

**CURRICULUM**  
**POST GRADUATE PROGRAM – M.Sc.**



**INDIAN INSTITUTE OF INFORMATION TECHNOLOGY TIRUCHIRAPPALLI**  
Tiruchirappalli – 620 012,  
Tamil Nadu, India

### CREDIT DISTRIBUTION

Sl. No.	Program	Semester				
		1	2	3	4	Total
1.	M. Sc. (Computer Science)	20	19	20	10	69
2.	M.Sc.-Electronics with VLSI Design	20	19	21	10	70

## M.Sc. (C.S.) SYLLABUS – CORE SUBJECTS

Semester	Subject Code	Subject Name	L	T	P	C
I		Mathematical Foundations of Computer Science	3	0	0	3
		Networking Technologies	2	1	0	3
		Data Structures and Algorithms	2	1	0	3
		Problem Solving using Python and R	2	1	0	3
		Operating Systems Fundamentals	3	0	2	4
		Data Structures Lab	0	0	4	2
		Python and R Lab	0	0	4	2
II		Computer Organization and Architecture	3	0	0	3
		Theory of Computation	2	1	0	3
		Advanced Statistical Techniques for Data Science	3	0	0	3
		DBMS and Data Mining	3	0	0	3
		Elective I	3	0	0	3
		Free and Open Source Software (FOSS) Lab	0	0	4	2
		DBMS and Data Mining Lab	0	0	4	2
III		Web Computing	3	0	0	3
		Artificial Intelligence and Machine Learning	3	0	2	4
		Object Oriented Software Engineering	3	0	0	3
		Elective II	3	0	0	3
		Elective III	3	0	0	3
		Artificial Intelligence and Machine Learning Lab Project Work Phase-I	0	0	4	2
		Project Work Phase-I	0	0	4	2
IV		Project Work Phase-II	-	-	-	10
		<b>Grand Total</b>	40	5	26	69

L: LECTURE | T: TUTORIAL | P: PRACTICAL | C: Credits

## LIST OF ELECTIVES

Subject Code	Subject Name	L	T	P	C
<b>ELECTIVE – I</b>					
	Internet of Things	3	0	0	3
	Cyber Security	3	0	0	3
	Cloud and Edge Computing	3	0	0	3
	Mobile Computing	3	0	0	3
	Cryptography and Blockchain Technology	3	0	0	3
	Computer Graphics	3	0	0	3
<b>ELECTIVE – II</b>					
	Big Data Analytics	3	0	0	3
	Computational Intelligence	3	0	0	3
	Computer Vision and Pattern Recognition	3	0	0	3
	Soft Computing Techniques	3	0	0	3
	Defensive and Secure Software Development	3	0	0	3
	Software Verification and Validation	3	0	0	3
<b>ELECTIVE – III</b>					
	General Purpose Computing on Graphics Processing Unit (GPGPU) Programming	3	0	0	3
	Design Patterns	3	0	0	3
	Compiler Design	3	0	0	3
	Mobile Application Development	3	0	0	3
	Augmented Reality and Virtual Reality	3	0	0	3
	Fault Tolerance Systems and Techniques	3	0	0	3

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**M.Sc. - ELECTRONICS with VLSI DESIGN**

Semester	Subject Code	Subject Name	L	T	P	C
I		Graph Theory and optimization	3	0	0	3
		Advanced Digital Systems Design	3	0	0	3
		Electronic Circuits	3	0	0	3
		Introduction to Python Programming	3	0	2	4
		Elective – 1	3	0	0	3
		Digital Systems Design with HDL Programming Laboratory	0	0	4	2
		Electronic Circuits Laboratory	0	0	4	2
II		Semiconductor Device Modeling	3	0	0	3
		Digital Signal Processing	3	0	0	3
		VLSI Process Technology	3	0	0	3
		Elective – 2	3	0	0	3
		Elective – 3	3	0	0	3
		Device Modeling Laboratory	0	0	4	2
		Digital Signal Processing Laboratory	0	0	4	2
III		Communication Theory	3	0	0	3
		Artificial Intelligence and Machine Learning	3	0	2	4
		VLSI Signal Processing	3	0	0	3
		Low power VLSI Design	3	0	0	3
		Elective – 4	3	0	0	3
		Elective – 5	3	0	0	3
		Project Work Phase-I	0	0	4	2
IV		Project Work Phase-II	-	-	-	10
		Grand Total	48	0	22	70

## LIST OF ELECTIVES

Subject Code	Subject Name	L	T	P	C
<b>ELECTIVE – I</b>					
	Solid state circuits	3	0	0	3
	Modelling and Synthesis with Verilog HDL / VHDL	3	0	0	3
	CAD for VLSI	3	0	0	3
	5G Wireless technology	3	0	0	3
	FPGA-Based System Design	3	0	0	3
	Embedded System Design	3	0	0	3
	Design of Semiconductor Memories	3	0	0	3
	Design of Cognitive Radio	3	0	0	3
	Testing of VLSI Circuits	3	0	0	3
	High Performance VLSI Systems	3	0	0	3
<b>ELECTIVE – II</b>					
	Physics and Modeling of MOS Transistors	3	0	0	3
	Nano-Scale Devices: Modelling and Circuits	3	0	0	3
	Physical Design Automation	3	0	0	3
	ASIC Design	3	0	0	3
	Field Programmable Gate Arrays based system Design	3	0	0	3
	Advanced Memory Technology	3	0	0	3
	Nanoscale Transistors	3	0	0	3
	Sub-micron VLSI Design	3	0	0	3
	Mixed-signal IC Design	3	0	0	3
	Data Converters	3	0	0	3
<b>ELECTIVE – III</b>					
	DSP Architectures	3	0	0	3
	Advanced Electronic Circuit Design	3	0	0	3
	Computer systems organization	3	0	0	3
	Introduction to Programming Systems Design	3	0	0	3
	Analysis of Algorithms	3	0	0	3
	Cyber-Physical Systems: A Computing Perspective	3	0	0	3
	Software Design and Optimization	3	0	0	3
	Parallel Programming	3	0	0	3
	High Speed Computer Arithmetic				
	Hardware Security & Advance Computer Architecture	3	0	0	3