

		Academic Year : 2	tute/ Branch Name : Symbiosis institute of Technology Programme Name : Master of Technology (Embedded Systems)						
Color Code I	scription:]						
Global	National / Local	Regional / National							
Sr. No.	GA. No.	Graduate Attributes	PO No.	Programme Outcomes	Relevance				
1	GAI	Scholarship: research, inquiry and lifelong learning	PO01	An ability to independently carry out research (investigation and development work to solve practical problems.	Regional / National				
2	GA2	Global citizenship: ethical, social and professional understanding	PO02	An ability to write and present a substantial technical report/document.	Regional / National				
3	GA3	Eco-literate: sensitivity towards a sustainable environment	PO03	Students should be able to demonstrate a degree of mastery over the area as per the specialization of the program. The mastery should be at a level higher than the requirements in the appropriate bachelor's program.	Regional / National				
4	GA4	Employability: equipped with skills, attributes, leadership and entrepreneurial qualities that society needs; being capable of making a contribution to society through earning a living	PO04	Devise and apply appropriate techniques and modern engineering tools to complex engineering activities with an understanding of its limitations.	Regional / National				
5	GA4	Employability: equipped with skills, attributes, leadership and entrepreneurial qualities that society needs; being capable of making a contribution to society through earning a living	PO05	Recognize the need for and an ability to engage in lifelong learning to keep onesielf abreast of the knowledge to be competent.	Regional / National				

Sr. No.	Semester	Institute Course Code	Catalog Course Code	Title	Course Outcome No	Course Outcome Statement	PO01	PO02	PO03	PO04	PO05
					CO1	Study evolution of ARM family Processor architectures	Strong-H	-	Strong-H	-	-
					CO2	Study ARM Cortex-M4 microprocessor architecture	Moderate-M	-	Strong-H	Moderate-M	-
1	г	701470101	TE7503	Advanced Microcontroller	C03	Explore Cortex Microcontroller Software Interface standard (CMSIS) Standard for system design	Strong-H	Moderate-M	ouong n	Moderate-M	
	-			Architecture and Programming	005	Explore Cortex Microcontroller Software tools for APM Cortex based system design and develop	Strong-11	wiouciate-ivi		Woderate=Wi	
					CO4	applications of APM cortex architecture in real time scenario	-	Moderate-M	Strong-H	Strong-H	-
						Understand the importance and concents of Software System Engineering in the engineering					
					CO1	designs	Strong-H	Weak-L	Moderate-M	Moderate-M	Strong-H
				Object Oriented Programming	C02	Understand the basic syntax of C++	Moderate _* M		Moderate-M	Strong_H	Weak_L
2	I	701470102	TE7523	and Data Structures	002	Demonstrate the concents of object-oriented programming language like class overloading functions	moderate m		moderate m	buong n	Weak E
				and Data Structures	CO3	inheritance and polymorphism	Moderate-M	Weak-L	Strong-H	Strong-H	Weak-L
					C04	Apply data structures to solve engineering problems	Weak-I		Strong-H	Strong-H	Moderate-M
					C01	To recall the basics of digital signal processing	Strong H	Strong U	buong m	buoing in	moderate m
		701470103		Digital Signal Processors	C01	To understand the numerical fidelity in DCD involvementation	Strong-11	Strong-11	-		
3	I		TE7662		002		Sublig-11	Sublig-11	-		
5			1E/002		003	To describe the basics of Digital Signal Processor Architecture	Strong-H	Strong-H	-	-	-
					CO4	To implement different digital signal processing techniques for real world applications using digital	Strong-H	Strong-H	Weak-L	Weak-L	Weak-L
					CO1	A nel una and illustrate thread alla	Ctana II	Sterne II	Sterne II	Madamta M	Sterne II
	I				001		Strong-H	Suong-H	Suong-H	Moderate-M	Suong-ri
4		701470106	T7674	61.6.3	02	Examine the different cyber laws and their importance	Strong-H	Strong-H	Strong-H	weak-L	weak-L
4			1/0/4	Cyber Security	CO3	Compare and contrast the implemented management practices in the	Strong-H	Strong-H	Strong-H	Moderate-M	Strong-H
					004	cyber world		- II		N. L. C. M.	
