Annexure-1

COURSE VS SOS & PSO'S MAPPING

Co urs e Co de	Course Title	s N O	CO NO	Description of the Course Outcome	a	b	c	đ	e	f	g	h		*	Course Type	Course Objective
		1	CO 1	Able to analyze embedded systems, analyze and program on chip peripherals for a single purpose controller			2						TOTAL TRANSPORT OF THE PROPERTY OF THE PROPERT	3	Modified	The objective of this course is to understand the basic concepts and develop a prototype for a real time embedded application
15 EM 310 3	EMBE DDED SYST EMS	2	CO 2	Able to interface and program different off chip peripherals and communic ation protocols used in embedded systems			2							3		
		3	CO 3	Able to understand , evaluate and select appropriate software architectur es			2							73		
		4	CO 4	Able to analyze and design			14	2						3		

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		5.	CO 5	systems using the features in real time operating systems. Able to develop a prototype for a real time embedded application using project based labs.		2			3	N. G. L. C J.	The abjective
15 EM 200 1	COMP UTER ORGA NIZA TION AND ARCH ITECT URE	6	CO 1	Understan d the functionali ty and design the CPU functional units - control unit, registers, the arithmetic and logic unit, the instruction execution unit, and the interconne ctions among these component s.		2			3	Modified	The objective of this course is to Understand the functionality and design the CPU and its functional units
		7	CO 2	Understan d, analyze and design main, cache and		2			, , , , , , , , , , , , , , , , , , ,		

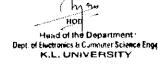
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				virtual memory organizatio ns.				U					
· Property of the state of the		8	CO 3	Understan d, analyze and design different types of I/O transfer techniques.		2			Addition to the state of the st		3		
		9	CO 4	Understan d the design issues of RISC and CISC CPUs and the design issues of pipeline architectur es.		2					3		
		1 0		Able to Design combinatio nal and sequential circuits using LOGISIM		2					3		
15 EM 220 2	PROC ESSO RS AND CONT ROLL ERS	# # # # # # # # # # # # # # # # # # #	CO 1	Able to understand and analyze the architectur al features of CISC type of General purpose processor Intel 8086 Microprocessor.			2				2	Added	The objective of this course is to understand and analyze the architectural features of various General purpose processors

	Able to understand and analyze the architectur al features of CISC type of microcontr oller - Intel 8051 Microcontr oller.		2	
3 1 1	Able to understand and analyze the architectur al features of RISC type of microcontr oller – PIC Microcontr oller.	2	2	
1 4	Able to program 8086 microproce ssor, 8051 and PIC microcontr ollers in assembly language using TASM, KEIL, MPLAB and Proteus tools.	2	2	
1 5	Able to Develop a real time application	2	2	

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		1 6	CO 1	using 8051 & PIC Microcontr ollers through project based labs. To Understan d the basics of Modulatio n and demodulati on techniques, Different types of filtering techniques and Radio Receiver characteris	2					2	Modified	The objective of this course is to Understand the basics of communication systems
15 EM 310 4	COM MUNI CATI ON SYST EMS	1 7	CO 2	tics. To Understan d the sampling techniques and signal to noise ratio of different pulse modulation schemes.	2	A CONTRACTOR OF THE CONTRACTOR				2		
		1 8	CO 3	To Design the Digital Modulatio n schemes, bandwidth estimation and clock recovery.	2		A PARTICIPATION OF THE PARTICI			2		



		9	4	Understan d the source coding techniques and estimate the error detection and correction of different block codes	in the state of th	THE PARTY OF THE P							
		2 0	CO 5	Able to design receivers used for Digital communic ation system using project based labs		2		and the state of t			2		
		2	CO 1	Able to create Static Web pages using basic HTML & apply CSS				2			3	Modified	The objective of this course is to create dynamic web pages using servlets & JSP
15 EM 310 5	INTER NET PROG RAM MING	2 2	CO 2	Able to apply javascript features for form validations and event handling				2			3		
		3	CO 3	Able to create databases using MYSQL and apply				2			3		

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			Territor ve della de	ce Estimation and Fault Testing.							
		2 8	CO 3	Able to Understan d Full- custom & Semi Custom design methodolo gies to design different PLD architectur es.		e e e e e e e e e e e e e e e e e e e			3		
		2 9	CO 4	Analyze different CPLD and FPGA architectur es	2				3		
		3 0		Able to design and simulate digital circuits using Verilog HDL through project based LAbs	2			a material and a second second second second second second second second second second second second second se	3		
15 EM 325 1	ADVA NCED EMBE DDED PROC ESSO R ARCH ITECT URES	3 1		Able to understand and analyze the 3 and 5 stage pipelines of ARM and able to program				2	1	Modified	The objective of this course is to understand and analyze the characteristics of ARM Processor

				the ARM												
				processor.												
				Able to												
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		3 6	CO 2	software models Analyze Validation and Verificatio n Technique s, design specificati on for embedded processor architectures				2	1			
		3 7	CO 3	Analyze the compilatio n techniques and tools for embedded processor architectur es				2		1		
	i	3 8		Understan d the standard design methods like COSYMA system and LYCOS systems.				2		1		
15 EM 325 2	SENS ORS AND SENSI NG PRINC IPLES	3 9	CO 1	Able to understand and analyze the sensor fundament als, principles and characteris				2	2		Added	The objective of this course is to understand and analyze the sensor fundamentals, principles and characteristics

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				tics							
				Understan d the application							
		4 0		of various physical				2	2		
				and Chemical sensors							
		4		Understan d the application of various				2	2		
		Ĺ		optical sensors							
		4	CO 4	Able to understand the different bio sensors				2	2		
				and its limitations.							
				Able to understand Transmissi on fundament						Added	The objective of this course is to understand
	WIRE	4		als and communic ations networks			·	2	2		fundamentals of wireless communication s networks
15 EM 415 8	LESS COM MUNI CATI ONS &			and application protocol architectur e							
	NETW ORKS			Able to understand and analyze							
		4 4		signal encoding techniques, spectrum				2	2		
				and different							

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			_	principles of cellular												Ì	
				wireless													
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				understand													
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				design and													
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		9	3	understand various MAC protocols for sensor networks	 The state of the s						
		5 0	CO 4	Able to understand and analyze various routing techniques of wsn and ad hoc networks				2	2		
		5		Able to understand fundament als of TinyOS and nesC in wsn environme nt.			2		1	Added	The objective of this course is to understand and develop energy efficient algorithms for wireless sensor networks
15 EM 416 0	SENS OR NETW ORKS PROG RAM MING	5 2	CO 2	Able to understand real world programming of wireless sensor network in different scenarios.			2				
		5	CO 3	Able to understand the performan ce analysis of poweraware algorithms			2				
		5 4	CO 4	Able to understand and			2		1		

				develop energy efficient algorithms for wireless sensor networks thru simulation or real time experiment s Must acquire theoretical			The state of the s				Modified	The objective of this course is to
15 EM 416 3	ENTE RPRIS E PROG RAM	5	CO 1	knowledge related to enterprise architectur es, developme nt platforms, Applicatio n servers, EJB component s, EJB query language.				2	2	1	^	develop real life Enterprise wide application based on EJB
	MING	5 6	CO 2	Must be hands-on developing EJB component s using NETBEA NS and deploy the component s using JBOSS Able to				2	2	1		
		5 7	3	understand				2	2	ı		



		5 8	CO 4	EJB QL & develop sample application s Must develop real life Enterprise wide application based on EJB and JBOSS and SQL server as DBMS engine					2	2	1		
	ECOL	5 9	CO 1	Understan d the importance of Environme ntal education and conservati on of natural resources.				1, 2	1			Modified	The objective of this course is to Understand the importance of Environmental education and conservation of natural resources.
15 GN 100 1	OGY AND ENVI RON MENT	6	CO 2	Understan d the importance of ecosystems and biodiversit y.				1,2	1				
		6	CO 3	Apply the environme ntal science knowledge on solid waste manageme nt, disaster			A second	1,3	1				

