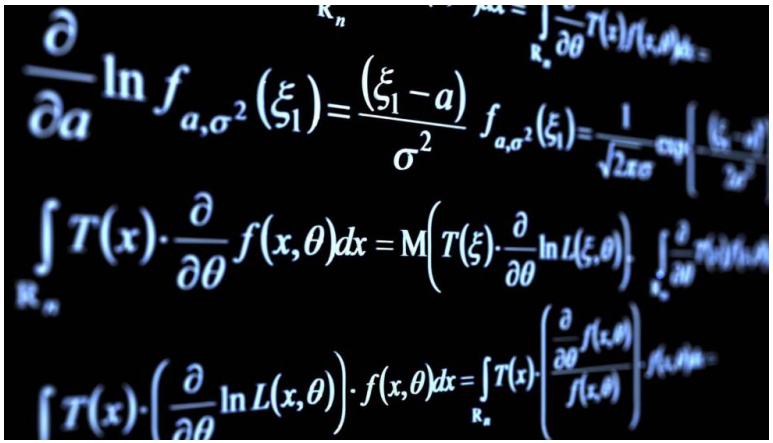
Introduction

Chapter 1

Jaime Laviada

Área de Teoría de la Señal y Comunicaciones
Universidad de Oviedo

Where do we come from? Where are we going?



Mathematics

Engineering

John Tukey: "I wouldn't want to fly in a plane whose design depended on whether a function was Riemann or Lebesgue integrable."

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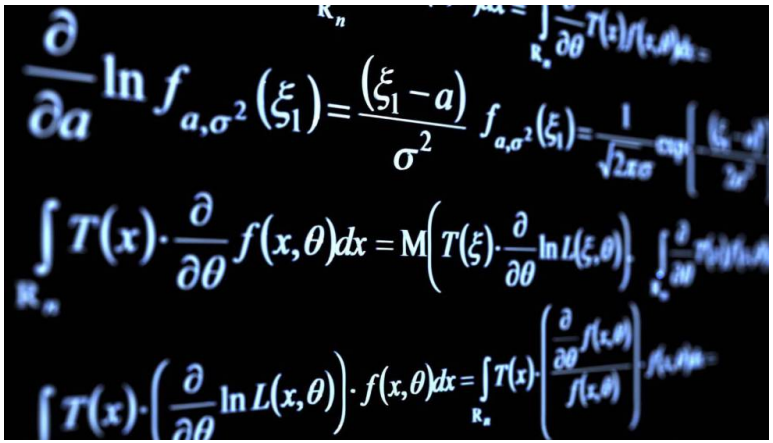

Mathematics

Signals and Systems

Engineering

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Bibliography- I

Basic Bibliography

E. Gago-Ribas. Señales y Sistemas Escalares Unidimensionales de Variable Real. Vol. ST-I.
- Signal Spaces
- Transforms theory
- Signals and Systems in CV

A. V. Oppenheim, A. S. Willsky, I. T. Young. Signals and Systems (2nd. Ed.), Prentice-Hall International, 1997.
- Signals and Systems
- Transforms

Supplementary Bibliography

A. V. Oppenheim, R. W. Schafer, Digital Signal Processing, Pearson, 1975.
- Signals and Systems in DV
- Transforms in DV

C. Gasquet and P. Witomski, Fourier analysis and applications, Springer, 1999.
- Mathematical concerns
- Distribution theory

Bibliography - II

Bibliography - Quizzes and Problems

E. Gago-Ribas. Señales y Sistemas Escalares Unidimensionales de Variable Real. Ejercicios Resueltos. Vol. ST-II. GR Editores, S.L., León, 2009.

- Signal spaces (CV)
- Signals and Systems (CV)
- Transforms (CV)
- Sampling

A. V. Oppenheim, A. S. Willsky, I. T. Young. Signals and Systems (2nd. Ed.), Prentice-Hall International, 1997.

- Everything (CV and DV)

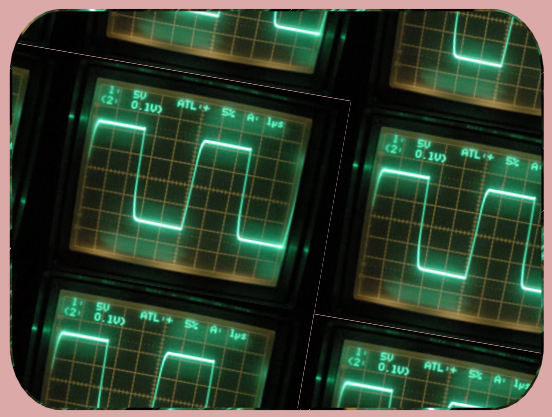
The rest of the books in the bibliography also include a large number of problems, which are focused on the topics previously described.

Resources

- Course bibliography (available in most university libraries)
- Virtual Campus
  - Slides/Notes
  - Lab. session notes and videos

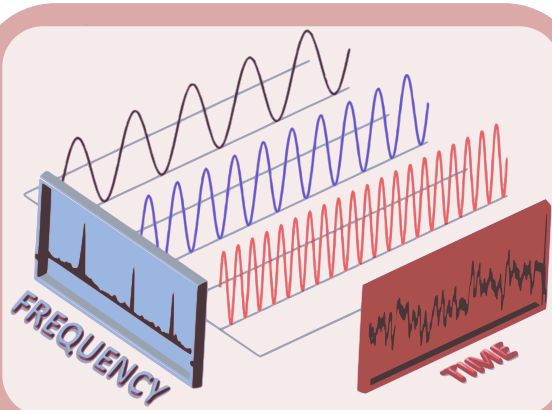
General overview

Signals

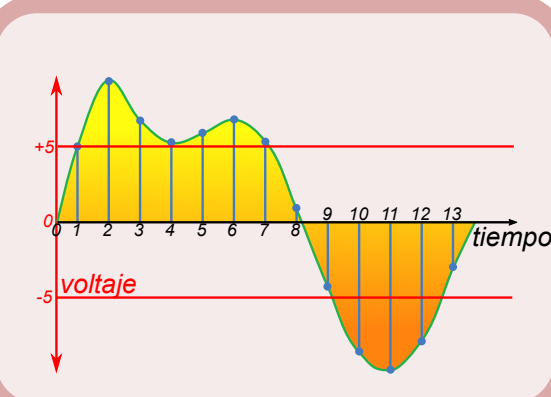


Systems

Transforms



Sampling



Syllabus

Part I: Introduction and General Analysis

Chapter 1: Introduction to the course
Chapter 2: Function (signal) spaces
Chapter 3: Operator spaces (systems)

Part II: Continuous-variable Signals and Systems

Chapter 4: Relevant starting signals
Chapter 5: Introduction to distribution theory
Chapter 6: Periodic signals: the Fourier series (FS) representation
Chapter 7: Aperiodic signals: The Fourier transform (FT)

Part III: Discrete-variable Signals and Systems

Chapter 8: Relevant starting signals
Chapter 9: Periodic signals: Fourier series (FS) representation of discrete-variable signals
Chapter 10: Aperiodic signals: the Fourier transform (FT) of discrete-variable signals

Part IV: Relation between continuous- and discrete-variable signals/systems

Chapter 11: Discrete- and Continuous-variable signals/systems

Appendixes: Complex-Variable Transforms

Appendix 1: Continuous variable: the Laplace transform
Appendix 2: Discrete variable: the z-transform