

<b>COURSE CODE</b>	<b>COURSE NAME</b>	<b>L-T-P-C</b>	<b>YEAR OF INTRODUCTION</b>
<b>EC 301</b>	<b>Digital Signal Processing</b>	<b>3-1-0-4</b>	<b>2015</b>
<b>Prerequisite:</b> EC 202 Signals & Systems			
<p><b>Course objectives:</b>  The purpose of this course is:</p> <ol style="list-style-type: none"> <li>1. To provide an understanding of Digital Signal Processing principles, algorithms and applications</li> <li>2. To study the design techniques for digital filters</li> <li>3. To give an understanding of Multi-rate Signal Processing and its applications</li> <li>4. To introduce the architecture of DSP processors</li> </ol>			
<p><b>Syllabus</b>  Discrete Fourier Transform and its Properties, Linear Filtering methods based on the DFT, Frequency analysis of signals using the DFT, Introduction to DCT and properties, Computation of DFT, FFT Algorithms, IDFT computation using Radix-2 FFT Algorithms, DFT Computation using Radix-4 FFT Algorithms, Efficient computation of DFT of two real sequences and a 2N-Point real sequence, Design of FIR Filters, Design of linear phase FIR Filters using window methods and frequency sampling method, Design of IIR Digital Filters from Analog Filters, IIR Filter Design, Frequency Transformations, FIR Filter Structures, IIR Filter Structures, Introduction to TMS320C67xx digital signal processor, Multi-rate Digital Signal Processing, Finite word length effects in DSP systems, IIR digital filters, FFT algorithms.</p>			
<p><b>Expected outcome:</b>  After the course, the student will understand the principle of digital signal processing and applications. The utilization of DSP to electronics engineering will also studied.</p>			
<p><b>Text Books:</b></p> <ol style="list-style-type: none"> <li>1. Oppenheim A. V., Schafer R. W. and Buck J. R., Discrete Time Signal Processing, 3/e, Prentice Hall, 2007.</li> <li>2. Proakis J. G. and Manolakis D. G., Digital Signal Processing, 4/e, Pearson Education, 2007.</li> </ol>			
<p><b>References:</b></p> <ol style="list-style-type: none"> <li>1. Lyons, Richard G., Understanding Digital Signal Processing, 3/e. Pearson Education India, 2004.</li> <li>2. Ifeachor E.C. and Jervis B. W., Digital Signal Processing: A Practical Approach, 2/e, Pearson Education, 2009.</li> <li>3. Mitra S. K., Digital Signal Processing: A Computer Based Approach, 4/e McGraw Hill (India), 2014.</li> <li>4. Salivahanan, Digital Signal Processing, 3e, Mc Graw –Hill Education New Delhi, 2014 (Smart book)</li> <li>5. Chassaing, Rulph., DSP applications using C and the TMS320C6x DSK. Vol. 13. John Wiley &amp; Sons, 2003.</li> <li>6. NagoorKani, Digital Signal Processing, 2e, Mc Graw –Hill Education New Delhi, 2013</li> <li>7. Singh A., Srinivasan S., Digital Signal Processing: Implementation Using DSP Microprocessors, Cenage Learning, 2012.</li> </ol>			