					C04	illustrate Symmetric and Asymmetric Encryption mechanisms	Strong-H	Strong-H	Strong-H	Moderate-M	Strong-H
		701470107		Advanced Microcontroller Architecture and Programming Laboratory	CO1	Get familiarised with and use various tools for Software and hardware development of ARM Cortex	Strong-H	-	-	Strong-H	-
					C02	Dased system.	Madamta M		Starse II	Madamta M	
5	I		TE7504		002	Use various AKM Cortex-M4 peripherals for system design	Moderate-M	-	Strong-H	Moderate-M	-
					CO3	Explore and use Cortex Microcontroller Software Interface standard (CMSIS) for system design	Strong-H	Moderate-M	-	Moderate-M	-
					CO4	Involument Deal Life examples on ADM Control union STM 22 Code IDE	-	Madamta M	Sterne II	Stern - II	
					04	Implement Real Life examples on ARM Cortex using STM 32 Cube IDE	-	Moderate-M	Suong-H	Suong-H	-
	I	701230107	TE7524	Object Oriented Programming and Data Structures Laboratory	001	Understand and apply the concepts of Software System Engineering in the engineering designs	Moderate-M	Strong-H	Moderate-M	Strong-H	Weak-L
					CO2	Understand the basic syntax of C++ programming language	Weak-L	-	Moderate-M	Strong-H	Moderate-M
6					CO3	Implement the concepts of object-oriented programming language like class, overloading functions,	Moderate-M	-	Strong-H	Strong-H	Moderate-M
					201	inheritance, and polymorphism.	a				
					C04	Implement data structures to solve engineering problems	Strong-H	Weak-L	Strong-H	Moderate-M	Moderate-M
	I	701470109	TE7511		CO1	Understand Wireless Sensor Network Technology	Strong-H	Weak-L	Strong-H	Moderate-M	Strong-H
					CO2	Understand Embedded System Design techniques	Moderate-M	Weak-L	Moderate-M	Strong-H	Strong-H
7				Embedded Wireless Sensor	CO3	Study sensors and processors used on WSN node	Strong-H	Weak-L	Moderate-M	Moderate-M	Moderate-M
/				Network	CO4	Study adhoc networks and its application in WSN	Strong-H	Weak-L	Moderate-M	Moderate-M	Strong-H
					CO5	Use Embedded System design principles to design a WSN node	Strong-H	Weak-L	Moderate-M	Moderate-M	Strong-H
					C06	Chose components for WSN node based on application domain	Strong-H	Weak-L	Strong-H	Moderate-M	Moderate-M
	I	701470111	TE7512		C01	Understand Practical aspects of Wireless Sensor Network Technology	Strong-H	Weak-I	Strong-H	Moderate _* M	Strong-H
					C01	Understand Design aritaria for Embaddad System for WSN	Moderate M	Weak L	Modorato M	Strong H	Strong H
					C02	Use simulation tools for WSN	Strong U	Weak-L Weak I	Moderate-M	Modorate M	Moderate M
8				Embedded Wireless Sensor Network Laboratory	001		Sublig-11	Weak-L	Moderate-IVI	Moderate-W	Niouerate=ivi
					004	Study various communication protocols used for wSN	Strong-H	weak-L	Moderate-M	Moderate-M	Strong-H
					CO5	Establish adhoc network between a set of WSN nodes	Strong-H	Weak-L	Moderate-M	Moderate-M	Strong-H
					CO6	Develop program for WSN node	Strong-H	Weak-L	Strong-H	Moderate-M	Moderate-M
		701470113	TE7515		CO1	Analyze the automation requirements in industrial scenarios, considering various factors and	Weak-L	Weak-L	Weak-L	-	Weak-L
				Industrial Automation		constraints.					
					CO2	Demonstrate the appropriate selection and utilization of sensors and actuators for various industrial	Moderate-M	Moderate-M	Moderate-M	-	Moderate-M
						applications.					
