Module Type		Taught		
Level		6	Credit Value	10
Programme(s) in which module is available		BEng: Electrical and Electronic Engineering, .Communications Engineering, Electronic Engineering and Computer Science		
Involvement of Other Schools		None		
Resource Split		N/A		
Name of Module Co-ordinator		Dr Vladimir Mezentsev		
Related Modules	Pre-requisites	EE2ESA or equivalent		
	Co-requisites	None		
	Prohibited Combinations	None		
Minimum and Maximum Intake Sizes		None		

Aims of the Module

To provide the analytical basis of discrete time and digital signal processing. To introduce the design and implementation of real-time digital signal processing systems. To extend the concepts to other areas such as image processing.

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Summary of Content

Analytical methods for signal processing in the continuous and discrete domains: Fourier transforms; convolution, correlation; sampling: aliasing; windows; Laplace transform and the z-transform; frequency responses; placing of poles and zeros in the z-plane; canonic forms.

Software tools to aid the designer.

Building filters using sequential real-time digital signal processing systems; architectures; algorithms. Typical applications. Implementation issues; noise, timeliness. Specialised and novel architectures for signal processing. Pipelined architectures. Processor networks.

Two- and higher dimensional signal processing; image processing.

Summary of Methods and Frequency of Teaching

Lectures/tutorials 16 x 1 hours
Laboratories 4 x 3 hours
Private study 72 hours

Summary of Methods of Assessment and Feedback (including formative feedback)

Two essays/case studies based on laboratory work (50% each)
Feedback will be provided according to School guidelines. 1-to-1 feedback will be provided orally at tutorials and in laboratory classes and by written comments on written reports. Generic feedback will be provided orally in class and via Blackboard.

Module Outcomes – what the student should gain from successful completion of the module:	Learning and Teaching and Assessment Strategies to enable outcomes to be achieved and demonstrated	
	Learning and Teaching Methods	Assessment Methods
Knowledge and Understanding of • Methods used in the design of signal processing systems in the continuous domain • Extension of these methods into the discrete domain.	Lectures, laboratories and case studies	Laboratory and essays on case studies
Intellectual Skills • Analyse and solve engineering problems, including the effectiveness and suitability of electronic systems.	Laboratory, case studies	Laboratory and essays on case studies
Professional/Subject Specific Skills • The design of simple filters • The selection of an appropriate signal processing architectures	Lectures, tutorials, case studies	Laboratory and essays on case studies
Transferable Skills • The ability to solve problems • The ability to carry out self study • The ability to manage time • Independent learning skills to facilitate professional development	Lectures, tutorials, case studies	Laboratory and essays on case studies

Introductory Learning Resources	Module information, tutorial material and generic feedback will be available on Blackboard
Core Texts, reading list	Ifeachor and Jervis, *Digital Signal Processing; a practical approach*, (Prentice-Hall, 2001).

Specification completed by: Date	Geof Carpenter Reformatted: 23.7.09