

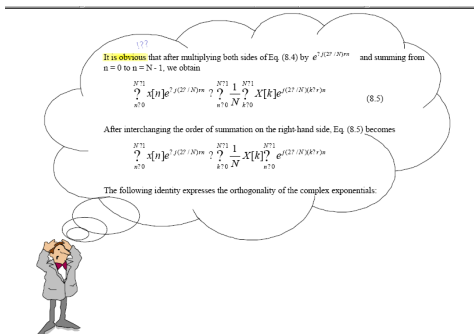
# Introduction to DSP class: a 1-day class

## DSP Foundation

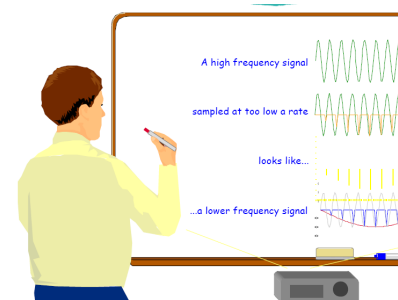
### Benefits

- Understand DSP principles
- Make better DSP design choices
- Apply DSP properly

Learn real-world DSP. Put DSP principles into practice and understand their realities and limitations.



Too much theory?



Get practical

### Contents

In this class we explain DSP including its advantages, applications and limitations, with a focus on practical questions.

### DSP basics

Learn when and how to apply DSP correctly and productively, through a good grasp of the fundamentals of the subject.

- When and why to use DSP
- Converting analogue signals
- Sampled data systems
- Data representations
- Complex numbers
- Typical DSP signals
- Aliasing and antialiasing
- Reconstruction

### Practical limitations

Know the real practical limitations of DSP and avoid common pitfalls.

- Frequency resolution
- Amplitude resolution
- Neglected effects of bad timing
- Quantization noise
- Sampling and aliasing

### Time domain processes

Understand the basic time-domain processes and their applications.

- Correlation and convolution
- Detecting signals in noise
- Identifying signals
- Finding a reference signal

### Frequency analysis

Fourier transform theory is easier than you think: practice is harder than you think. We clarify this crucial area and show how you can apply these techniques in practical ways.

- Spectral analysis
- Convolution
- Short Fourier transforms
- Frequency resolution
- Fourier transform limitations
- FT assumption of periodic signals
- Effects of short-duration signal
- Frequency 'leakage'

### Windowing

Windowing is important in FT analysis and in filtering. We explain how windows work and what they do.

- The basis for windowing
- Improving frequency resolution
- Unwanted side effects

### Filtering

Filtering is the most common application of DSP. We give you insight into what it does, how it works, and how to do it.

- FIR and IIR filters
- Impulse and frequency responses
- Introduction to FIR filter design
- Introduction to IIR filter design

### Time and arrangements

This class takes 1 day.

It is presented 'on-site' by arrangement - the material can be adapted if you have specific needs (at extra cost).

Sometimes we arrange 'public' classes: schedules are posted on the Internet:

<http://www.bores.com/schedule.htm>

### DSP Foundation

'Introduction to DSP' is self-contained but we recommend it be taken as part of our 4-day 'DSP Foundation' class that covers DSP, FIR and IIR filters, and C programming.

Contact us for details and advice:

[chris@bores.com](mailto:chris@bores.com)

### Booking and questions

Call us by 'phone or send email to book or to ask questions.

- contact: Dr Chris Bore
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- mobile: +44 (0)7921 153219
- email: [chris@bores.com](mailto:chris@bores.com)

### About us

BORES Signal Processing train managers, engineers and programmers to understand and use DSP and streaming media processing.

- established 17 years
- excellent reputation
- worldwide activities
- [www.bores.com](http://www.bores.com)