

GUJARAT TECHNOLOGICAL UNIVERSITY

Master of Engineering (VLSI System Design Engineering)

Semester – II

Subject Code: 1722607

Subject Name: VLSI Signal Processing (Major Elective-II)

Sr. No.	Course Content
1	Introduction to Digital Signal Processing Systems, Iteration Bound , Pipelining and Parallel Processing
2	Retiming. Unfolding. Folding
3	Systolic Architecture Design and Fast Convolution algorithms
4	Algorithmic Strength Reduction in Filters and Transforms . Pipelined and Parallel Recursive and Adaptive Filters Scaling and Round off Noise . Digital Lattice Filter Structures
5	Bit-Level Arithmetic Architectures. Redundant Arithmetic, Numerical Strength Reduction
6	Synchronous, Wave, and Asynchronous Pipelines. Low-Power Design, Programmable Digital Signal Processors for mobile and multimedia applications.

Laboratory work: It will consist of 10 to 12 experiment based on above syllabus.

Text/References:

1. Keshag K Parthi, "VLSI Digital Signal processing systems, Design and implementation", Wiley, Inter Science, 1999.
2. Uwe Meyer-Bease, Digital Signal Processing with FPGA, Springer-India 2003
3. Mohammed Isamail and Terri Fiez, "Analog VLSI Signal and Information Processing", Mc Graw-Hill, 1994.
4. S.Y. Kung, H.J. White House, T. Kailath, "VLSI and Modern Signal Processing", Prentice Hall, 1985.
5. Jose E. France, Yannis Tsividis, "Design of Analog-Digital VLSI Circuits for Telecommunication and Signal Processing", Prentice-Hall, 1994.
6. S.Y. Kung, VLSI Array Processors, Prentice-Hall, 1988.
7. P. Lapsley, J. Bier, A. Shoham and E.A. Lee, Dsp Processor Fundamentals: Architectures and Feature, Wiley/IEEE, 2001.
8. P. Pirsch, Architecture for Digital Signal Processing, Wiley, 1998.
9. V.K. Madiseti, VLSI Digital Signal Processors, Butterworth-Heinemann/IEEE press, 1995.
10. M. Mehendale and S.D. Sherlekar, VLSI Synthesis of DSP Kernels, Kluwer, 2001.

11. Bateman and I. Paterson-Stephens, The DSP Handbook, PH/Pearson, 2002.
12. S.M. Kuo, Digital Signal Processors: Architectures, Implementation and Applications, PH/Pearson, 2004.
13. L. Wanhammar, DSP Integrated Circuits, AP, 1997.
14. M.A. Richards, A.J. Gadiant and G.A. Frank, Rapid Prototyping of Applications, PH/Pearson, 1997.
15. B. Venkataramani and M. Bhaskar, Digital Signal Processing: Architecture, Programming and Applications, TMH, 2002.
16. E.E. Swartzlander, Application Specific Processors, Kluwer, 1997.
17. U. Meyer-Baese, DSP with FPGAs, Springer-Verlag.