

WELCOME TO EE3TP4

SIGNALS AND SYSTEMS

Tim Davidson

CRL-203

Ext. 27352

Email: davidson@mcmaster.ca

Web <http://www.ece.mcmaster.ca/~davidson>

(Look for EE3TP4 link)

Text Haykin and Van Veen

Lectures: Tues, Wed, Fri, 12.30pm
TSH B-128

Tutorial: Mon, 8.30am
HSC 1A1

Labs: According to assigned groups
Every second week

MARKING SCHEME

LABS: 15%

TWO MIDTERM TESTS @ 15% = 30%

FINAL EXAM: 55%

DETAILS

LABS START: 17th SEPT

TUTORIALS START: 17th SEPT

SOME FRIENDLY ADVICE

REVISE MATERIAL ON
LAPLACE TRANSFORMS
FREQUENCY RESPONSE
FROM 2C34

DO MORE THAN HALF OF EACH PROBLEM
SET UNDER EXAM CONDITIONS

- THINK ABOUT WHAT YOU ARE DOING
IN THE LABS.

COME TO LECTURES

- COME TO THE TUTORIAL
READ THE TEXT

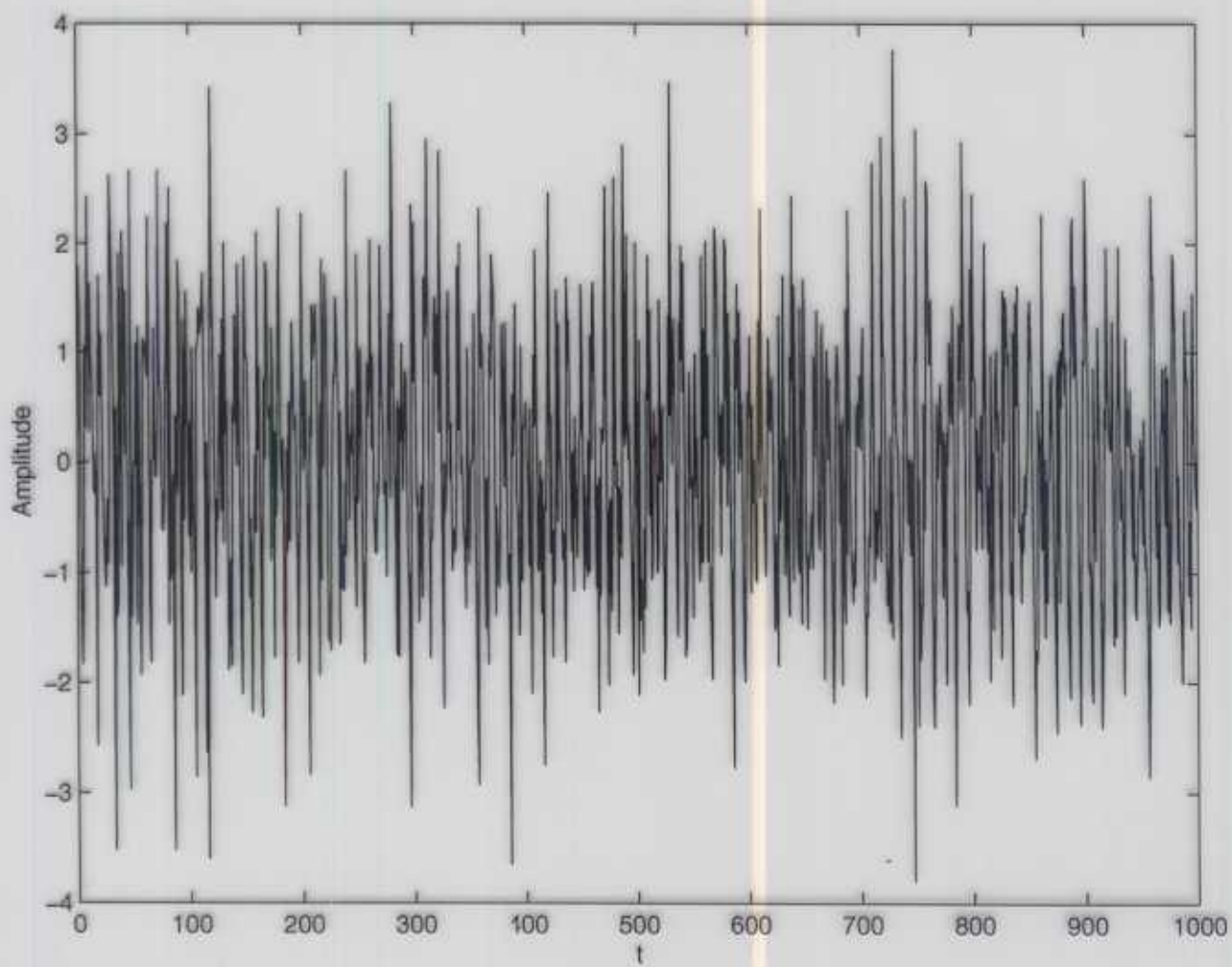
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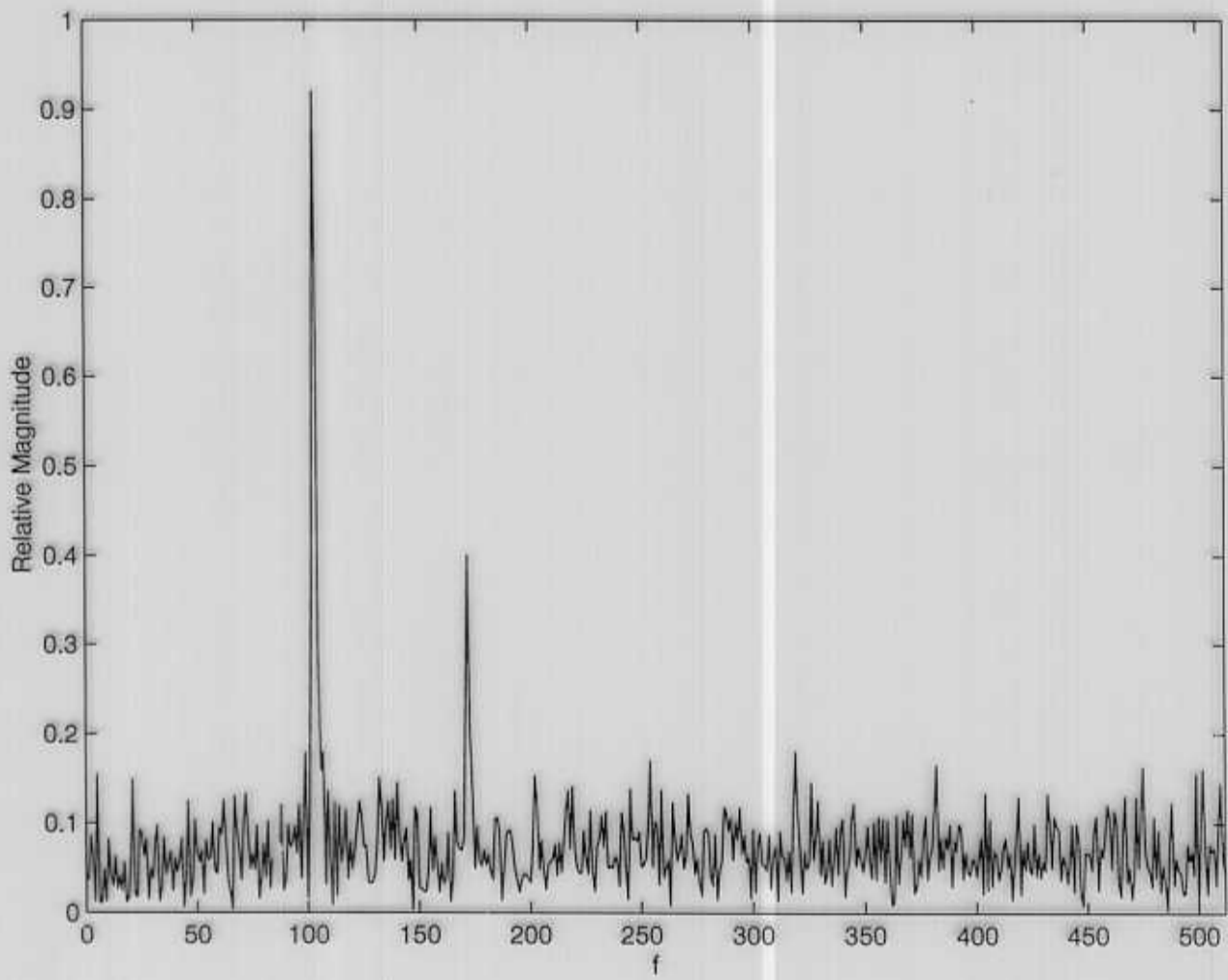
COURSE OBJECTIVES