		6 2	CO 1	manageme nt and EIA process. Understan d and identify the basic aspiration of human beings			1 , , 2				Modified	The objective of this course is to Understand and identify the basic aspiration of human beings
15 GN 100 2	HUM AN VALU ES	6 3	CO 2	Envisage the roadmap to fulfill the basic aspiration of human beings.			1 , 2					
		6 4	Ŀ	Analyze the profession and his role in this existence.			1,2					
15 EN	RUDI MENT S OF COM MUNI	6 5		Remember speech sounds and apply stress and intonation rules to enhance pronunciati on skills.				, mark			Modified	The objective of this course is to Understand writing strategies and apply those by using the basic and advanced concepts of grammar.
110	CATI ON SKILL S	6	1	Understan d writing strategies and apply those by using the basic and advanced concepts of grammar.				1				

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		6	CO 3	Understan d the types of texts and tone of the author.					1				
		6	CO 4	Understan d the importance of interperson al skills					1				
		6	CO 1	Understand the method of identifying the meaning of words from the context and form sentences using words.					2			Modified	The objective of this course is to Understand and analyze reading techniques and Writing Strategies
15 EN 120 2	INTER PERS ONAL COM MUNI CATI ON SKILL S	7	CO 2	Understan d and analyze seven types of reading techniques and improve reading speed.	A second			-	2				
		7	CO 3	Understan d and apply writing strategies for office/ formal communic ation.					2	And the state of t			
		7 2	CO 4	Understan d and			1						

				analyze different cultures and the importance of empathy in cross- cultural communic ation. Understan d the concept of					Modified	The objective of this course is to
		7		Group Discussion and listen and speak effectively during the discussion.			1	7,4 (1)		Understand the concept of Group Discussion and application of presentation skills.
15 EN 210 3	PROF ESSIO NAL COM MUNI CATI ON SKILL S	7 4	CO 2	Understan d and improve learners' competenc y in competitiv e English and apply the principles of grammar in real life contexts.			2			
		7 5	CO 3	Understan d skimming & scanning, and apply the types of reasoning in comprehen			3			

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				informatio							
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		7 6	CO ·4	Understan d the mechanics and application of presentatio n skills. Analyze			1			Modified	The objective
		7 7		one's own strength as a speaker/ Communic ator and uise discretion while listening.				2			of this course is to analyze various concepts of reading ,writing strategies in professional communication skills
15 EN 220 4	EMPL OYAB ILITY SKILL S	7 8	CO 2	Apply and analyze various concepts of writing strategies in profession al communic ation skills like, reports, resume and minutes of the meeting.				n			
		7 9		Understan d the organizatio n of the passage and also analyze the				2			

				tone, attitude and style of the author.					
		8 0	CO 4	Acquire knowledge of and apply people skills in various social organizatio nal and corporate ambiences.		2			
1.5	VERB AL AND	8 1	CO 1	Understan d the method of identifying synonyms and antonyms and analyze the meaning of a word from the context.			1	Modified	The objective of this course is to Analyze issues and arguments in the process of critical reasoning
15 EN 310 5	QUAN TITAT IVE REAS ONIN G	8 2	CO 2	Analyze issues and arguments in the process of critical reasoning and apply grammar rules to correct sentences.			1		
		8 3	CO 3	Apply the Concepts of basic Algebra			1		

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				and their importance while solving the problems						April, M. Company		
		8 4		Apply the short-cut methods on the concepts of different models in Calendars, Clocks, Blood relations and various types of arrangeme nts.	A PARA CALLED TO THE CALLED TO				11.			
15 MT 200 5	PROB ABILI TY AND STOC HASTI C	8 5	1	Construct the probability distributio n of a random variable, based on a real-world situation, and use it to compute expectatio n and variance			2		a samula sa sa sa sa sa sa sa sa sa sa sa sa sa		Modified	The objective of this course is to understand the basics of probability methods
	MODE LS	8	2	Predict the relationshi p between two variables and construct the linear and non-linear			2					

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	To appropriate ly choose, define and / or to			
1 0 2	derive probabibility distributions such as 2 the Binomial, Poisson and normal etc. to model and solve engineering problems	2		
t to the state of	To understand how regression analysis canbe used to develop an equation that estimate how two			
	variables are related and how the analysis of variance procedure can be used to determine it means of two papulation are equal	2		
1 4To	have 2	2	Dept. o	Hold of the Department : Electronics & Comoner Science English. K.L. UNIVERSITY

		0 3 1 0 4		through knowledge on linear and non linear programmi ng									
15 ME 100 1	MECH ANIC S	1 0 5	CO 1	Apply the concept of forces, governing static equations and analyze planer system of forces. Apply different analytical methods on spatial system of forces and analyzing them	2						Modif	ïed	The objective of this course is to understand the basics concepts of mechanics
		1 0 6	CO 2	Understan ding the concepts of planar and non-planar system of parallel forces and analyzing them. estimate moment of inertia of lamina and material bodies	2								

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		1 0 7	CO 3	Analyzing the rigid bodies under translation and rotation with and without considerin g forces.		***************************************	And the state of t	1					
		1 0 8	CO 4	Understan ding the engineerin g mechanics physical systems prepare and demonstrat e the models with the help of mechanics concepts to solve the engineerin g problems		The state of the s	The state of the s	THE					
		1 0 9	CO 5	Apply the concepts of mechanics and carryout different experiment s and analyze the results	2								
15 PH 100 1	ENGI NEERI NG MATE RIALS	1 1 0	CO 1	Understan d the concepts of crystallogr aphy and		1						Modified	The objective of this course is to Understand the concepts of basic

	crystalline imperfecti ons in order to determine crystal structures and to identify defects in crystals						engineering materials
1 CO 2	Understan d electrical and optical properties of materials and apply them to know various mechanism s involved in electrical, electronic, optical, optoelectro nic devices.	111					
1 CO 3	Understan d mechanical and thermal properties of	1					

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		1 1 3 3	CO 4	for specific engineerin g application s Understan d magnetic properties of materials and apply them to know various mechanism s involved in magnetic memory devices and	TOTAL TOTAL		THE PROPERTY OF THE PROPERTY O	The state of the s		THE STATE OF THE S	TOTAL TOTAL		TOTAL CONTRACTOR OF THE PARTY O		
15 CY	ENGI NEERI NG CHEM	1 1 4	CO -1	transforme rs. Predict potential complicati ons from combining various chemicals or metals in an engineerin g setting.		THE PARTY OF THE P	TOTAL TOTAL	· · · · · · · · · · · · · · · · · · ·	TOTAL AND THE PROPERTY OF THE			7777	The state of the s	Modified	The objective of this course is to Understand the basic concepts of engineering chemistry
100	ISTRY	1 1 5	CO -2	Discuss fundament al aspects of electroche mistry and materials science relevant to corrosion phenomen a.	1		THE RESERVE THE PROPERTY OF TH		THE PARTY OF THE P	The street of th	The state of the s		- THE STATE OF THE		

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		1 1 6	CO -3	water quality and select appropriate purificatio n technique for intended problem.		The second secon											
		1 1 7	CO -4	Apply phase rule, polymers, conducting polymers and nano chemistry to engineerin g processes.				1			The state of the s				A STATE OF THE STA		
		1 1 8	CO -5	An ability to analyze & generate experiment al skills.				1									
		1 1 9	CO -1	Acquire the Knowledg e of basic biology					***************************************			1		2		Added	The objective of this course is to Acquire the Knowledge of basic biology
15 BT 100	BIOL OGY FOR ENGI NEER S	1 2 0	CO -2	Acquire the Knowledg e of Human Biological Systems								1		2			
		1 2 1		Acquire Knowledg e on Microorga nisms and Biosensors								1		2			
15	FIELD	1	1	Understan	1			<u> </u>		<u></u>		<u> </u>			1	Modified	The objective

EE 120 1	S & NETW ORKS	2 2		d the circuit elements, kirchhoff's law and theorems to solve the networks					A A A A A A A A A A A A A A A A A A A	The second secon		of this course is to Understand the basics of circuit elements
		1 2 3	2	Apply the procedure to determine form factor and peak factor to different symmetric al & unsymmetrical waves.	2			The second secon				
		1 2 4	3	Apply vector algebra to field fundament als to analyze electric and magnetic field distributio ns								
		1 2 5	4	Apply Maxwell's equations for static and time varying fields								
		1 2 6	5	Test and Analyze the concepts learned in	2	A STATE OF THE STA						

		1 2 7	CO -1	fields and networks by conducting experiment s or by any simulation softwares Understand the basic principles of engineering design				1		Added	The objective of this course is to Understand the basic principles of engineering design
	INTR ODUC	1 2 8	CO -2	Understan d the aspects of critical thinking and problem solving in engineerin g				2			
15 GN 100	TION TO ENGI NEERI NG	1 2 9	СО	Apply to knowledge of critical thinking to frame real-world problems and provide basic solution approach to such problems from engineerin g perspective Understan d and			3	2			
			-4	analyze the			3				

