# EE210.1x Signals and Systems, Part 1

## Programme Overview

We encounter signals and systems extensively in our day-to-day lives, from making a phone call, listening to a song, editing photos, manipulating audio files, using speech recognition softwares like Siri and Google now, to taking EEGs, ECGs and X-Ray images. Each of these involves gathering, storing, transmitting and processing information from the physical world. This course will equip you to deal with these tasks efficiently by learning the basic mathematical framework of signals and systems

This course is divided into two parts. In this part (EE210.1x), we will explore the various properties of signals and systems, characterization of Linear Shift Invariant Systems, convolution and Fourier Transform, while the next part (EE210.2x), will deal with the Sampling theorem, Z-Transform, discrete Fourier transform and Laplace transform. Ideas introduced in this course will be useful in understanding further electrical engineering courses which deal with control systems, communication systems, power systems, digital signal processing, statistical signal analysis, and digital message transmission. The concepts taught in this course are also useful to students of other disciplines like mechanical, chemical, aerospace, and other branches of engineering and science.

***The course content will be offered in two languages, English and Hindi. Whereas, the assignments and activities will be available only in English.***

Please check the course video here.

## Course content

The topics covered in this course:

- How to unite abstractions for several kinds of systems, to draw a common system description

- How to identify properties that this system has or does not have

- How to deal with an important class of systems namely, linear shift invariant systems

- How to represent and analyze signals and systems in the Fourier domain

## Teaching Faculty

**Prof. Vikram Gadre,** Department of Electrical Engineering, IIT Bombay

## Duration and Venue

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| **Registration Opens** | August 10, 2020 |
| **Registration Ends** | October 16, 2020 |
| **Course Starts** | August 10, 2020 |
| **Course Ends** | November 25, 2020 |
| **Total Duration** | 8 Weeks |

## Who Should Attend

This course can be taken by any learner who has knowledge of High School Mathematics and Basic Calculus.

## Course Fee and Certification

The registration fee for the course is **Rs. 475/-**. However, register before **25 August 2020** for **Rs. 375/-** to avail the early bird registration discount. Please note that the registration fee once paid is neither refundable nor adjustable under any circumstances

**Important payment instructions**:

In case of a course fee transaction failure, the participant will get an auto-generated mail with instructions for further process. Please go through the mail carefully. If the amount is already debited to your account, please do not make another payment. In case of a double payment (or more than once), please send a mail to dbpaccounts@cse.iitb.ac.in requesting for a refund. The participant will also have to check the following link for his/her vendor

creation in order to get a refund. IIT Bombay will not be able to process the refund (for any reason) if the vendor creation, as per IIT Bombay's requirement, is not completed by the participant. **Link**:- https://portal.iitb.ac.in/vrp/index.jsp

Honor Code e-Certificates will be issued on successful completion of the course based on the grading policy mentioned in the course. Please note that all e-certificates will be issued online after the course ends on 25 November 2020. No hard copies will be given.

## How to Apply

Enrollment will be strictly online, and no other mode of application will be entertained. The online registration for the course will start on **10 August 2020**. It will remain open till **16 October 2020**.

Registration process for the Program: Flowchart of registration process

- Sign up using your valid email id on the website: https://www.it.iitb.ac.in/lakshya/signup.html

- After verification, your account will be created

- Log in on the website with the verified account

- Go to Announcements, select the program and register

- After successful registration, you will receive an automated email. Your name will be listed in the "**List of Participants page"**

- Thereafter register on IITBombayX site (https://courses.iitbombayx.in/register) using the same email id to access the course content

## Note

The course content is released under Open Source License. All participants must agree that the content contributed by them in any form, (assignments, questions, etc.) would be released under Open Source Licence, by accepting the terms mentioned under 'No Objection Certificate'. All contributors will be acknowledged.