

Course: Biomedical Signals and Detection

Instructor: C.Y. Lee

Course description

This course covers the following concepts: medical data acquisition, conversion, analysis and processing, elementary digital signal processing theory, and various applications in biomedical area.

References

Both are free eBooks

The scientist and engineer's guide to digital signal processing

S.W. Smith

California Technical Publishing

Biomedical digital signal processing

WJ Tompkins

University of Wisconsin

Course Schedule

Introduction to medical signals

Introduction to MATLAB and guide programming

Signal conversion

Signal and systems

Signal and systems

Fourier transform properties

Fourier transform properties

ECG feature extraction

mid-term exam

error correction

data compression

Z-transform and filter design

Statistical signal processing – basics of statistics

Statistical signal processing – variance, covariance, correlation

Statistical signal processing – covariance matrix, Karhunen-Loeve transform

Statistical signal processing – probability distribution function and central limit theorem

Statistical signal processing – adaptive filter

Course evaluation

Passing score for graduate course is 70. In general, score is allocated between class attendance, homework, mid-term written exam, final written exam and student oral presentation. Course instructor reserves the right to adjust the grading scheme.