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1	1	1	I	possible	ı	l	l	1	1	ı	1	1	1	l	1	İ
				career												
				options in Engineerin												
				g and												
				develop												
				strategic plan,												
				career			İ			ĺ						
				targets and												
				mechanism to achieve												
				the same.												
				Illustrate											Modified	The objective
				how												of this course is
		1		problems are solved												to Solve real
		1 3 1	CO -1	using	2											world problems
		1		computers												using C
				and programmi												programming
		L		ng.												
				Interpret &												
				Illustrate user												
	С	1		defined C												
	PROG	1 3 2	CO	functions	2											
15	RAM MING	2	-2	and different										İ		
CS	&			operations												
100	DATA			on list of									İ			
1	STRU			data.	-		_	_					_	_		
	CTUR ES			Implement Linear												
		1	СО	Data												
		3	-3	Structures			-	2								
		3		and compare												
				them.			١									
		1	СО	Implement								1	7			
		3	-4	Binary Trees.				2								
		1		Apply the	+	-	\dashv	1	-	1		\dashv	\dashv	\dashv		
		3	CO	knowledge										2		
		5	-5	obtained by the												
i	i			oy uie	I	 	L	\perp								

		1 3 6	CO -1	course to solve real world problems. Draft orthograph ic Projections , Isometric views , projection of planes, Manually and prepare Models in workshop by using drawings. Draftorhto				Modified	The objective of this course is to Use AutoCAD and prepare Models in workshop
15 ME 100 2	ENGI NEERI NG GRAP HICS	1 3 7	-2	graphic projections , isometric views , projection of planes using Autocad. Draft projection of solids Manually and by using AutoCAD and prepare Models in workshop by using different workshop trades Draft				2	
		3 8	CO -3	Developm ent of				2	

										'			
		1 3 9	CO -4	surfaces of solid and sections of solid Manually Practicing house wiring through Auto Cad Develop 2D & 3D							2		
		1 4 0	CO -5	component s using Auto Cad Software		2							
15 GN	MEAS	1 4 1	CO -1	Understan d and apply the fundament als of a measureme nt system, characteris tics, and metrology using simulation and experiment ation tools.	2	2						Modified	The objective of this course is to Understand fundamentals of a measurement system and experimentatio n tools.
100 3	UREM ENTS	1 4 2	CO -2	Understan d various electrical & computer parameters , and apply different measuring techniques on various electrical parameters using simulation	2	2							

and experiment ation tools. Understan d electronid & electrophysiologi cal parameters , and apply 1 measuring CO 2 -3 techniques 3 on electronic parameters using simulation and experiment 2 ation tools. Understan and d apply different measuring techniques civil on CO 2 and -4 4 mechanical parameters using simulation and experiment 2 ation tools. Apply theoretical the CO condepts to -5 measure different parameters2 Modified The objective Understan 15 **OBJE** 1 of this course is CS 200 CTd Basic 2 4 CO Concepts **ORIE** Understand of OOP, 6 1 2 **NTED** HOL

	PROG RAM MING			introductio n to classes and objects through Java Language and apply. Understan d the		Annual de la constant						Basic Concepts of OOP and develop real world applications using Java
		1 4 7	CO 2	concepts of constructor s, Overloadin g, parameter passing, access control, Inheritance and apply.			2			William Control of the Control of th		
		1 4 8	CO 3	Understan d Packages, Interfaces, and Exception Handling and apply.			2		The state of the s			
		1 4 9	CO 4	Understan d I/O Streams & apply and understand Basic Concepts of Multi - Threading	- Winnership					3		
		1 5 0	CO 5	Apply OOP concepts for developing an application						3		
15 EC	SIGN AL	1 5	CO 1	Demonstra te signals	2						Added	The objective of this course is

200	ANAL YSIS	1		and their Spectra	to Analyze various types of Signals
		1 5 2	CO 2	Analyze discrete time systems 2	
		1 5 3	CO 3	Design filters to cater signal analysis needs 2	
		1 5 4	CO 4	Analyze non stationary signals in time	
		1 5 5	CO 5	Analyze non stationary signals in frequency domains	
15 CS 200 3	DISCR ETE MATH EMAT ICS	1 5 6	CO 1	Understan d sets, relations, functions and discrete structures, Count discrete event occurrence s 2 Apply Propositio	The objective of this course is to Understand the basic concepts of discrete mathematics
		1 3		nal logic and First 2 order logic to solve problems	
		1 4 8	CO 3	Formulate and solve recurrence 2	

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1																
		1 5 9	CO 4	relations, apply algebraic structures and lattices. To identify the basic properties of graphs and trees and model simple application		ATTERNET CONTRACTOR OF THE PROPERTY OF THE PRO		A CONTRACTOR OF THE PARTY OF TH			And the second s			2		
		_	<u> </u>	S	_ _	4	-	_		_	4	_	_	<u> </u>		
		1 6 0	CO 5	Relate practical examples to the appropriate set, function model and interpret the associated operations and terminolog y in context			**************************************		The second secon				White the second	2		
15 CS 220	OPER ATIN G	1 6 1	CO 1	Develop algorithms for subsystem component s		2									Modified	The objective of this course is to Understand the basic concepts related to operating systems
6	SYST EMS	1 6 2	CO 2	Understan d process and memory virtualizati on		2										5,5001115

		1 6 3 1 6 4	CO 3 CO 4	understand persistence concepts Design and solve synchroniz ation problems, and multi threading libraries	2	2				3		
		1 6 5	CO 5	Develop application programs using UNIX system calls						3		
		1 6 6		Understan d OSI and TCP/IP models						2	Modified	The objective of this course is to Understand the basics of computer networks
15	СОМР	1 6 7		Analyze MAC layer protocols and LAN technologi es			2					
CS 220 8	UTER NETW ORKS	1 6 8		Implement routing and congestion control algorithms			2			2		
		1 6	CO 4	Understan d application layer concepts			2					
		1 7	CO 5	Design application s using internet protocols						2		

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		1 7 1	CO 1	Understan d various signals and model physical process using them.	N. A. C. C. C. C. C. C. C. C. C. C. C. C. C.	2	The second secon		Modified	The objective of this course is to Understand various signals and model physical process using them.
15 EC	SIGN AL 220 ROC 6 SSIN	1 7 2	CO 2	Acquaint with various a transforma tion methods and their potential for applicabilit y in various signal analysis conditions		2				
	SSIN G	1. 7 3	CO 3	Demonstra te sampling and its potential application s in communic ations, discrete signal acquisition etc.,.		2		The state of the s		
		1 7 4	CO 4	Evaluate discrete system behavior and its response to facilitate system design.		2				

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	THE PARTY OF THE P	1 7 5	CO 5	Design a low pass discrete time system to meet noise elimination like application s			2			3		
		1 7 6	CO 6	Analyze non stationary signals and analyze them in both time frequency domains.			2			3		
15	LINU X	1 7 7	CO 1	Describe and understand the fundament al LINUX operating system and utilities	2		2				Added	The objective of this course is to understand the fundamental LINUX operating system and utilities
EM 30 B1	PROG RAM MING	1 7 8		apply shell scripts in order to perform basic shell Programming and analyze the Linux file system						2		

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Annexure-1

COURSE VS SOS & PSO'S MAPPING

Co urs e Co de	Course Title	s No	CO NO	Description of the Course Outcome	a	b		d	en ladinam George	f	QQ	 100 (100 (100 (100 (100 (100 (100 (100		Course Type	Course Objective
		1	CO 1	Able to analyze embedded systems, analyze and program on chip peripherals for a single purpose controller			2						3	Modified	The objective of this course is to understand the basic concepts and develop a prototype for a real time embedded application
15 EM 310 3	EMBE DDED SYST EMS	2	CO 2	Able to interface and program different off chip peripherals and communic ation protocols used in embedded systems			2						3)		
		3	CO 3	Able to understand , evaluate and select appropriate software architectur es				2						3	
		4	CO 4	Able to analyze and design				2						3	

