-	TAMIL	NADU							
19271CSR	Design/Soc	Sensitization of social											
P	io technical	needs for innovation											
	Project	b. Team work towards											
		interdisciplinary											
		synchronous research											
		strategy											
		c. Development of											
		critical thinking and											
		synergistic research											
		approach.						~			~		
	II.				SEM-IV	7				I		L	
19271C41	Wireless	• Familiar with the latest											
P	Sensor	4G networks and LTE											
1	Networks	• Understand about the											
	TICEWOIKS	wireless IP architecture											
		and LTE network											
		architecture.											
		• Familiar with the											
		adaptive link layer and											
		network layer graphs											
		and protocol.											
		• Understand about the											
		mobility management											
		and cellular network.											
		Understand about the											
		wireless sensor network											
		architecture and its											
		concept.	~	~			√		· ~		-		
19271C42	Fiber Optic	Design and Analyze		•				<u>_</u>			Ť	Ť	
P	Networkin	Network Components											
1	g	Assess and Evaluate											
	8	optical networks											
		T	~	~	,	/ /	~	· •	~	~	~	/ -	



F	•	1	THANJA	VUR-	613403-	TAMIL	NADU	1 1	- -	Ī	i i		
	19271P44	Project	The student should be										
	P	Phase – I	able to: Apply										
			fundamental and										
			disciplinary concepts										
			and methods in ways										
			appropriate to their										
			principal area of study.•										
			Demonstrate skill and										
			knowledge of current										
			information and										
			technological tools and										
			techniques specific to										
			the professional field of										
			study.• Use effectively										
			oral, written and visual										
			communication.•										
			Identify, analyze, and										
			solve problems										
			creatively through										
			sustained critical										
			investigation.• Integrate										
			information from										
			multiple sources.•										
			Demonstrate an										
			awareness and										
			application of										
			appropriate personal,										
			societal, and										
			professional ethical										
			standards.• Practice the										
			skills, diligence, and										
			commitment to										
			excellence needed to										
			engage in lifelong										
			learning.						~				
					EL	ECTIV	E-I						



	Ì		VUR-	613403-	TAMIL	NADU	1 1		ı	i i				1
19271E2	High	• The student would be												
3AP	Speed	able to identify suitable												
	Switching	switch architectures for												
	Architectu	a specified networking												
	re	scenario and												
	16	demonstrate its blocking												
		performance.												
		• The student would be												
		in a position to apply his												
		knowledge of switching												
		technologies,												
		architectures and												
		buffering strategies for												
		designing high speed												
		communication												
		networks and analyse												
		their performance	✓	✓	•	✓	✓	✓	✓	✓	•	/ .	✓	
19271E2	DSP	Become Digital Signal												
3BP	Processor	Processor specialized												
	Architectu	engineer												
	re and	DSP based System												
	Programm	Developer												
	ing													
	IIIg		~	~	•	· •	~	~	~	~	•	/	~	



	ı		VUR-	613403-	TAMIL	NADU		i	i i	i	ı	1 1	 ī
19271E2	Digital	Model speech											
3CP	Speech	production system and											
	Processing	describe the											
		fundamentals of speech.											
		 Extract and compare 											
		different speech											
		parameters.											
		• Choose an appropriate											
		statistical speech model											
		for a given application.											
		• Design a speech											
		recognition system.											
		• Use different text											
		analysis and speech											
		synthesis techniques.											
							/				<u>.</u>		



		THANJA	VUR-	613403-	TAMIL	NADU						
19271E2	ASIC and	• Demonstrate VLSI										
3DP	FPGA	tool-flow and	·									
	Design	appreciate FPGA	·									
		architecture.•	·									
		Understand the issues	·									
		involved in ASIC	·									
		design, including	ļ									
		technology choice,	ļ									
		design management,	ļ									
		tool-flow, verification,	ļ									
		debug and test, as well	ļ									
		as the impact of	·									
		technology scaling	ļ									
		on ASIC design.•	ļ									
		Understand the	ļ									
		algorithms used for	ļ									
		ASIC construction•	ļ									
		Understand the basics	·									
		of System on Chip, On	·									
		chip communication	ļ									
		architectures like	ļ									
		AMBA,AXI and	ļ									
		utilizing Platform	ļ									
		based design.•	ļ									
		Appreciate high	ļ									
		performance										
		algorithms available										
		for ASICs		✓	•	✓	✓	✓	 ✓	,	<u> </u>	
				ELI	ECTIV	E-II						



