REG/03/53(2)

Aston University Quality and Standards Committee

Module Specification

Online test

School and Subject Group		School of Engineering and Applied Science, Electronic Engineering			
Module Code		EE401B			
Module Title		Digital Transmission			
Module Type		Taught			
Date of introduction of new module		2001			
Level		7 Credit Value 10	0		
Programme(s) in which	module is available	MSc in Telecommunications Technology			
		MRes in Photonic Network Systems			
		MSc in Telecommunications Technology (Distance Learning)			
Involvement of Other Schools		None			
Resource Split					
Name of Module Co-ordinator		Dr. John A.R. Williams			
Name of Module Adviso	r	I. Bennion			
Related Modules	Pre-requisites	None			
	Co-requisites	None			
	Prohibited Combina-	None			
	tions				
Minimum and Maximum	Intake Sizes	None – 36			
Aims of the Module					
To provide a basic unde	erstanding of the purpose	and principles of transmission and modulation technique	ues used		
in analogue and digital communication systems.					
Summary of Content					
Modulation Basics Th	e need for modulation, Re	epresentation of signals, Fourier transform, transmissic	on of sig-		
nals through linea	ar systems, representation	of band-pass signals, phase and group delay.			
Pulse Medulation, Dulse emplitude and pulse position medulation, time division multiplaying, pulse and medu					
Pulse modulation Pulse amplitude and pulse position modulation, time division multiplexing, pulse code modu-					
lation, sampling and quantisation, companding, NICAW, differential pulse code modulation, adaptive quan-					
lisation and preur		daptive subband couling.			
Baseband Pulse Trans	mission Matched Filter,	Additive White Gaussian Noise, error rate due to noise	se, inter-		
symbol interferen	ce, ideal Nyquist channel	l, raised cosine filter, correlative-level coding, tapped d	lelay line		
equalisation, line codes, eve pattern diagram					
Digital Passband Tran	smission Geometric Inte	erpretation of Signals and Noise (Signal Space diagram	s), Prob-		
ability of Error, Coherent Binary Phase Shift Keying, Binary and M-ary Amplitude Shift Keying, Coherent					
Binary FSK, Coh	erent M-ary Phase Shift I	Keying, Calculation of Error Rate for QPSK, Quadratur	re Ampli-		
tude Modulation (QAM), Calculation of symbol error rate for QAM. Modems, Comparison of modulation					
schemes, Carrier and symbol synchronisation, Spread Spectrum techniques, Modems					
Contomporary Transm	vission Systems moder	s vDSL techniques, modulation techniques used for m	achila ra		
dio	Ission systems modern	is, XDSL techniques, modulation techniques used for m			
Summary of Methods	and Frequency of	Tutorials 4 hours.			
Teaching	, ,				
5		Laboratory 12 hours. On campus for all students.			
Lestures 04 hours. On compute students only distance to optimis					
current and audio files of lactures available aplice					
Summary of Methods of	f Assessment	support and addio mes or lectures available on			
Assessment Type	Status	% Requirements	Due		
Formal Examination	Compulsory 6	0.0 Exam 2hr formal examination	15 Dec 2009		
Laboratory	Compulsory 2	0.0 Laboratory Tests to be completed at the end	10 Dec 2009		
Laboratory		of every session.	.0 000 2000		

intervals.

20.0

Compulsory

MCQ. Online tests to be completed at regular 10 Dec 2009

Module Outcomes - what the student should gai completion of the module:	n from successful	Learning and Teaching and Assessment Strategies to enable outcomes to be achieved and demonstrated			
		Learning and Teach- ing Methods	Assessment Methods		
A. Knowledge and Understan	ding				
the purpose and principles of transmission and niques used in analogue and digital communication	Laboratory, Lectures, Tutorials	Formal Examination, Laboratory, Online test			
B. Intellectual Skills					
C. Professional Skills					
apply their knowledge of the principles underlying works	modern data net-	Laboratory, Tutorials	Laboratory		
D. Transferable Skills					
Please provide either or both of:					
(i) Introductory Learning Resources	1. Blackboard module with discussion group and tutorial material		and tutorial material		
	2. Online tutorials w	vith integrated formative/su	mmative assessments		
(ii) Core Texts	 "Communication Systems', Simon Haykin, 4th Edition, Pub. Wiley, 2000. ISBN 0471178691. Class Number 621.380413 HAY "Digital Communications', I.A. Glover and P.M. Grant, , Pub Prentice Hall 1998. ISBN 0-13-565391-6 pounds 25 softback "Digital Communications', John G. Proakis, 3rd Edition, Pub. McGraw-Hill 1995. ISBN 0-07-113814-54 pounds 22.95 pa- perback "Telecommunications Engineering', J. Dunlop and D.G. Smith 3rd Edition, Pub Chapman & Hall. Class Number 621.38 DUN "The Principles of Communications', R. E. Ziemer and W. H. Tranter, 4th Ed., Pub Houghton Mifflin Company 1995 "ADSL, VDSL, and Multicarrier Modulation' John A.C. Bing- 				
Reading Lists	Attached				
Specification completed by:	Dr. John A.R. Williams				
Date	22-Apr-2009				
Date module approved by Teaching Commit-					
tee(s)					
Date module approved by School Board(s)					

RPS/SJD/DLL/Module Specification/24 March 2003(f) SJD/LAP/Module Programmes