					CO3	Evaluate the effectiveness of different control approaches and identify their advantages and	Moderate-M	Moderate-M	Moderate-M	Strong-H	Moderate-M
9	I					Apply programming skills to configure and program a Programmable Logic Controller (PLC) for					
					CO4	specific industrial tasks	Moderate-M	Weak-L	Moderate-M	Strong-H	Strong-H
						Critique advanced technologies used in industrial automation assessing their suitability and potential					
					CO5	impact on industrial processes.	Moderate-M	Moderate-M	Moderate-M	-	Moderate-M
					CO(Assess the outcomes of control strategies on industrial process parameters and propose improvements	Madamta M	Weels I	Madamata M		Madamia M
					000	when necessary.	woderate-w	weak-L	wioderate-wi	-	Woderate-IVI
			TE7520 TE7325	Model Based Development	CO1	Understand the importance and concepts of model based development	Strong-H	-	-	-	Moderate-M
		701470201 701470202			CO2	Analysis the various envriments of the model based development	Strong-H	Moderate-M	Weak-L	-	Moderate-M
10	11				CO3	Analysis and apply the auto code generation, verification and validation	Strong-H	Moderate-M	Weak-L	-	Moderate-M
	п				C04	Apply model based development to solve engineering problems	Strong-H	Strong-H	Strong-H	Weak-L	Moderate-M
					C01	Understand the fundamentals of embedded Linux operating system				Moderate-M	Strong-H
					C02	Study the architecture of Linux operating system	-	1		Moderate-M	Moderate_M
11					C02	Understand and implement the TDCs in Linux provingement	-	- Madamta M	Etman II	Streng I	Weak I
11					003	Inderstand and implement the IPCs in Linux environment	wouerate-M	wouerate-M	Suong-H	Suong-H	weak-L
					C04	Implement embedded Linux applications	Weak-L	Moderate-M	Weak-L	Strong-H	Moderate-M
					CO5	Develop basic device drivers.	Weak-L	-	Strong-H	Strong-H	Strong-H
		701470203	TE7510	Embedded System Design	CO1	Understand structure and architecture of Embedded System	Weak-L	Weak-L	Strong-H	-	-
12					CO2	Study various peripherals and communication protocols used in embedded systems	Moderate-M	Weak-L	Moderate-M	Weak-L	-
12	¹¹				CO3	Understand software design of Embedded System	Moderate-M	Moderate-M	Moderate-M	Strong-H	-
					CO4	Explore various practical implementations of Embedded Systems in real life.	Moderate-M	Weak-L	Strong-H	Strong-H	Moderate-M
					C01	Understand the importance of EVs.	Weak-L	Weak-L	Strong-H	Weak-L	Moderate-M
					CO2	Learn smart electronics components used in EVs	Weak-L	Weak-L	Strong-H	Moderate-M	Weak-L
1					CO3	Learn micronrocessors used in FVs	Strong-H	Weak-I	Weak-I	Weak-I	Weak-I
13	П	701470204	TE7509	Electric Vehicle Technology	C04	Gat knowledge on communication protocols EV	Wash I	Stron- II	Worl- I	Madamin M	Worl- I
1	1			1	0.04	Get knowledge on communication protocols E v	weak-L	Suong-H	weak-L	wioderate-M	weak-L

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					CO5	Get knowledge on EV motor drive mechanism	Strong-H	Weak-L	Weak-L	Weak-L	Moderate-M
					CO6	Get knowledge on battery management system and charging stations	Strong-H	Moderate-M	Weak-L	Weak-L	Weak-L
		701470205	TE7521	Model Based Development Laboratory	CO1	Understand the importance and concepts of model based development	Strong-H	-	-	-	Moderate-M
14	п				CO2	Analysis the various envriments of the model based development	Strong-H	Moderate-M	Weak-L	-	Moderate-M
14					CO3	Analysis and apply the auto code generation, verification and validation	Strong-H	Moderate-M	Weak-L	-	Moderate-M
					CO4	Apply model based development to solve engineering problems.	Strong-H	Strong-H	Strong-H	Weak-L	Moderate-M
