

**University of Computer Studies (Thaton)**  
**2024-2025 Academic Year**  
**FourthYear (B.C.Tech.)**

**Lecture Plan**

**CT-4235 : Signals and Systems**

**Semester VIII**

- References.** : 1. Signals & Systems by Alan V. Oppenheim, Alan S. Willsky with S. Hamid Nawab, 2<sup>nd</sup> Edition, Prentice Hall, 1996.  
: 2. Fundamentals of Signals and Systems by Benoit Boulet, 1<sup>st</sup> Edition, Charles River Media, 2006.  
: 3. Signals and Systems by Michael D. Adams, 3<sup>rd</sup> Edition, University of Victoria, Canada, 2020.  
: 4. Signals and Systems by Hwei P. Hsu, 2<sup>nd</sup> Edition, Mc.Graw-Hill, 2011.  
: 5. Signals and Systems by Simon Haykin, Barry Van Veen, John Wiley & Sons, Inc., 1999.

**Prerequisites : CT-4134**

**Period : 64 periods for 16 weeks (4 periods/week)**

No	Chapter	Period	Page	Ref. no	Detail Lecture Plan
1.	<b>Chapter 1 Signals and Systems</b> 1.1 Continuous-Time and Discrete-Time Signals 1.2 Transformations of the Independent Variable 1.3 Exponential and Sinusoidal Signals 1.4 The Unit Impulse and Unit Step Functions 1.5 Continuous-Time and Discrete-Time Systems 1.6 Basic System Properties	8	1-56	1	All Examples and Questions
2.	<b>Chapter 2 Linear Time-Invariant Systems</b> 2.1 Discrete-Time LTI Systems: The Convolution Sum 2.2 Continuous-Time LTI Systems: The Convolution Integral 2.3 Properties of Linear Time-Invariant Systems 2.4 Causal LTI Systems Described by Differential and Difference Equations 2.5 Singularity Functions	10	75-137	1	All Examples and Questions
3.	<b>Chapter3 Fourier Series Representation of Periodic Signals</b> 3.1 A Historical Perspective 3.2 The Response of LTI Systems to Complex Exponentials 3.3 Fourier Series Representation of Continuous-Time Periodic Signals 3.4 Convergence of the Fourier Series 3.5 Properties of Continuous-Time Fourier Series	10	178-249	1	All Examples and Questions

No	Chapter	Period	Page	Ref. no	Detail Lecture Plan
	3.6 Fourier Series Representation of Discrete-Time Periodic Signal 3.7 Properties of Discrete-Time Fourier Series 3.8 Fourier Series and LTI Systems 3.9 Filtering 3.10 Examples of Continuous-Time Filters Described by Differential Equations 3.11 Examples of Discrete-Time Filters Described by Difference Equations				
4.	<b>Chapter 4 The Continuous-Time Fourier Transform</b> 4.1 Representation of Aperiodic Signals: The Continuous-Time Fourier Transform 4.2 The Fourier Transform for Periodic Signals 4.3 Properties of the Continuous-Time Fourier Transform 4.4 The Convolution Property 4.5 The Multiplication Property 4.6 Tables of Fourier Properties and Basic Fourier Transform Pairs 4.7 Systems Characterized by Linear Constant-Coefficient Differential Equations	10	285-333	1	All Examples and Questions
5.	<b>Chapter 5 The Discrete-Time Fourier Transform</b> 5.1 Representation of Aperiodic Signals: The Discrete-Time Fourier Transform 5.2 The Fourier Transform for Periodic Signals 5.3 Properties of the Discrete-Time Fourier Transform 5.4 The Convolution Property 5.5 The Multiplication Property 5.6 Tables of Fourier Transform Properties and Basic Fourier Transform Pairs 5.7 Duality 5.8 Systems Characterized by Linear Constant-Coefficient Difference Equations	8	359-399	1	All Examples and Questions
6.	Revision for All Chapters	2			
7.	Lab	16			

#### Assessment Plan

<b>Exam</b>	<b>60%</b>
<b>Tutorial</b>	<b>10%</b>
<b>Lab</b>	<b>10%</b>
<b>Quiz</b>	<b>10%</b>
<b>Assignment</b>	<b>10%</b>