- DISCOVER FUNDAMENTAL PRINCIPLES OF REPRESENTING SIGNALS AND (LINEAR) SYSTEMS IN THE TIME AND FREQUENCY DOMAINS

USE THESE PRINCIPLES IN THE ANALYSIS AND DESIGN OF LINEAR CONTROL AND COMMUNICATION SYSTEMS.

GAIN PRACTICAL EXPERIENCE IN THE USE OF LABORATORY EQUIPMENT FOR SIGNAL MEASUREMENT, AND IN THE USE OF A STANDARD ENVIRONMENT FOR SYSTEM SIMULATION (MATLAB).





COURSE CONTENT

- BASIC DEFINITIONS, ELEMENTARY SIGNALS, FUNDAMENTAL PROPERTIES. (CHAPTER 1)
- TIME-DOMAIN REPRESENTATIONS OF SYSTEMS (CHAPTER 2)

- Convolution

- Impulse response

- Frequency response

- Differential and difference equations.

FOURIER REPRESENTATIONS (CHAPTER 3)

- Definitions

- Properties

APPLICATIONS OF FOURIER REPRESENTATIONS (CHAPTER 4)

- Frequency response

- Filtering and filter design

- AM / DSB-SC communications

- Sampling / Digitization

- LAPLACE TRANSFORM (CHAPTER 6)

- This will be mostly review material, but the transform is slightly different from that used in 2C34.
- We will focus on the Bilateral Laplace Transform. The one you know is the unilateral one

- THE Z-Transform (Chapter 7)

- This plays the same role as for discrete time systems as the Laplace transform plays for continuous-time systems

- Applications to Communications (Chapter 8)

- Only brief.
- Most of this will be covered in EE 3T14

- APPLICATIONS TO CONTROL (Chapter 9)

- Feedback, stability
- Root locus, Nyquist, Routh-Hurwitz Analysis
- Bode diagrams; PI, lead/lag controller design