



Module Descriptor

Code: CE00998-3

Version: 2

Approval Status: Valid Current

Title: CODING AND TRANSFORMATIONS

Section: Computing, Engineering & Technology

Field: AT

Level: 3

Contact	E-mail Address	VLE
PATRICIA LEWIS	P.A.LEWIS@STAFFS.AC.UK	Blackboard

Pattern Of Delivery

Credits	Contact Hours	Independent Study Hours	Total Learning Hours	Description of Pattern of Delivery
15	48	102	150	Pattern 1, study 100% in period 1
				Pattern 2, study 100% in period 2

Site
STAFFORD

Registration Conditions	Module Version Condition Text
None	

Module Details	
Assessment Details	A TEST length 2.5 HOURS weighted at 50%. A COURSEWORK weighted at 50%. 1. An assignment weighted at 50% assessing learning outcomes 1 and 3. 2. A suite of tests (3 x 50 minutes) weighted at 50% assessing learning outcomes 1 and 2. The assignment will use a mathematical package to assess the implementation to more sophisticated problems and techniques. The suite of tests will assess the application of the techniques to problems and the interpretation of the solutions.
Indicative Content	Fourier Series Fourier Transforms, including Fast Fourier Transforms and Discrete Fourier Transforms Sampling Theorems Theory of Coding, for example Huffman Coding Introduction to Maple
Learning Strategies	The material will be delivered through a mixture of lectures, workshops, tutorials and practicals. There will be 1 lecture, 1 workshop of no more than 20 students, 1 supporting tutorial in groups of no more than 20 and 1 practical in groups of no more than 40 per week. Supplementary MAPLE material will be available via the web. (1:n)1 (1:20)2 (1:40)1
	The transformation and storage of data often use coding techniques in order to adapt data to the properties, limitations and defects of transmission channels or storage technologies.

08/09/2009

CE00998-3 - CODING AND TRAN...

Prospectus Information	The coding itself incorporates functional transformation operations designed primarily to reveal specific properties that will be exploited during coding. One application of these general principles is to compression systems, notably to compression with loss, used mostly for audio-visual data or for cases in which data loss is likely. This module will introduce the student to the Mathematical concepts which underpin these applications.
Resources	Access to MAPLE on standard University computers.
Special Admissions Requirements	A knowledge of basic mathematical techniques, equivalent to CE61015-1 Mathematical Foundations for Engineers, or similar. Students must be registered on the special programme run for EFREI
Texts	Modern Engineering Mathematics, Glyn James, Addison Wesley, 1999, ISBN: 0 201 59621 0 Advanced Modern Engineering Mathematics, Glyn James et al, Addison Wesley, 2003 ISBN: 0130454257 Engineering Mathematics, K A Stroud and J Booth Dexter, Palgrave, 2001 ISBN: 0333919394 Mathematics in Communication Theory R.H Jones and N C Steele, Ellis Horwood, 1989 ISBN: 0745803040 Data & Computer Communications 6th Edition ? William Stallings Prentice Hall 2000, ISBN 0 13 086388 2 R.C. Gonzalez, R.E.Woods, Digital Image Processing, Addison Wesley, 2002, ISBN: 0130946508

Learning Outcome	
1. UNDERSTAND THE CONCEPTS REQUIRED TO DEVELOP THE MATHEMATICAL TECHNIQUES USED TO PRODUCE SOLUTIONS TO PROBLEMS.	Analysis
	Knowledge & Understanding
2. SELECT AND APPLY APPROPRIATE TECHNIQUES TO A RANGE OF APPLICATIONS AND CRITICALLY EVALUATE THE SOLUTIONS.	Analysis
	Application
	Problem Solving
3. IMPLEMENT THE TECHNIQUES DEVELOPED IN THE MODULE USING MATHEMATICAL SOFTWARE AND BE ABLE TO INTERPRET AND ANALYSE THE QUALITY AND LIMITATIONS OF THE RESULTS OBTAINED.	Analysis
	Application
	Problem Solving