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embedded			1	

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		5	CO 5	systems using the features in real time operating systems. Able to develop a prototype for a real time embedded application		2			3		•
				using project based labs.						12 10	
15 EM 200 1	COMP UTER ORGA NIZA TION AND ARCH ITECT URE	6	CO 1	Understan d the functionali ty and design the CPU functional units - control unit, registers, the arithmetic and logic unit, the instruction execution unit, and the interconne ctions among these component s.		2			3	Modified	The objective of this course is to Understand the functionality and design the CPU and its functional units
		7	CO 2	Understan d, analyze and design main, cache and		2				•	

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			_	_												
				virtual memory												
				organizatio												
		_	<u> </u>	ns. Understan	-	+	-	_	_	<u> </u>				_		
				d, analyze												
				and design												
		8	CO 3	different types of			2							3		
				I/O			İ									
				transfer												
				techniques. Understan	$\vdash \vdash$	+	╂	╁				H	_			
				d the												
				design issues of												
				RISC and												
		9	CO 4	CISC CPUs and		1	2							3		
			4	the design												
				issues of												
				pipeline architectur												
				es.												
				Able to Design												
				combinatio												
		1	CO	nal and		2	2							3		
		0	5	sequential circuits												
				using									ĺ	ĺ		
				LOGISIM Able to		-	<u> </u>			4	_			_	A .7 .71	T1 1
				understand											Added	The objective of this course is
				and	ĺ											to
	PROC			analyze the architectur												understand and analyze the
15	ESSO RS			al features							Ì					architectural
EM 220	AND	1	CO 1	of CISC type of				2						2		features of
2	CONT ROLL		1	General												various General
	ERS			purpose												purpose
				processor Intel 8086												processors
				Microproc												
				essor,		Ļ										

1 2		Able to understand and analyze the architectur al features of CISC type of microcontr oller - Intel 8051 Microcontr oller.	2		2	
	1 CO 3 3	Able to understand and analyze the architectur al features of RISC type of microcontr oller – PIC Microcontr oller.	2		2	
	1 CO 4 4	Able to program 8086 microproce ssor, 8051 and PIC microcontr ollers in assembly language using TASM, KEIL, MPLAB and Proteus tools.	2		2	
	1 CO 5 5	Able to Develop a real time application	2		2	

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				8051 &											
				PIC Microcontr											
				ollers											
				through											
				project		ĺ								<u> </u>	
		-		based labs. To	++	\dashv		+	-	├-	_		_	NA 1'C' 1	721
				Understan										Modified	The objective of this course is
				d the											to
				basics of											Understand the
				Modulatio n and											basics of
				demodulati											communication systems
		1	co	on											Systems
		6		techniques, Different		2	Ì						2	2	THE PARTY OF THE P
				types of											
				filtering											
				techniques											
				and Radio Receiver											
				characteris											
	COM			tics.											
15 EM	MUNI CATI			To											
310	ON			Understan d the		İ									
4	SYST			sampling											
	EMS		GO.	techniques											
		1 7	CO 2	and signal to noise		2							2		
			<u>س</u>	ratio of					i	İ					
				different							Ì				
				pulse											
				modulation schemes.							İ				
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	:			the Digital							ı				
			СО	Modulatio n schemes,											
	;	8	3	bandwidth	:	2							2		
				estimation											
				and clock						1					
		1	CO	recovery.	ا ا	2	-	\dashv	_	+	_	-	12		
i		- 1	00	10		_		Ш			\perp		12		

		9	4	Understan d the source coding techniques and estimate the error detection and correction of different block codes								
		2 0	CO 5	Able to design receivers used for Digital communic ation system using project based labs	2					2		
		2	CO 1	Able to create Static Web pages using basic HTML & apply CSS			2	,		3	Modified	The objective of this course is to create dynamic web pages using servlets & JSP
15 EM 310 5	INTER NET PROG RAM MING	2 2	CO 2	Able to apply javascript features for form validations and event handling			2			7		
			2 CO 3 3	Able to create databases using MYSQL and apply			2				3	

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		2 4	2 CO	JDBC concepts to connect to a database. Able to create dynamic web pages using servlets & JSP			2		1	3		
		2 5	CO 5	Must be able to design WEB site considerin g the user interface, navigation and interaction with database using project based LABS			2			3		
15 EM 320 6	VLSI DESIG N	2 6	CO 1	To understand the VLSI fabrication process and to be able to interact with integrated circuit process engineers	2					3	Modified	The objective of this course is to Understand design methodologies to design different PLD architectures
		2 7	CO 2	Able to analyze Circuit Characters ation ,Performan	2					3		

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		2 8	CO 3	ce Estimation and Fault Testing. Able to Understan d Full- custom & Semi Custom design methodolo gies to design different PLD architectur es.	2				3		
		2	CO 4	Analyze different CPLD and FPGA architectur es	2				3		
		3 0		Able to design and simulate digital circuits using Verilog HDL through project based LAbs	2				3		
15 EM 325 1	ADVA NCED EMBE DDED PROC ESSO R ARCH ITECT URES	3 1		Able to understand and analyze the 3 and 5 stage pipelines of ARM and able to program				2	1	Modified	The objective of this course is to understand and analyze the characteristics of ARM Processor

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	_	_														
				the ARM												
				processor.												
				Able to	П				T							
		ĺ		program												
		2	СО	the on chip												
		3 2	2	& off chip							2			1		
		2	4	peripherals	Ш					B						
				of ARM 7				ı								
				controller.			-									
				Understan	П											
				d and												
İ				analyze the				ł	Ì							
				AMBA					1			li				
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		3	3	architectur							2			1		
		'		e and												
				different												
				advanced												
				ARM				İ								
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				analyze the												
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		3		SOC						İ	2			1		
		4	4	application												
l				s using				1								
				ARM												
				cores. Understan	┝	_		-	+	-		_		\dashv	A.π 1.*C! 1	73 1
				d and									l	ı	Modified	The objective
				Analyze												of this course is
				the co-												to Understand and
				design				İ								
				models												Analyze the
	HARD			like FSM,												tools required for designing
15	WARE			DFG and					1							the hardware
EM	SOFT	3	CO	target												and software
415	WARE	3 5	1	architectur								2		1		models
7	CO-			es and use										ļ		11104015
	DESIG			the tools												
	N			required										l		
				for												·
				designing												
				the												
				hardware												
				and		- 1										
	<u> </u>			and					<u> </u>							

		3 6	CO 2	software models Analyze Validation and Verificatio n Technique s, design specificati on for embedded			2		1		
				Analyze the compilatio							
		3 7	CO 3	techniques and tools for embedded processor architectur es				2	1		
		3	CO 4	Understan d the standard design methods like COSYMA system and LYCOS systems.				2	1		
15 EM 325 2	SENS ORS AND SENSI NG PRINC IPLES	3 9	CO 1	Able to understand and analyze the sensor fundament als, principles and characteris				2	2	Added	The objective of this course is to understand and analyze the sensor fundamentals, principles and characteristics

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				tics									1		
				Understan d the application											
		4 0	CO 2	of various								2 2	2		
		١٧	2	physical and											
				Chemical											
ļ		-		sensors Understan	+-			-	<u></u>	- -	-	_	-		
				d the											
		4		application							2	2 2			
		1)	of various optical											
				sensors				_							
				Able to understand											
		4	СО	the											
		2	4	different bio sensors							2	2 2			
				and its											
				limitations. Able to			-	_			_	ļ.,	_	Added	
				understand										Augeg	The objective of this course is
				Transmissi on											to
				fundament											understand fundamentals
		4	СО	als and communic											of wireless
	WIRE	3	1	ations							2	2			communication s networks
	LESS			networks and											
15	COM MUNI			application											
EM 415	CATI			protocol architectur											
8	ONS &			e											
	NETW			Able to understand											
	ORKS			and											
		4	CO	analyze											
		4	CO 2	signal encoding							2	2			
				techniques,											
				spectrum and											
				different											

1	ı	į	1	wireless	1	1	1		ı	ı		ì	1	ı	İ	1
				networks	1											
		-		Able to	+-	+	+	\Box	\dashv	+	╁	╁	T	╁		
				understand and												1
		4	CO 3	analyze various								2 2	,			
			,	principles of cellular												
				wireless networks												
				Able to understand wireless												
				protocols and												
		4		application s of								2 2	2			
		O.	7	IEEE802.1												
				architectur e and												
				standards												
									·						Added	The objective of this course is
	ļ	4		Able to understand								2		2		to understand wireless sensor
		7	1	Cellular and adhoc networks									,,,,,			networks data
				in detail				_		_	_		1			S
15	WIRE LESS			Able to understand wireless												
EM 415	SENS OR			sensor networks												
9	NETW ORKS	4	l CO	data communic												
		8		ations to								2		2		
				networks which												
				involves its design and												
				principles					<u> </u>				_			
		4	4 CO	Able to								2	\perp	2		