	1	THANJA	VUR-	613403-	TAMIL	NADU							
19271E3	Internetwo	• Understand the state-	I										
3AP	rking and	of-art developments in	I										
	Multimedi	Internet technologies	I										
	a	and applications	I										
		• Understand the	I										
		development of next	I										
		generation Internet	I										
		• Appreciate the	I										
		principles used in	I										
		designing Internet	I										
		protocols for multimedia	I										
		applications, and so	I										
		understand why standard	I										
		protocols are designed	I										
		the way that they are	I										
		• Be able to solve	I										
		problems for the design	I										
		of multimedia	I										
		applications on Internet.	~	~	,	✓	✓	~	~	~	✓	✓	
19271E3	Digital	• Explain the	I										
3BP	Image	fundamentals digital	İ										
	Processing	image processing.	I										
		Describe image various	I										
		segmentation and feature	İ										
		extraction techniques for	1										
		image analysis.	1										
		• Discuss the concepts of	1										
		image registration and	1										
		fusion.	~	~	•	✓	✓	~	✓	~	· •	✓ ✓	



 -	i	THANJA	VUR-	613403-	TAMIL	NADU		1		1			
19271E3	LASER	Recognize and classify	1										
3CP	Communi	the structures of Optical	I										,
	cation	fiber and types.	I										,
		• Discuss the channel	I										
		impairments like losses	I										
		and dispersion.	I										
		 Analyze various 	1										
		coupling losses.	1										
		 Classify the Optical 	1										
		sources and detectors	I										
		and to discuss their	1										
		principle.	1										
		 Familiar with Design 	1										
		considerations of fiber	I										
		optic systems.	1										
		• To perform	1										
		characteristics of optical	I										
		fiber, sources and	I										
		detectors, design as well	I										
		as conduct experiments	I										
		in software and	I										
		hardware, analyze the	1										,
		results to provide valid	1										
		conclusions.	~	~	•	<u>✓</u>	√	· ~	~	,	<u>/</u>	· •	



1007150) (F) (G	THANJA	VUR-	513403-	TAMIL	NADU	ĺ	ı	ĺ	Ī	ı	1	1	Ī
19271E3	MEMS	Ability to understand												
3DP	and	the operation of micro												
	NEMS	devices, micro systems												
		and their applications												
		Ability to design the												
		micro devices, micro												
		systems using the												
		MEMS fabrication												
		process. Gain a												
		knowledge of basic												
		approaches for various												
		sensor design Gain a												
		knowledge of basic												
		approaches for various												
		actuator design												
		Develop experience on												
		micro/nano systems for												
		photonics . Gain the												
		technical knowledge												
		required for computer-												
		aided design,												
		fabrication, analysis and												
		characterization of												
		nano-structured												
		materials, micro- and												
		nano-scale devices.	~	~	~	✓	~	~	~	~	~			
				EEL	ECTIV	EIII								



i	1	THANJA	VUR-	613403-	TAMIL	NADU	i		i	1 1	i	i	i i
19271E4	Digital	 Apply basic principles 											
3AP	Communi	of digital											
	cation	communication											
	Receivers	techniques.											
	Receives	• Discuss on receivers											
		for AWGN & Fading											
		channel											
		Describe various											
		synchronization											
		techniques.											
		Design adaptive											
		equalization algorithms											
		to satisfy the evolving											
		demands in digital											
		communication.	~	~	,	/ /	~	~	· ~	~		/	
19271E4	Soft	Knowledge on											
3BP	Computin	concepts of soft											
021	g	computational											
	5	techniques.											
		• Able to apply soft											
		computational											
		techniques to solve											
		various problems.											
		Motivate to solve											
		research oriented											
		problems.											
		^	~	~	•	/ /	~	· •	· ~	~	~	/	
19271E4	Communi	Explain digital											
3CP	cation	signature standards											
	Network	• Discuss authentication											
	Security	• Explain security at											
	Security	different layers	~	~	,	/ /	~	· •	· ~	~	~	/	



