

Faculty of Engineering & Technology

Signal Analysis

Information :

Course Code : COM 362

Level : Undergraduate

Course Hours : 3.00- Hours

Department : Department of Electrical Engineering

Instructor Information :

| Title | Name | Office hours |
|--------------------|--|--------------|
| Lecturer | MOHAMED MOUSA SAYED EMAM AHMED | 6 |
| Lecturer | AHMED SAEED ABDELSAMEA SAYED | 8 |
| Assistant Lecturer | Mostafa Mohamed Salaheldin Abdelkhalek | |
| Assistant Lecturer | Ahmed Essam Fahim Zahran | 3 |
| Teaching Assistant | Bassel Yasser Mohamed Kamel | |

Area Of Study :

- Develop students knowledge about signals and systems.
- Develop students skills about using software tools in signal analysis
- Share ideas and work in a team or a group.

Description :

Continuous and discrete time signals and systems, Continuous time convolution, Discrete time convolution, Fourier series representation of periodic signals: Fourier representation of continuous time periodic signals, Fourier series representation of discrete time periodic signals, The continuous-time Fourier transform: the Fourier transform for periodic signals, the properties of continuous-time Fourier transform, The discrete-time Fourier transform: representation of a periodic signals, the discrete Fourier transform for periodic signals, properties of the discrete-time Fourier transform.

Course outcomes :

a. Knowledge and Understanding: :

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|-----|--|
| 1 - | Identify the application of mathematics in analog and discrete signals and systems description and classification. |
| 2 - | Define the main properties of convolution integral and applications. |
| 3 - | List the different types of analogue and discrete signals and systems. |
| 4 - | Define Fourier series, transforms and their properties. |

b. Intellectual Skills: :

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|-----|---|
| 1 - | b1. Analyse the analogue and discrete signals in time and frequency domains. |
| 2 - | b2. Analyse analogue systems in time and frequency domains, examples on electric systems. |

c. Professional and Practical Skills: :

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|-----|---|
| 1 - | c1. Use software tools (MATLAB) in signal analysis. |
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2 - c2. Prepare technical report.

d.General and Transferable Skills: :

- 1 - d1. Communicate effectively with other people using visual, graphic, written and verbal means.
- 2 - d2. Manage time to meet deadlines.
- 3 - d3. Search for information related to signal and systems applications.
- 4 - d4. Refer the relevant literatures in report writing

Course Topic And Contents :

| Topic | No. of hours | Lecture | Tutorial / Practical |
|--|--------------|---------|----------------------|
| Concepts and analysis of Continuous-time systems | 19 | 12 | 7 |
| Convolution integral and properties | 10 | 6 | 4 |
| Fourier series and Fourier transform | 15 | 9 | 6 |
| Discrete-time signals | 15 | 9 | 6 |
| Continuous-time signals | 16 | 9 | 7 |

Teaching And Learning Methodologies :

Interactive Lecturing

Discussion

Problem Solving

Assignments/Research

Course Assessment :

| Methods of assessment | Relative weight % | Week No | Assess What |
|-------------------------|-------------------|---------|---|
| 2 Midterms | 30.00 | | |
| Final Exam | 40.00 | 16 | to assess the comprehensive understanding of the scientific background of the course, to assess the ability of problem solving and of analysis and design of simple electronic circuits |
| In Class Quizzes | 10.00 | | |
| Performance/assignments | 20.00 | | |

Course Notes :

No course notes are required

Recommended books :

Alan V. Oppenheim, Signals and Systems-2nd Edition, 1997