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		3.	9 3 5 CO 4	understand various MAC protocols for sensor networks Able to understand and analyze various routing techniques of wsn and ad hoo networks			2		2	
		5	CO 1	Able to understand fundament als of TinyOS and nesC in wsn environme nt.			 2		Added	The objective of this course is to understand and develop energy efficient algorithms for wireless sensor networks
15 EM 416 0	SENS OR NETW ORKS PROG RAM MING	5 2	CO 2	Able to understand real world programming of wireless sensor network in different scenarios.			2	14		
		5 3	CO 3	Able to understand the performan ce analysis of poweraware algorithms			2	1		
		5 4	CO 4	Able to understand and			2	1		

. 1	ı	ı	dayalan	1			ı	ı		ı	ı	I	1
			develop energy efficient algorithms for wireless sensor networks thru simulation or real time										
			experiment s										
15 EM 416 3	ENTE RPRIS E PROG RAM	5 CO 5 1	Must acquire theoretical knowledge related to enterprise architectur es, developme nt platforms, Applicatio n servers, EJB component s, EJB query language.						2	2	1	Modified	The objective of this course is to develop real life Enterprise wide application based on EJB
	MING	5 CO 6 2	Must be hands-on developing EJB component						2	2	1		
		5 CO 7 3	Able to understand						2	2	1		

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		5 8	CO 4	EJB QL & develop sample application s Must develop real life Enterprise wide application based on EJB and JBOSS and SQL server as DBMS					2	2	1		
	EGOL	5 9	CO 1	engine Understan d the importance of Environme ntal education and conservati on of natural resources.			The state of the s	1,,2	1			Modified	The objective of this course is to Understand the importance of Environmental education and conservation of natural resources.
15 GN 100 1	ECOL OGY AND ENVI RON MENT	6		Understan d the importance of ecosystems and biodiversit y.				1, 2	1				
		6	CO 3	Apply the environme ntal science knowledge on solid waste manageme nt, disaster				1,3	1				

		6 2	CO 1	manageme nt and EIA process. Understan d and identify the basic aspiration of human beings		1,2			Modified	The objective of this course is to Understand and identify the basic aspiration of human beings
15 GN 100 2	HUM AN VALU ES	6 3	CO 2	Envisage the roadmap to fulfill the basic aspiration of human beings.		1,2				·
		6 4		Analyze the profession and his role in this existence.		1,,2				
15 EN	RUDI MENT S OF COM MUNI	6 5		Remember speech sounds and apply stress and intonation rules to enhance pronunciati on skills.			***************************************		Modified	The objective of this course is to Understand writing strategies and apply those by using the basic and advanced concepts of grammar.
110	CATI ON SKILL S	66		Understan d writing strategies and apply those by using the basic and advanced concepts of grammar.			1			

		7	6 CO	Understan d the types of texts and tone of the author.					1					
		6 8		Understan d the importance of interperson al skills					-					
		6 9	CO 1	Understand the method of identifying the meaning of words from the context and form sentences using words.		The state of the s	100 mm		2			TOTAL STATE OF THE	Modified	The objective of this course is to Understand and analyze reading techniques and Writing Strategies
15 EN 120 2	INTER PERS ONAL COM MUNI CATI ON SKILL S	7 0	CO 2	Understan d and analyze seven types of reading techniques and improve reading speed.					2	The state of the s				
		7	CO 3	Understan d and apply writing strategies for office/formal communic ation.					2					
		7 2	CO 4	Understan d and				1						

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				analyze different cultures and the importance of empathy in cross- cultural communic ation.			,				
		7	CO 1	Understan d the concept of Group Discussion and listen and speak effectively during the discussion.						Modified	The objective of this course is to Understand the concept of Group Discussion and application of presentation skills.
15 EN 210 3	PROF ESSIO NAL COM MUNI CATI ON SKILL S	7 4	CO 2	Understan d and improve learners' competenc y in competitiv e English and apply the principles of grammar in real life contexts.				2			
		7 5		Understan d skimming & scanning, and apply the types of reasoning in comprehen				3			

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	1	ı									
				ding the							
				informatio n.							
		7		Understan d the mechanics and application of presentation n skills.			1				
		7 7	CO 1	Analyze one's own strength as a speaker/ Communic ator and use discretion while listening.				2	indigram, and the state of the	Modified	The objective of this course is to analyze various concepts of reading ,writing strategies in professional communication skills
15 EN 220 4	EMPL OYAB ILITY SKILL S	7 8	CO 2	Apply and analyze various concepts of writing strategies in profession al communic ation skills like, reports, resume and minutes of the meeting.		- CALLEY AND THE STATE OF THE S		3			
		7 9	CO 3	Understan d the organizatio n of the passage and also analyze the				2			

				tone, attitude and style of the author. Acquire								
		8 0		knowledge of and apply people skills in various social organizatio nal and corporate ambiences.			2	- Annahara				
1.5	VERB AL AND	8 1		Understan d the method of identifying synonyms and antonyms and analyze the meaning of a word from the context.					The state of the s		Modified	The objective of this course is to Analyze issues and arguments in the process of critical reasoning
15 EN 310 5	QUAN TITAT IVE REAS ONIN G	8 2		Analyze issues and arguments in the process of critical reasoning and apply grammar rules to correct sentences.						1		
		8	3 CO 3 3	Apply the Concepts of basic Algebra						1		



		8 4		and their importance while solving the problems Apply the short-cut methods on the concepts of different models in Calendars, Clocks, Blood relations and various types of arrangements.				Tank		
15 MT 200 5	PROB ABILI TY AND STOC HASTI C	8 5	1	Construct the probability distributio n of a random variable, based on a real-world situation, and use it to compute expectatio n and variance		2			Modified	The objective of this course is to understand the basics of probability methods
	MODE LS	8	2	Predict the relationshi p between two variables and construct the linear and non-linear		2				

regression lines for the given

		the given	
		data	
		Model the	
		Single and	
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		models	
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		and infinite	
		capacity.	
		Verify and	
	8	validate	
	8 4	the	
	0	simulation	
		models.	
		Verify the	
		solution of	
	8 .	problems	
	$\begin{vmatrix} 8 \\ 9 \end{vmatrix}$ 5	through	
		MATLAB/	
		MINITAB.	
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		physical of this course i	
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		relations the concepts of	
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MAIK		method for	
IX		solving	
ALGE		and	
BRA		interpretin	
		g the	
		results.	
	2	Formulate	
1	9 C	9 1	
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		laws and	
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		relations mathemati cally in the form of second/hig her order differential equations and identify a	***************************************	The state of the s	And the second s		***************************************			
		method for solving and interpretin g the results.								
9 2	CO -3	Provide solutions for Fourier series of periodic/no n-periodic phenomen on in models involving differential equations.		1		The state of the s				
9	CO -4	Apply numeric solution methods for a system of linear algebraic equations and application oriented matrix eigenvalue problems.		1						
9 4	CO -5	Verify the solution of problems					1			

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			-							1
	1		through							
			MATLAB.		_ _ _		4	1	B. # . # . 0° . 1	The chiestine
		9 CO 5 1	Determine the maximum and minimum values for the function involving two variables			2			Modified	The objective of this course is to Understand the concepts of multi variable calculus
	MULT	9 CO 6 2	Calculate the length of the arc, area, volume of the surface of a solid revolution			2				
15 MT 120 3	I VARI ATE CALC ULUS	9 CO 7 3	Model the given phenomen a as a partial differential equations of first and second orders						2	
		9 CO 8 4	Solve the partial differential equations by analytical and finite difference methods			2				
		9 CO 9 5	Verify the solution of problems through MATLAB.						2	

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1 0 2 1	appropriate ly choose, define and / or to derive probabibili ty distributio ns such as 2 the Binomial, Poisson and normal etc. to model and solve engineerin	2			
1 0 3 2	g problems To understand how regression analysis canbe used to develop an equation that estimate how two variables are related and how the analysis of variance procedure can be used to determine it means of	2			
1 4To	two papulation are equal	2		(m	
			Dept	Herd of he two sics & K.L. UN	out : Switch Engli

