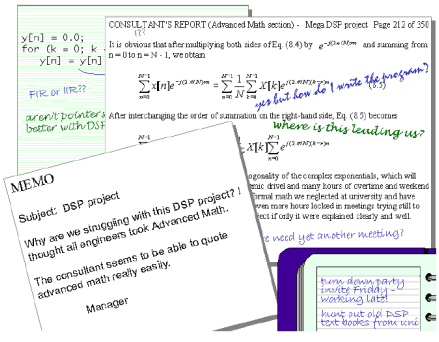
DSP Foundation class: a 4-day class

DSP Foundation

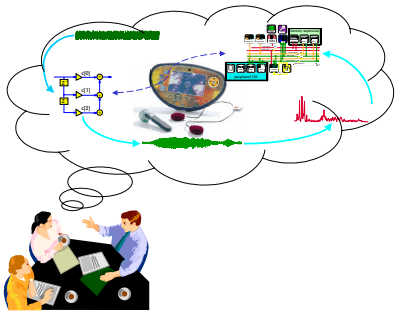
Benefits

- Understand DSP
- Write DSP programs
- Apply DSP properly

You will learn to apply DSP to real-world design problems, make well-informed design choices, and write DSP programs.



From academic dream...



...to practical reality

Contents

In this class we show why, when and how to apply DSP in real practical situations. The class offers insight and understanding without getting bogged down in math. We take a practical approach, considering from the outset computational load and limitations of implementation on real hardware.

Introduction to DSP

Learn about DSP including its advantages, applications and limitations.

- Why and when to use DSP
- Sampled data systems
- Aliasing and antialiasing
- Reconstruction
- Practical limitations
- Frequency & amplitude resolution
- Quantization and timing errors
- Correlation and convolution
- Frequency analysis
- Fourier transforms
- Frequency 'leakage'
- Windowing

C programming for DSP

Learn the basics of DSP programming in C.

- DSP data types
- Complex numbers
- DSP hardware
- Pointers and buffering

FIR digital filters

Learn how FIR digital filters are used, how to implement them efficiently on DSP hardware and how the aim of efficient implementation affects design choices.

- FIR filter basics
- Analysis of FIR filters
- Frequency & impulse responses
- The window design method
- Optimization design methods
- Parks-McLellan equiripple design
- Practical limitations of FIR filters
- DSP processors
- FIR programming in C
- FIR programming for a DSP

IIR digital filters

Learn why IIR filters fail so often when implemented on real DSP hardware. Understand the practical limitations when implementing on limited precision hardware, and learn how to avoid the common pitfalls.

- IIR filter basics
- Analysis of FIR filters
- Frequency & impulse responses
- IIR filter design
- Poles. zeroes and filter response
- IIR design models
- IIR filter programming
- Finite precision implementations
- Problem of quantization feedback
- Design workarounds & structures
- Group and order IIR sections
- Debunking nonsense

Time and arrangements

This class takes 4 days.

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

Pic'N'Mix

'You can design a class to suit your specific needs. Each topic in this DSP Foundation class can be a self-contained session, from which you can "pic'n'mix" to make your own class.

Contact us for details and advice:

chris@bores.com

Booking and questions

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

- contact: Dr Chris Bore
- 'phone: +44 (0)1483 740138
- mobile: +44 (0)7921 153219
- email: 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