		THANJA	VUR-6	13403-T	AMILNA	DU							
19271E4	Radar	 Know how a radar is 											
3DP	Signal	built and understand											
	Processing	the principles of											
		behavior.											
		Have a basic											
		understanding of how											
		radar signals propagate											
		through a medium, and											
		the mechanisms for											
		signal reflection from											
		the target and				_					_		
		unwanted reflections	✓		~	~	~		~	~	~	~	
		("clutter").						✓					
		 Understand the basic 											
		principles of signal											
		processing done in a											
		radar.											
		Be able to estimate											
		the performance of a											
		radar based on											
		parameters provided,											
		for example at what											
		distance the radar will											
		be able to detect targets											
		of a given size.											
		 Be able to assess what 											
		type of radar is suitable											
		for which task (choice of											
		waveforms, frequency											
		bands, etc).											
		Be able to use											
		numerical tools to		,									
		calculate radar	√	√	√_			.—	√	_√ _	√_	_•	
		performance and to	~	~	✓	~	√ _	_•	~	~	✓	~	



	T	THANJA	VUR-6	513403-	TAMILN	ADU			i	
		simulate the signal								
		processing in a radar.								
			l							
	1									
	J .	l I	•							
		<u> </u>		ELECT	VE IV SEN	/I-V				
19271E5	Software	Compare MAC and		ELECT	VE IV SEN	/I-V				
19271E5 1AP	Software Defined	Compare MAC and network layer design for		ELECT	VEIV SEN	/I-V				
		network layer design for software defined radio•		ELECT	VEIV SEN	/I-V				
	Defined	network layer design for software defined radio• Discuss cognitive radio		ELECT	VEIV SEM	/I-V				
	Defined	network layer design for software defined radio• Discuss cognitive radio for Internet of Things		ELECT	VEIV SEN	/I-V				
1AP	Defined Radio	network layer design for software defined radio• Discuss cognitive radio for Internet of Things and M2Mtechnologies		ELECT	VE IV SER	/I-V				
1AP 19271E5	Defined Radio	network layer design for software defined radio• Discuss cognitive radio for Internet of Things and M2Mtechnologies • Discuss satellite		ELECT	VE IV SER	/I-V				
1AP	Defined Radio Satellite Communi	network layer design for software defined radio• Discuss cognitive radio for Internet of Things and M2Mtechnologies • Discuss satellite navigation and global		ELECT	VE IV SEN	/I-V				
1AP 19271E5	Defined Radio	network layer design for software defined radio• Discuss cognitive radio for Internet of Things and M2Mtechnologies • Discuss satellite navigation and global positioning system		ELECT	VE IV SER	/I-V				
1AP 19271E5	Defined Radio Satellite Communi	network layer design for software defined radio• Discuss cognitive radio for Internet of Things and M2Mtechnologies • Discuss satellite navigation and global		ELECT	VE IV SER	/I-V				



19271E5	CDMA	Analyze MIMO	WUR-	613403-	TAMIL	NADU		1		I		1
1CP	Systems	system.										
ICI	Systems	• Discuss millimeter										
		wave communication.										
		Demonstrate software										
		defined radio and										
		cognitive radio.										
19271E5	Speech	• Identify the various	~		Ý	~		~	~	Ť	Ť 🕂	
		temporal, spectral and										
1DP	Processing	cepstral features										
	and											
	Synthesis	required for identifying										
		speech units – phoneme,										
		syllable and word										
		• Determine and apply										
		Mel-frequency cepstral										
		coefficients for										
		processing all types of										
		signals										
		• Justify the use of										
		formant and										
		concatenative										
		approaches to speech										
		synthesis										
		 Identify the apt 										
		approach of speech										
		synthesis depending on										
		the language to be										
		processed										
		• Determine the various										
		encoding techniques for										
		representing speech.	~	~	~	~	✓		-	· •		
					ELE	CTIVE V						
19271E5	Wavelets	• The students will be										
2AP	and Multi	able to apprehend the										
2111	Resolution	detailed knowledge										
	Resolution	about the Wavelet	~	~	-	_	✓	~	~	~	✓	