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		0 3 1 0 4	through knowledge on linear and non linear programmi ng						
15 ME 100	MECH ANIC S	1 CO 5 1	Apply the concept of forces, governing static equations and analyze planer system of forces. Apply different analytical methods on spatial system of forces and analyzing them	2				Modified	The objective of this course is to understand the basics concepts of mechanics
		1 CO 2	Understan ding the concepts of planar and non-planar system of parallel forces and analyzing them. estimate moment of inertia of lamina and material bodies	2					

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		1 0 7	CO 3	Analyzing the rigid bodies under translation and rotation with and without considerin g forces.		The first of the f				AAAAA TIYAYA AAAAA TIYAA AAAAA TIYAA AAAAA AAAAA AAAAA AAAAA AAAAA AAAAA AAAA		And the second s		
		1 0 8	CO 4	Understan ding the engineerin g mechanics physical systems prepare and demonstrat e the models with the help of mechanics concepts to solve the engineerin g problems	The state of the s		A STATE OF THE PARTY OF THE PAR	1						
		1 0 9	CO 5	Apply the concepts of mechanics and carryout different experiment s and analyze the results	2									
15 PH 100 1	ENGI NEERI NG MATE RIALS	1 1 0	CO 1	Understan d the concepts of crystallogr aphy and		1							Modified	The objective of this course is to Understand the concepts of basic

	crystalline imperfecti ons in			engineering materials
	order to determine crystal structures and to identify			
	defects in crystals			
1 1	Understan d electrical and optical properties of materials and apply them to know various mechanism s involved in electrical, electronic, optical, optoelectro nic devices.			
1 1 2	Understan d mechanical and thermal properties of CO materials 3 and apprehend their importance in identificati on of materials	1		

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		1 1 3	CO 4	for specific engineerin g application s Understan d magnetic properties of materials and apply them to know various mechanism s involved in magnetic memory devices and transforme		THE CONTRACT OF THE CONTRACT O					Tripped at the second s			
15 CV	ENGI NEERI NG	1 1 4	CO -1	rs. Predict potential complicati ons from combining various chemicals or metals in ar engineerin g setting.		1	THE PERSON NAMED IN COLUMN TWO IS NOT THE PERSON NAMED IN COLUMN TWO IS NAMED IN COLUMN TWO IS NAMED IN COLUMN TWO IS NAMED IN COLUMN TWO IS NAMED IN COLUMN TWO IS NAMED IN COLUMN TWO IS NAMED IN COLUMN TWO IS NAMED IN COL	THE PROPERTY OF THE PROPERTY O	Transaction of the state of the		777777		Modified	The objective of this course is to Understand the basic concepts of engineering chemistry
CY 100 1	CHEM ISTRY	1 1 5	CO -2	Discuss fundament al aspects of electroche mistry and materials science relevant to corrosion phenomen a.	To the state of th	THE RESERVE OF THE PERSON OF T	TITRIH MALALAN TITRIH MALAN TITRIH MALAN	 THE PROPERTY OF THE PROPERTY O		Transfer of the Control of the Contr		PATRICIAL DE LA CONTRACTOR DE LA CONTRAC		

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				Examine water quality and select												
		1 1 6	CO -3	appropriate purificatio n technique for intended		 1		The state of the s			and the second of the second o					
		1 1 7	CO -4	problem. Apply phase rule, polymers, conducting polymers and nano chemistry to engineerin g processes.			THE REAL PROPERTY OF THE PROPE									
		1 1 8	CO -5	An ability to analyze & generate experiment al skills.			1									
		1 1 9	CO -1	Acquire the Knowledg e of basic biology							1		2		Added	The objective of this course is to Acquire the Knowledge of basic biology
15 BT 100	BIOL OGY FOR ENGI NEER S	1 2 0	CO -2	Acquire the Knowledg e of Human Biological Systems							1		2			
		1 2 1	CO -3	Acquire Knowledg e on Microorga nisms and Biosensors							1		2			
15	FIELD	1	1	Understan	1					_				1	Modified	The objective



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EE	S &	2 2		d the												of this course is
	NETW	2		circuit												to
1	ORKS			elements,												Understand the
				kirchhoff's		l							l			basics of
				law and												circuit
				theorems												elements
				to solve						1						
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		6		concepts												
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		1 2 7	CO -1	fields and networks by conducting experiment s or by any simulation softwares Understan d the basic principles of engineering design				1		Added	The objective of this course is to Understand the basic principles of engineering design
	INTR ODUC	1 2 8	CO -2	Understan d the aspects of critical thinking and problem solving in engineerin g				2			
15 GN 100 4	TION TO ENGI NEERI NG	1 2 9		Apply to knowledge of critical thinking to frame real-world problems and provide basic solution approach to such problems from engineerin g perspective					22		
		1	CO -4	d and and analyze the			3				

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				possible career options in Engineerin g and develop strategic plan, career targets and mechanism to achieve the same.		The second secon				,				
		1 3 1	CO -1	Illustrate how problems are solved using computers and programming.	2								Modified	The objective of this course is to Solve real world problems using C programming
15 CS 100 1	C PROG RAM MING & DATA STRU	1 3 2	CO -2	Interpret & Illustrate user defined C functions and different operations on list of data.	2		4,644		V-A-V		The state of the s			
	CTUR ES	1 3 3	CO -3	Implement Linear Data Structures and compare them.				2						
		1 3 4 1 3 5	CO -4 CO -5	Implement Binary Trees. Apply the knowledge obtained by the			2			La Constantina		2		

1	ı	i	i	, 1	1			l	ı	1 1	1 1		1
				course to solve real world problems.									
		1 3 6	CO -1	Draft orthograph ic Projections , Isometric views ,projection of planes, Manually and prepare Models in workshop by using drawings.							2	Modified	The objective of this course is to Use AutoCAD and prepare Models in workshop
15 ME 100 2	ENGI NEERI NG GRAP HICS	1 3 7	-2	Draftorhto graphic projections , isometric views , projection of planes using Autocad. Draft projection of solids Manually and by using AutoCAD and prepare Models in workshop by using different workshop trades							2		
		3	CO -3	Draft Developm ent of								2	

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		1 3 9	CO -4	surfaces of solid and sections of solid Manually Practicing house wiring through Auto Cad Develop					The same of the sa		2		
		1 4 0	CO -5	2D & 3D component s using Auto Cad Software		2							
15 GN	MEAS	1 4 1	CO -1	Understan d and apply the fundament als of a measureme nt system, characteris tics, and metrology using simulation and experiment ation tools.	2	2						Modified	The objective of this course is to Understand fundamentals of a measurement system and experimentatio n tools.
100	UREM ENTS	1 4 2	CO -2	Understan d various electrical & computer parameters , and apply different measuring techniques on various electrical parameters using simulation	2	2,							

and experiment ation tools. Understan d electronid & electrophysiologi cal parameters , and apply 1 COmeasuring 2 -3 techniques 3 on electronic parameters using simulation and experiment 2 ation tools. Understan and d apply different measuring techniques civil on CO 2 and -4 4 mechanical parameters using simulation and experiment 2 ation tools. Apply theoretical the 1 CO concepts to 4 -5 measure different parameters2 Modified The objective Understan 15 **OBJE** 1 of this course is CS d Basic CT2 4 CO 200 **ORIE** Concepts Understand of OOP, 2 NTED 6 1

	PROG RAM MING			introductio n to classes and objects through Java Language and apply.								Basic Concepts of OOP and develop real world applications using Java
		1 4 7	CO 2	Understan d the concepts of constructor s, Overloadin g, parameter passing, access control, Inheritance and apply.			2			The state of the s		
		1 4 8	CO 3	Understan d Packages, Interfaces, and Exception Handling and apply.			2					
		1 4 9	CO 4	Understan d I/O Streams & apply and understand Basic Concepts of Multi Threading				The state of the s			3	
		1 5 0	CO 5	Apply OOP concepts for developing an application							3	
15 EC	SIGN AL	1 5	CO 1	Demonstra te signals	2						Added	The objective of this course is

200 2	ANAL YSIS	Yeard.	and their Spectra	to Analyze various types of Signals
		1 5 2	time systems	
		1 5 3	1 (2) (2) (2) (3) (4) (4) (4) (4) (4) (4) (4) (4) (4) (4	
		1 5 4	I CIANTANATO I I I I I I I I I I I I I I	
		1 C	signals in frequency domains	
15 CS 200 3	DISCR ETE MATH EMAT ICS	1 5 6	Apply	The objective of this course is to Understand the basic concepts of discrete mathematics
	TOD	7	Propositio nal logic and First 2 order logic to solve problems	
			Formulate and solve recurrence 20	

