

EEE 4107 Signals and Communication I

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Summary

This course will introduce the student to the fundamentals of signals and systems with emphasis on communication systems. Communications systems have come to play a major role in modern life and a proper understanding of how these systems work requires a good grasp of signals and systems theory. It is hoped that this course will enable the student to pursue further studies in communication and gain confidence in analysing communication systems.

Course content

1. Representation and characterisation of signals
2. Linear systems
3. Fourier Series
4. Fourier transform
5. Amplitude and Frequency modulation
6. Multiplexing schemes
7. Transmitter circuits

Prerequisites

It is assumed that the student is familiar with integral and differential calculus, complex numbers, Fourier series, electric circuit theory. Some computer programming experience is also assumed. A number of programming assignments will be given during the course. For these assignments the student may use any language but Matlab and Python may prove to be the most useful.

Course books

I will use the following books as references (1 and 2 are available in the library):

1. Simon Haykin and Barry Van Veen, *Signals and Systems*, 2nd edition, John Wiley and Sons.
2. Simon Haykin and Michael Moher, *Communication Systems*, 5th edition, John Wiley and Sons.
3. Alan V. Oppenheim and Ronald W. Shafer *Discrete-Time Signal Processing*, 2nd edition, Prentice Hall
4. John G. Proakis and Masoud Salehi *Fundamentals of Communication Systems*, Pearson Education

Assessment

There will be two continuous assesment tests during the semester (during 8th and 11th weeks) and a final exam. The dates will be announced at a later date. Also, regular homework will be assigned. **Academic Honesty** is expected. Any work handed in must be your own. Discussion among students is encouraged but answers must be written up individually.

Office hours

By appointment.