		701470206	TE7659	Technical Communication Skills	CO1	Sketch their communicative knowledge for effective interpersonal, business, technical, intercultural communication; also express ideas well through brainstorming, mind-mapping in group discussion.	-	Moderate-M	-	-	Weak-L
16					CO2	Demonstrate linguistic competence and employ communication etiquettes through enhanced listening, speaking and reading skills.	-	Moderate-M	-	-	Moderate-M
15	11				CO3	Construct and draft effective Proposals, Manuals and research papers.	-	Moderate-M	-	-	Moderate-M
					CO4	Constructing sentences effectively using grammar, punctuation and vocab with reference to effective formal business/technical communication.	-	Moderate-M	-	-	Weak-L
					CO5	Design impactful resumes, memos, reports, emails and business letters.	-	Moderate-M	-	-	Moderate-M
	п	701470210	TE7513	Image Processing and Computer Vision	CO1	Recognize and describe both the theoretical and practical aspects of computing with images and connect issues from Computer Vision to Human Vision.	Strong-H	Weak-L	-	-	-
					CO2	CO2: Describe the foundation of image formation and image analysis. Understand the basics of 2D and 3D Computer Vision.	Strong-H	Moderate-M	-	-	-
16					CO3	Become familiar with the major technical approaches involved in computer vision and describe various methods used for registration, alignment, and matching in images.	Strong-H	Strong-H	Moderate-M	Weak-L	Weak-L
					CO4	Get an exposure to advanced concepts leading to object and scene categorization from images and concepts in image segmentation.	Strong-H	Weak-L	-	-	-
					CO5	Build computer vision applications.	Strong-H	Strong-H	Moderate-M	Weak-L	Weak-L
		701470213	TE7514	Image Processing and Computer Vision Laboratory	CO1	Recognize and describe both the theoretical and practical aspects of computing with images and connect issues from Computer Vision to Human Vision	Strong-H	Weak-L	-	-	-
					CO2	Describe the foundation of image formation and image analysis. Understand the basics of 2D and 3D Computer Vision	Strong-H	Moderate-M	-	-	-
17	п				CO3	Become familiar with the major technical approaches involved in computer vision and describe various methods used for registration, alignment, and matching in images	Strong-H	Strong-H	Moderate-M	Weak-L	Weak-L
					CO4	Get an exposure to advanced concepts leading to object and scene categorization from images and concepts in image segmentation	Strong-H	Weak-L	-	-	-
					CO5	Build computer vision applications	Strong-H	Strong-H	Moderate-M	Weak-L	Weak-L
		701470216	TE7507	Computational Algorithms	CO1	Understand and analyse of algorithms based on their asymptotic complexity	Strong-H	Moderate-M	Moderate-M	Weak-L	Weak-L
					CO2	Apply the different cryptographic algorithms for security applications	Moderate-M	Moderate-M	Weak-L	Moderate-M	Weak-L
18	П				CO3	Understand the concept and importance of optimization in engineering designs	Moderate-M	Weak-L	Moderate-M	Weak-L	Moderate-M
					CO4	Understand the different optimization algorithms	Weak-L	Moderate-M	Weak-L	Moderate-M	Weak-L
					CO5	Understand and apply the generic algorithms for solving engineering problems	Moderate-M	Moderate-M	Moderate-M	Moderate-M	Moderate-M
		701470302	F7048	Introduction to Machine Learning and Applications	CO1	Distinguish training, testing and validation set	Strong-H	Strong-H	Moderate-M	Moderate-M	Strong-H
19	ш				CO2	Experiment different types of regression algorithm	Strong-H	Strong-H	Strong-H	Strong-H	Strong-H
					CO3	Experiment different types of classification algorithm	Strong-H	Strong-H	Strong-H	Strong-H	Strong-H
					CO4	Test the model built with regression algorithms	Strong-H	Strong-H	Strong-H	Strong-H	Strong-H