BHARATHIAR UNIVERSITY, COIMBATORE
Scheme of Examination (CBCS PATTERN)
M.Sc., Electronics and Communication System
(Effective from the academic Year 2014-2015)

Sem.	**Study Components**	**Course Title**	**Ins. hrs**	**Exam**				**Credit**
				Dur. Hrs.	**CIA**	**Uni. exam**	**Total**	
I	Paper I	Telecommunication and Fiber Optics	4	3	25	75	100	4
	Paper II	Instrumentation and Control Systems	4	3	25	75	100	4
	Paper III	8051 Micro Controller with C Programming	4	3	25	75	100	4
	Paper IV	MEMS and Power Electronics	4	3	25	75	100	4
	Practical I	Electronics and Communication Systems Lab	5	-	-	-	-	-
	Practical II	Embedded Systems and Real Time Operating Systems Lab	5	-	-	-	-	-
	Elec. Paper I		4	3	25	75	100	4
II	Paper V	Signals and Systems	4	3	25	75	100	4
	Paper VI	Computer Communication and Networks	4	3	25	75	100	4
	Paper VII	Embedded Systems and Real Time Operating Systems	4	3	25	75	100	4
	Paper VIII	Digital Image processing	4	3	25	75	100	4
	Practical I	Electronics and Communication Systems Lab	5	4	40	60	100	4
	Practical II	Embedded Systems and Real Time Operating Systems Lab	5	4	40	60	100	4
	Elect.Paper II		4	3	25	75	100	4
III	Paper IX	Digital Signal Processing	4	3	25	75	100	4
	Paper X	MATLAB Programming	4	3	25	75	100	4
	Paper XI	VLSI Design and VHDL Programming	4	3	25	75	100	4
	Paper XII	Virtual Instrumentation	4	3	25	75	100	4
	Practical III	DSP AND MATLAB	5	4	40	60	100	4
	Practical IV	Virtual Instrumentation and VLSI Design Lab	5	4	40	60	100	4
	Elect.PaperIII:		4	3	25	75	100	4
IV	Paper XIII	Wireless Communication and Networks	4	3	25	75	100	4
	Paper XIV	Nanoelectronics and Nanosystems	4	3	25	75	100	4
	Project	Project work and Viva-voce	--	--	-	-	100*	4
	Elective : Practical		5	4	20	30	50	2
Total							2250	90

****Project report – 80% Marks; Viva voce – 20% Marks;***

List of Group Elective papers (Colleges can choose any one of the Group papers as electives)

	GROUP A **INFORMATION TECHNOLOGY**	*GROUP B* ***ELECTRONIC MEDIA***	*GROUP C* ***VLSI SYSTEMS DESIGN***
Paper I/ Sem I	*Web Technologies*	*Principles of acoustics and sound engineering*	*Basic VLSI Design*
Paper II/Sem II	*Relational Data Base Management Systems*	*Applied electronics for Electronic media*	*ASIC Design*
Paper III/Sem II	*LINUX and Shell Programming*	*Advanced Digital Image processing*	*VLSI Design Using Verilog*
Paper IV/Sem IV	*RDBMS and LINUX Lab*	*Electronic media lab*	*VLSI System Design Lab*

Note :

The syllabus for the above papers (except Practical III -DSP AND MATLAB, Practical IV- Virtual Instrumentation and VLSI Design Lab and Elective III- Advanced Digital Image processing) be the same as prescribed for the academic year 2012-13. The Syllabus for the Practical III -DSP AND MATLAB, Practical IV- Virtual Instrumentation and VLSI Design Lab and Elective III- Advanced Digital Image processing are furnished below:

PRACTICAL – III
DSP and MAT LAB

USING TMS320C5X/TMS320C54XX/TMS320C67XX/MATLAB

1. Study of addressing Modes of DSP using simple examples
2. Arithmetic operations
3. DFT computations
4. FFT Computations
5. Convolution of two discrete signals
6. Correlation of two discrete signals
7. Quantization noise
8. Waveform generation
9. Solving differential equations
10. Solving z-transform
11. Voice storing & Retrieval
12. FIR Filter design
13. IIR filter design
14. Generation of signals
15. Amplitude Modulation & FFT response
16. Impulse, Step, Exponential & Ramp functions
17. Frequency sampling method

PRACTICAL – IV
VIRTUAL INSTRUMENTATION AND VLSI LAB

VIRTUAL INSTRUMENTATION

(Using Lab View)

1. Creating a simple VI to place a Digital Control
2. Navigation and Editing
3. VI to make a Degree C to Degree F Converter
4. Converting VI in to Sub VI
5. Write a programme to count Modulus 32 and display the values in decimal, octal and binary.
6. Built a VI using while loop that displays random numbers in to three wave form charts. (Strip, scope & Sweep)

7. Data Acquisition using Lab VIEW
8. Development of Temperature Measurement using Lab VIEW
9. Development of Virtual Instrument for Function Generator using Lab VIEW
10. Development of Virtual Instrument for Audio Signal Spectrum Analyser using Lab VIEW

VLSI DESIGN LAB

1. NOR and NAND as a Universal gates.
2. Solving of Boolean equations.
3. Half Adder and Full Adder.
4. Half Subtractor and Full Subtractor.
5. Encoder.
6. Decoder.
7. Multiplexer.
8. De-multiplexer.
9. Latches and Flip-Flops.
10. ALU Design.
11. Parity Generator.
12. 2-bit Comparator.
13. Synchronous Counter.
14. Asynchronous Counter.
15. Shift Registers.
16. Clock divider and generator.
17. FIFO Design.
18. UART Module.
19. SPI Module.
20. Memory Module.
21. Sequence Detector.
22. Design and Simulation of Programmable logic Array.
23. Design and simulation of Traffic light controller.
24. Design and simulation of Real time clock (RTC).
25. State machine-Eg. Moore model.

GROUP B - ELECTIVE III - ADVANCED DIGITAL IMAGE PROCESSING

UNIT I: DIGITAL IMAGE FUNDAMENTALS

Elements of a digital image processing system – structure of the human eye – image formation and contrast sensitivity – sampling and quantization – neighbors of pixel – distance measure – photographic film structure and exposure – film characteristics – linear scanner – video camera – image processing applications.

UNIT II: IMAGE TRANSFORMS

Introduction to Fourier transform – DFT – properties of two-dimensional FT – separability, translation, periodicity, rotation, average value – FFT algorithm – Walsh transform – Hadamard transform – discrete cosine transform.

UNIT III: IMAGE ENHANCEMENT

Definition – spatial domain methods – frequency domain methods – histogram – modification techniques – neighborhood averaging – median filtering – low pass filtering – averaging of multiple images – image sharpening by differentiation and high pass filtering.

UNIT IV: IMAGE ENCODING

Objective and subjective fidelity criteria – basic encoding process – the mapping – the quantizer– the coder – differential – encoding – contour encoding – run length encoding - image encoding – relative to fidelity criterion – differential pulse code modulation.

UNIT V: IMAGE ANALYSIS AND COMPUTER VISION

Typical computer vision system – image analysis techniques – spatial feature extraction – amplitude and histogram features - transforms features – edge detection – gradient operators – boundary extraction – edge linking – boundary representation – boundary matching – shape representation.

TEXT BOOK

1. Rafael C. Gonzalez, Paul Wintz, “Digital Image Processing”, Addison-Westley Publishing Company, 1987
2. Rafael C. Gonzalez, Richard E Woods “Digital Image Processing”, Pearson, 2001