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	1												
				relations, apply algebraic structures and lattices. To identify									
		1 5 9	CO 4	the basic properties of graphs and trees and model simple application s	Marie de la constante de la co		A ALIA PROPERTY AND A STATE OF THE STATE OF	And the second s		The state of the s	2		
		1600		Relate practical examples to the appropriate set, function model and interpret the associated operations and terminolog y in context							2		
15 CS 220	OPER ATIN G SYST	1 6 1	CO 1	Develop algorithms for subsystem component s	2	Arter Arter				Adding the second secon		Modified	The objective of this course is to Understand the basic concepts related to operating systems
6	EMS	1 6 2	CO 2	Understan d process and memory virtualizati on	2								,

		1 6 3	co 3	understand persistence concepts	2							
		1 6 4	CO 4	Design and solve synchroniz ation problems, and multithreading libraries						3		
		1 6 5	CO 5	Develop application programs using UNIX system calls						3		
		1 6 6	CO 1	Understan d OSI and TCP/IP models						2	Modified	The objective of this course is to Understand the basics of computer networks
15	СОМР	1 6 7	CO 2	Analyze MAC layer protocols and LAN technologi es			2					
CS 220 8	UTER NETW ORKS	1 6 8	CO 3	Implement routing and congestion control algorithms			2			2		
		1 6		Understan d application layer concepts			2					
			CO 5	Design application s using internet protocols							2	

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		1 7 1	CO 1	Understan d various signals and model physical process using them.		2		Modified	The objective of this course is to Understand various signals and model physical process using them.
15 EC	SIGN AL 220 OC 6 SSIN	1 7 2	CO 2	Acquaint with various a transforma tion methods and their potential for applicabilit y in various signal analysis conditions		2			
	G G	7 3	CO 3	Demonstra te sampling and its potential application s in communic ations, discrete signal acquisition etc.,.		2			
		1 7 4	CO 4	Evaluate discrete system behavior and its response to facilitate system design.		2			

		1 7 5	CO 5	Design a low pass discrete time system to meet noise elimination like application s			2		The second secon	3		
		1 7 6	CO 6	Analyze non stationary signals and analyze them in both time frequency domains.			2	an merenen men en dem en en eller de de de de de de de de de de de de de		3		
15 EM	LINU X	1 7 7	CO 1	Describe and understand the fundament al LINUX operating system and utilities	2		2				Added	The objective of this course is to understand the fundamental LINUX operating system and utilities
EM 30 B1	PROG RAM MING	1 7 8		apply shell scripts in order to perform basic shell Programming and analyze the Linux file system						2		

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		1 7 5	CO 5	Design a low pass discrete time system to meet noise elimination like application s			2			3		
		1 7 6	CO 6	Analyze non stationary signals and analyze them in both time frequency domains.			2			3		
15 EM	LINU X	1 7 7		Describe and understand the fundament al LINUX operating system and utilities	2		2				Added	The objective of this course is to understand the fundamental LINUX operating system and utilities
30 B1	PROG RAM MING	1 7 8		apply shell scripts in order to perform basic shell Programming and analyze the						2		

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Annexure-2

COURSE VS POS & PSO'S MAPPING

					MAPPING OF COs and P	Os							
				ltem	Description	150	0		ogra mes	m (POs)		
C o d e	Course Title	P	C R E D I T S	CO NO	Description of the Course Outcome	P 0	P 0 2	P 0 3	P 0 4	P O 5	P O 6	Course Type	Course Objective
				CO 1	Understanding the fundamentals of Embedded Systems and its hardware and software architecture.						1	Modified	The objective of this course is to understand working principles of various microcontrollers
1 5 E M 5	Microc ontroll ers for Embed ded Syste	3 - 0	4	CO 2	Demonstrate the working principle of 8051 microcontrollers and Processor Architecture & Interfacing				,	2			
1 0 1	m Design	2		CO 3	Analyze PIC Microcontroller Hardware with its Architecture & Interfacing	2							
				CO 4	Analyze the Device Drivers , Interrupt service Mechanism and Devices & Communication Buses for Devices Network.		2						
1 5 E M 5 1 0 2	Real Time Conce pts for Embed ded Syste ms	3 - 2 - 0	4	CO 1	Understand the current trends for Embedded Systems Design. Hard versus soft Real-Time Systems, A Reference Model of Real-Time Systems: Processors and	1					1	Modified	The objective of this course is to understand Basics of RTOS used in Embedded systems

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					Resources, Temporal Parameters of Real Time Workload, Periodic Task Model, Precedence Constraints and Data Dependency etc						
				CO 2	Understand and apply Challenges in validating timing constraints in priority –driven systems Off- line versus On-line Scheduling	1			2		
				CO 3	Analyze Priority- Driven Scheduling of Periodic Tasks, aperiodic tasks, and sporadic tasks with different scheduling mechanisms	2	2				
				CO 4	Understand Real- Time Operating Systems Other Basic Operating System Functions	1					
1				CO 1	Understand basic concepts of MOSFET, and study the second order effects in MOS technology concepts.	1				Modified	The objective of this course is to understand CMOS devices, CMOS IC fabrication & CMOS circuits
5 E M 5 1 0 3	VLSI Techn ology & Design	3 . 0 . 2	4	CO 2	Understand various forms of CMOS devices, steps involved in CMOS IC fabrication and also the rules to draw stick & layout of CMOS circuits	1					
				CO 3	Apply MOS device concepts for generating transistor level diagrams for digital circuits				2		



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				CO 4	Analyze CMOS circuits in terms of area, speed and power dissipation by applying the techniques like transistor sizing & design rules. Evaluate the design parameters (Area, Speed & Power) & driving capacity of CMOS circuits like Multiplexer, Latch e.t.c.	2	3			2		
Luman				CO 1	Understand Mobile and Wireless Landscape,Wireless LAN and IEEE 802.11	1		,			Modified	The objective of this course is to understand the basics of wireless comm. And standards
1 5 E	Wirele ss Comm	, m		CO 2	Discuss Global System for Mobile Communications (GSM) and Medium Access Control (MAC)		1					
M 5 1	unicati ons & Netwo	2 - 0		CO 3	Describe Mobile IP and Mobile Ad hoc Networks (MANETs)				1			
0	rks			CO 4	Understand Mobile Transport Layer: Traditional TCP, Indirect TCP, Snooping TCP and Mobile TCP.					1		
				CO 5	Understand Broadcast systems(DVB and DAB)	1				1		
											0.4 - 150 - 1	T1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -
1 5 E M 5 2	Digital Signal Proces sors and Archit ecture	3 - 2 - 0	4	CO 1	At the end of the course the student will get familiarized with various DSP based Embedded System Applications. Understands the implementation aspects of			,			Modified	The objective of this course is to understand various DSP based Embedded System Applications.
6	\$				Computational accuracy of DSP based algorithms	1	ļ					



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Understand the architectural features of programmable DSP devices. Student will be

	devices. Student will be							
CO	familiarised with							
2	development process							
_	applications based on							
	DSK5416 development							
	board and various						İ	
	development tools			<u> </u>				
	used.	1						
******	To familiarize with						ĺ	•
	Texas Instruments'							
	TM\$320C54XX family							
	of fixed-point DSP							
	Processors their							
	architectures in-terms							
	of addressing modes,							
	· - -							
	Programming On-Chip		[
co	Peripherals', Interrupts							
CO	and Pipeline							
3	operations. Student							
	will be getting	,						
	fam liarised with							•
	applications							
	development process							
	based on DSK5416						ļ	
	development board							
	and various software						1	
	development tools							
	used.		L					
	Student will			1				
	demonstrate the ability							
	to implement various							
	DSP algorithms used in							
CO	different Embedded							
4	Systems based on Tr's		,					
	TM\$320C54XX family							
	of fiked-point DSP							
	Processors		1				1	
	Student will							
	demonstrate the ability							
	to implement various							
	DSP based Embedded							
CO	Systems by interfacing							
5	DSPs with Memory,							
	I/O with the help of							
	integration concepts like INTERRUPTS, DIMA							
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	and CODECs with D\$P	1		+	-			
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			CO 1	To remember and understand the basic concepts of model, Architecture and programming Language				٠		Modified	The objective of this course is to understand Modern embedded architectures and compilation technologies
1 5	Advan ced	3	CO 2	To remember and understand the Hardware software synthesis algorithms and software partitioning distributed system co-synthesis		1	Whiterers are a second and a second a second and a second and a second and a second and a second and a second and a second and a second and a second and a second a second and a second and a second and a second and a second and				teemnoogies
E M 5 2 0 7	Embed ded Syste ms Design	- 2 - 0	CO 3	To understand Architecture Specialization techniques, Architecture for control dominated systems			\$	The state of the s	1		
			 CO 4	Analyze and apply the techniques of Modern embedded architectures and compilation technologies		2					
			CO 5	Analyze concurrency coordinating, concurrent computations and verification tools.		7			2		
1 5 E M	Linux Syste m	3	CO 1	Apply various various GNU development tools for compiling, debugging and creating libraries.						MOdified	The objective of this course is to Understand the concepts related to Linux kernel
5 2 0 8	Conce pts	2	CO 2	Understand the concepts related to Linux kernel Configuration and kernel modules		1					