1		THANJA	VUR-	613403-	TAMIL	NADU	ı	1				ı		1
	Processing	transforms& its												
		applications.												
19271E5	High	 Diagnose problems and 												
2BP	performan	make minor repairs to												
	ce	computer networks												
		using appropriate												
	Communi	diagnostics software												
	cation	• Demonstrate how to												
	Networks													
		correctly maintain LAN												
		computer systems												
		• Maintain the network												
		by performing routine												
		maintenance tasks												
		Apply network												
		management tools	~	✓	•	/ /	✓		~	~	~	· ,	/	
19271E5	Advanced	• The student will be												
2CP	Microproc	able to work with												
	essors and	suitable microprocessor /												
	Microcont	microcontroller for a												
		specific real world												
	rollers	application.					-	-						
19271E5	Reconfigu	1. Identify the need	~		,	~			~		·			
	_													
2DP	rable .	for reconfigurable												
	computing	architectures												
		2. Discuss the												
		architecture of												
		FPGAs												
		3. Point out the												
		salient features of												
		different												
		reconfigurable												
		architectures												
		4. Build basic		-/	_		-/-	-			-			
		1. Dana baolo	~	•	•	•	•		~	~	·	,		



		modules using any HDL 5. Develop applications using any HDL and appropriate tools 6. Design and build an SoPC for a particular application		613403-									
				Е	LECTIVE	/I							
19271E5 3AP	Simulatio n of Communi cation Networks	• Apply Monte Carlo simulation• Discuss Lower Layer and Link Layer Wireless Modeling• Compare channel modeling and mobility modeling	\	~	·		~	· ~	~	·	· •		
19271E5 3BP	Medical Imaging	 Explain computer aided tomography Discuss ultrasonic systems Outline magnetic resonance imaging 	\	~	,	· •	•	· •	~	,	•	,	



19271E5	Mobile	Identify different	WOR-	613403-	TAME	ADO		ĺ					
3CP	ADHOC	issues in wireless ad hoc											
	networks	and sensor networks.											
		• To analyze protocols											
		developed for ad hoc											
		and sensor networks.											
		• To identify and address											
		the security threats in ad											
		hoc and sensor											
		networks.											
		 Establish a Sensor 											
		network environment for											
		different type of											
		applications.	~	~	~	~	✓	~	~	✓	✓		
19271E5	Ultra	radio technology that											
3DP	Wide	can use a very low											
	Band	energy level for short-											
	Communi	range, high-bandwidth											
	cation	communications over a											
		large portion of the											
		radio spectrum	~	~	~	~	✓		~	~	~	✓	
			·	-	SEM VI					·		· · · · · ·	



19271P61	Project	The student should be	613403-						
P	Phase – II	able to:							
-	11450 11	• Apply fundamental and							
		disciplinary concepts							
		and methods in ways							
		appropriate to their							
		principal area of study.							
		• Demonstrate skill and							
		knowledge of current							
		information and							
		technological tools and							
		techniques specific to							
		the professional field of							
		study.							
		• Use effectively oral, written and visual							
		communication.							
		• Identify, analyze, and							
		solve problems							
		creatively through							
		sustained critical							
		investigation.							
		• Integrate information							
		from multiple sources.							
		• Demonstrate an							
		awareness and							
		application of							
		appropriate personal,							
		societal, and							
		professional ethical							
		standards.							
		• Practice the skills,							
		diligence, and							
		commitment to							
		excellence needed to							
		engage in lifelong			✓		~		



		learning.						