



EEE 211 – Continuous Signals and Linear Systems

PART A: General Information

1. Course Number
Course Title
Credit (Contact) Hours
2. Level and Term (Section)
Academic Term
3. Type of Course
Offered to
4. Pre-requisite Course(s)
5. Course Website
6. Lecture Schedule
7. Important Dates
8. Course Teacher(s)
- EEE 211
Continuous Signals and Linear Systems
3.0
Level-2, Term-I
January 2026
Core Course
EEE
None
Designated Microsoft Teams for each section
Section A: Sat 10 am, Sun 11 am, Mon 10 am - Room 918
Section B: Sun 09 am, Mon 08 am, Tues 09 am - Room 923
Section C: Sun 09 am, Mon 09 am, Wed 09 am - Room 920
For important dates and examination schedules and latest updates, please follow the course website
Section A: Dr. S. M. Mahbubur Rahman
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PART B: Course Details

9. Course Content (As approved by the Academic Council)
 - Classification of signals and systems: signals - classification, basic operation on signals, elementary signals, representation of signals using impulse function; systems- classification.
 - Properties of Linear Time Invariant (LTI) systems: Linearity, causality, time invariance, memory, stability, invertibility.
 - Time domain analysis of LTI systems: (i) Differential equations - system representation, order of the system, solution techniques, zero state and zero input response, system properties; (ii) impulse response

- convolution integral, determination of system properties; (iii) state variable - basic concept, state equation and time domain solution.

- Frequency domain analysis of LTI systems: (i) Fourier series - properties, harmonic representation, system response, frequency response of LTI systems; (ii) Fourier transformation - properties, system transfer function, system response and distortion-less systems.
- Applications of time and frequency domain analyses: solution of analog electrical and mechanical systems, amplitude modulation and demodulation, time-division and frequency-division multiplexing.
- Laplace transformation: properties, inverse transform, solution of system equations, system transfer function, system stability, frequency response and application.
- Solution of analog electrical and mechanical systems

10. Course Objectives

- To develop a solid foundation on the continuous time signals and systems, and the essential techniques required for their analysis and synthesis for pursuing further studies in the field of telecommunications and signal processing
- To study the most widely used techniques for transforming and analyzing signals and systems, both in time domain and frequency domain
- To investigate the behavior of linear time invariant (LTI) systems with continuous time signals as input using various techniques, such as convolution, differential equations and state equations.
- To explore the analogy between the electrical systems and mechanical or electromechanical systems, and apply this analogy for problem solving

11. Background Knowledge required

Fundamental concepts of mathematics, fundamentals of electrical circuits and mechanical systems.

12. Course Outcomes

CO No.	CO Statement	Corresponding PO(s)*	Domains and Taxonomy level(s)**	Delivery Method(s) and Activity(-ies)	Assessment Tool(s)
CO1	Understand the properties of different continuous time signals and basic operations on them	PO(a)	C2	Lectures, Discussions	Assignment, Class test, Final exam
CO2	Apply the fundamental concepts of continuous time signals, based on the understanding of their properties to analyse input/output behaviour of LTI systems in time-domain.	PO(a)	C3	Lectures, Discussions	Assignment, Class test, Final exam
CO3	Apply the concept of frequency domain transformation (Fourier series and Fourier transform) of continuous time signals to analyse LTI system behaviour	PO(a)	C3	Lectures, Discussions	Assignment, Class test, Final exam
CO4	Analyse input/output behaviour of LTI systems using Laplace transform	PO(b)	C4	Lectures, Discussions	Assignment, Class test, Final exam

***Program Outcomes (PO):** PO(a) Engineering Knowledge, PO(b) Problem Analysis, PO(c) Design/development Solution, PO(d) Investigation, PO(e) Modern tool usage, PO(f) The Engineer and Society, PO(g) Environment and sustainability, PO(h) Ethics, PO(i) Individual work and team work, PO(j) Communication, PO(k) Project management and finance, PO(l) Life-long Learning

13. Assessment Strategy

- Class participation will be judged by in-class evaluation; attendance will be recorded in every class.
- Continuous assessment will be done in the form of class tests, assignments, in-class evaluations.
- Final Examination: A comprehensive term final examination will be held at the end of the Term following the guideline of academic Council.

14. Distribution of Marks

Class Participation	10%
Homework, Assignment and Quizes	20%
Final Examination	70%
Total	100%

15. Main Textbook

- Continuous and Discrete Signals and Systems (2nd edition) - Samir S. Soliman and Mandyam D. Srinath
- Signals and Systems (2nd Edition) - Alan V. Oppenheim, Alan S. Willsky and S. Hamid Nawab
- Analysis of Linear Systems – David K. Cheng

16. Reference Textbooks and relevant resources

- Signals, Systems, and Transforms – Charles L. Phillips, John M. Parr, Eve A. Riskin (4th Ed)
- Signal Processing and Linear Systems – B. P. Lathi (2nd Ed)
- Continuous-Time Signals and Systems – Michael D. Adams

N.B.: Besides going through relevant topics of the textbooks, it is strongly advised that the students follow the class lectures and discussions regularly for a thorough understanding of the topics.

17. Lecture Plan

Week	Lectures	Topic
1-2	1-6	<i>Classification of signals and systems:</i> signals - classification, basic operation on signals, elementary signals, representation of signals using impulse function; systems- classification.
3	7-9	<i>Properties of Linear Time Invariant (LTI) systems:</i> Linearity, causality, time invariance, memory, stability, invertibility.
4-6	10-18	<i>Time domain analysis of LTI systems:</i> (i) <i>Differential equations</i> - system representation, order of the system, solution techniques, zero state and zero input response, system properties; (ii) <i>impulse response</i> - convolution integral, determination of system properties; (iii) <i>state variable</i> - basic concept, state equation and time domain solution.
7-8	19-24	<i>Frequency domain analysis of LTI systems:</i> (i) <i>Fourier series</i> - properties, harmonic representation, system response, frequency response of LTI systems.
9-10	25-30	<i>Frequency domain analysis of LTI systems:</i> (ii) <i>Fourier transformation</i> - properties, system transfer function, system response and distortion-less systems.
11	31-33	<i>Applications of time and frequency domain analyses:</i> solution of analog electrical and mechanical systems, amplitude modulation and demodulation, time-division and frequency-division multiplexing.
12-13	34-39	<i>Laplace transformation:</i> properties, inverse transform, solution of system equations, system transfer function, system stability and frequency response and application.
14	40-42	Solution of analog electrical and mechanical systems.

18. Important University Policies

- Please check the following link for Rules and regulations for the undergraduate programmes:
<https://www.buet.ac.bd/info/Academicinformation/RulesUndergradprogram>