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				CO 5	communication between client and server using SOCKET API	3		**********	,		3		
			a de la companya de l	CO 1	Understand the architecture and features of ROM,PLA,PAL and CPLD							Modified	The objective of this course is to understand the architecture and features of CPLD & FPGA.
1 5 E	CPLD & FPGA	3		CO 2	Understand the architecture and features of FPGA.		1						
M 5 1 A 1	Archit ecture s and Applic ations	0	3	CO 3	Understand XILINX FPGAs and Design various combinational & sequential logicrealization using XILINX FPGAS	Laurence Control of the Control of t				1			
				CO 4	Analyze the technologies of Actel FPGAs		2			_	2		
:				CO 5	Analyze different Design Applications		2		,	2			
1 5 E M	Embed ded Real Time	3 - 0		CO 1	Understanding the concepts of Embedded Networking Communication Standard protocols: RS 232, RS 485, SPI, I2C bus protocols.								The objective of this course is to understand
5 1 B	Operat ing Syste	- 0		co 2	Analyze the US B& CAN based synchronization Techniques		2						
1	ms			CO 3	Applying Ethernet communication protocols for Embedded Systems								



Dr. M. SUMAN
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Dr. M. Steinian
Chairman BOS-ECM

Dr. M. SUMAN PHOFESSOR A HOD

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Dr. M. SUMAN
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KL UNIVERSITY Green Fields, Vaddeswaram.

List of Pre-Ph.D Courses approved by

DEPARTMENT OF ELECTRONICS AND COMPUTER ENGINEERING

Annexure-IV

<u>A.Y.2015-16</u>

s.no	PAPER – 1	Code
1.	RESEARCH METHODOLOGY	15 RM ENGG 101

S.NO	PAPER – 2	Code	PAPER – 3	Code
1.	Information Retrieval System	15 CS 201	Big Data Analytics	15 CS 301
2.	Data Ware Housing And Mining	15 CS 202	Cloud Computing	15 CS 302
3.	Computer Networks	15 CS 203	Distributed Databases	15 CS 303
4.	Data Center Virtualization	15 CS 204	Pattern Recognition	15 CS 304
5.	Network Security	15 CS 205	Soft Computing	15 CS 305
6.	Software Architecture	15 CS 206	Software Engineering	15 CS 306
7.	Software Testing And Quality Assurance	15 CS 207	Software Reliability	15 CS 307
8.	Advances in Computing	15 CS 208	Web Security	15 CS 308
9.	Advanced Data Structures	15 CS 209	Wireless Sensor Networks	15 CS 309
10.	Digital Image Processing	15 CS 210	Software Project Management	15 CS 310
11.	Bio-Informatics	15 CS 211	Artificial Intelligence	15 CS 311
12.	Service Oriented Architecture	15 CS 212	Cloud Security	15 CS 312
13.	Mobile Cloud	15 CS 213	Data Security & Privacy	15 CS 313
14.	Distributed Computing	15 CS 214	Mobile Computing and Wireless Communication	15 CS 314
15.	Cryptography & Network Security	15 CS 215	Parallel Algorithms	15 CS 315



S.NO	PAPER – 2	Code	PAPER – 3	Code
1.	Global Positioning Systems	15 EC 201	Bio Medical signal Processing	15 EC 301
2.	Advanced Digital Signal Processing	15 EC 202	Advanced Embedded Processor Architecture	15 EC 302
3.	Embedded Networking	15 EC 203	Wireless Cellular Communications	15 EC 303
4.	Modern Digital communication	15 EC 204	Speech Processing	15 EC 304
5.	Mathematics for signal processing	15 EC 205	Image and Video Processing	15 EC 305
6.	Wavelet theory and Applications	15 EC 206	EMI/EMC	15 EC 306
7.	Radiating systems	15 EC 207	MEMS Measurement Techniques	15 EC 307
8.	Micro Electro Mechanical Systems	15 EC 208	Antenna Measurements	15 EC 308
9.	RF & Microwave System Design	15 EC 209	VLSI System Design	15 EC 309
10.	Low Power VLSI Circuits	15 EC 210	MOS Circuit Design	15 EC 310
11.	Detection and Estimation Of Signals	15 EC 211	Testing of VLSI Circuits	15 EC 311
12.	Adaptive Signal Processing	15 EC 212	Design	15 EC 312
13.	Real Time Concepts for Embedded Systems	15 EC 213	Microwave and Millimeter wave Circuits	15 EC 313
14.	Optical Signal Processing	15 EC 214	Multirate Signal Processing	15 EC 314
15.	ASIC Design Flow	15 EC 215	CMOS RF Circuit Design	15 EC 315

Head of the Department:
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K L UNIVERSITY DEPARTMENT OF ELECTRONICS AND COMPUTER ENGINEERING MINUTES OF DEPARTMENT ACADEMIC COMMITTEE MEETING

On 25th May 2016 in its meeting DAC made the following recommendations to ECM-BOS to be made effective from the forth coming academic year 2016-17.

Agenda:

- 1. To discuss the feedbacks received from stake holders on curriculum
- 2. To propose the curriculum for B. Tech 2016-17 admitting batch
- 3. Any other points with the permission of the DAC chairman

The following Members were present

Name of the Member	Designation	Signature
Dr K.Raghava Rao	Chairman	The state of the s
Dr K Srinivasa Ravi	Member	KSlen's
Dr K Kiran Kumar	Member	W.
Dr M Kameswara Rao	Member	
	Member	
	Dr K.Raghava Rao Dr K Srinivasa Ravi Dr K Kiran Kumar	Dr K.Raghava Rao Chairman Dr K Srinivasa Ravi Member Dr K Kiran Kumar Member Dr M Kameswara Rao Member

The following points were discussed and resolved:

- The DAC discussed and resolved to recommend adding the Following Courses B. Tech (ECM) 2016-17 Batch Curriculum
 - Coding Skills
 - Fundamentals of Embedded System Design
 - Sensors and sensing principles
 - Fundamentals of Internet of Things
 - Wireless Technologies for IOT
 - IOT Application Programming Using Python
 - Cryptography and Network Security
 - Information Security and Risk Management
 - Mobile and Wireless Security
 - Computer Forensics
 - Security in Cloud Computing

- 2. Upon discussing the feedbacks from stake holders and surveying through the policy documents in relevance to APIIC, Human Resource Development Policy, Govt. of India, National Skill Development Corporation, Govt. of India, Confederation of Indian Industries, ABET, NBA norms and AICTE statutory norms, It is resolved to propose enclosed Program development documents and curriculum for B.Tech (Electronics and Computer Engineering), M.Tech (Embedded Systems) and M.Tech (Wireless Communications & Sensor Networks) programs (Annexure-I) recommended to BOS
- 3. The DAC discussed and resolved to recommend modifying the Existing Syllabus of the Courses of B. Tech(ECM)2015-16 curriculum(annexure-1)
 - Upon discussing the feedback from students, it was resolved to offer the course C
 and Data Structures as two separate courses
 - C & Data Structures-1 and C & Data Structures-2
- Upon discussing the feedback from students, it was resolved to remove Thermodynamics from 2016 Academic year onwards for ECM students.
- The DAC discussed and resolved to recommend having a separate RPAC for ECM Department

DAC CHAIRMAN