



Course: M.Tech. (Electronics & Communication Engineering)	Name of Faculty: Dr. Supriya M.H.
Topic: 18-437-0105 ADVANCED DIGITAL SIGNAL PROCESSING	Semester: FIRST
Lecture Hall: 118	Timings: as per CBCS

Week and date	Lecture topics	Assignments	Remarks
Week 1 (10 <sup>th</sup> July 19)	<b>Module 1</b> <b>Overview of Transforms</b> <ul style="list-style-type: none"> <li>Z – Transform</li> </ul>		
Week 2 (15 <sup>th</sup> July 19)	<ul style="list-style-type: none"> <li>DFT</li> <li>FFT</li> </ul>	<b>Assignment-1</b> <ul style="list-style-type: none"> <li>➤ Signal Processing Hardware – TMS 320 Series Chips.</li> <li>➤ DCT, Hillbert Transform,</li> <li>➤ Short-time Fourier Transform, Wavelet Transform</li> </ul>	
Week 3 (22 <sup>nd</sup> July 19)	<b>Module 5</b> <b>Hardware</b> <ul style="list-style-type: none"> <li>Finite word length affect in Signal Processing</li> </ul>		
Week 4 (29 <sup>th</sup> July 19)	<ul style="list-style-type: none"> <li>Real-time Implementation Considerations</li> </ul>		
Week 5 (5 <sup>th</sup> Aug 19)	<b>Module 2</b> <b>Filter Design</b> <ul style="list-style-type: none"> <li>LTI System as Frequency Selective Filters</li> <li>FIR Filters - Characteristics of FIR Filters with Linear Phase</li> </ul>		
Week 6 (12 <sup>th</sup> Aug 19)	<ul style="list-style-type: none"> <li>Fourier Series Method of FIR Filter Design</li> </ul>	<b>Assignment-1 submission</b>	
Week 7 (19 <sup>th</sup> Aug 19)	<ul style="list-style-type: none"> <li>Window method</li> <li>Design of FIR Filters by Frequency Sampling Technique</li> </ul>		
Week 8 (26 <sup>th</sup> Aug 19)	First Internals		
Week 9 (2 <sup>nd</sup> Sep 19)	<b>IIR Filters</b> <ul style="list-style-type: none"> <li>Impulse Invariant Transformation</li> <li>Bilinear Transformation</li> <li>Design of Lowpass Digital Butterworth Filter</li> </ul>	<b>Assignment-2</b> <ul style="list-style-type: none"> <li>➤ Multidimensional FFT</li> <li>➤ Multidimensional z – Transforms</li> </ul>	
Week 10 (16 <sup>th</sup> Sep 19 )	<ul style="list-style-type: none"> <li>Design of Lowpass Digital Chebyshev Filter</li> <li>Frequency Transformations</li> </ul>		

*Onam Vacation*

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Week 11 (23 <sup>rd</sup> Sep 19)	<p><b><u>Module 3</u></b>  <b><u>Multidimensional Signal Processing</u></b></p> <ul style="list-style-type: none"> <li>• 2-D Signals and Systems</li> <li>• Multidimensional Sampling</li> <li>• Difference Equations.</li> </ul>		
Week 12 (30 <sup>th</sup> Sep 19)	<ul style="list-style-type: none"> <li>• Convolution</li> <li>• Fourier representation, 2-D DFT</li> </ul>		
Week 13 (14 <sup>th</sup> Oct 19)	Second Internals		
Week 14 (21 <sup>st</sup> Oct 19)	<ul style="list-style-type: none"> <li>• Multidimensional FFT</li> <li>• Multidimensional z – Transforms</li> </ul>		
Week 15 (28 <sup>th</sup> Oct 19)	<p><b><u>Module 4</u></b>  <b><u>Multi-rate Signal Processing</u></b></p> <ul style="list-style-type: none"> <li>• Sampling and Sampling rate Conversion</li> <li>• Decimation and Interpolation FIR &amp; IIR Decimators</li> </ul>		
Week 16 (4 <sup>th</sup> Nov 19)	<ul style="list-style-type: none"> <li>• FIR &amp; IIR Interpolators</li> </ul>	<i>Assignment-2 submission</i>	
Week 17 (6 <sup>th</sup> Nov 19)	<i>Publication of Sessional</i>		
Week 18 (7 <sup>th</sup> Nov 19)	<b>REVISION</b>		