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 BSc Internet Systems		
Involvement of Other Schools		None		
Resource Split		N/A		
Name of Module Co-ordinator		Prof Keith Blow, Prof Ian Bennion		
Related Modules	Pre-requisites	EE2CSE or EE2CPS or equivalent		
	Co-requisites	None		
	Prohibited Combinations	None		
Minimum and Maximum Intake Sizes		None		

Aims of the Module

The specific problems in telecommunications that arise from the need for networking will be taught, to provide an understanding of the problems and solutions which arise from the need to provide networked communications as opposed to point-to-point links. The course will concentrate on the provision of networking in computer based networks and the students will gain an understanding of the issues in modern packet switched networks.

Summary of Content

Networking Overview	The need for networks; Internet; network problems; resources.
Reference Models	OSI layered model; relationship to TCP/IP
Data Link Layer	Error control; framing; protocols; MAC sublayer; repeaters and bridges.
Network Layer	Routing; congestion and flow control; internetworking.
Transport Layer	Sockets and addresses; connection management; TCP and UDP; performance.
Security	Public and secret key cryptosystems
Application Layer	DNS; SNMP.

Summary of Methods and Frequency of Teaching

Lectures 15 x 1 hour (Semester 1)
Tutorial/Seminar 3 x 1 hour (Semester 1)
Laboratory 3 x 3 hour (Semester 1)
Private study: 73 hours

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

Examination (60%) in January.
Continuous Assessment (40%) involving Laboratory Report and Report on RFC system coursework.
Feedback will be provided according to School guidelines. 1-to-1 feedback will be provided orally during laboratory sessions 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 • Describe protocols though the concepts of a protocol stack and its layers. • Understand the detailed issues involved in the Datalink, Network, Transport and Application layers and have an appreciation of the other layers. • Describe the internet RFC system. • Use the network simulation package NS2	Lectures, WebCT Guided study Laboratory	Examination and laboratory
Intellectual Skills • Analyse and solve engineering problems	Laboratory	Examination and laboratory
Professional/Subject Specific Skills • Use professional sources and documentation	Lectures, guided study	Examination and report
Transferable Skills • The ability to solve problems • The ability to carry out self study • The ability to manage time • ICT skills • Independent learning skills to facilitate professional development	Lectures	Examination, laboratory and report

Introductory Learning Resources	Module information, tutorial material and generic feedback will be available on Blackboard
Core Texts, reading list	A.Tanenbaum, Computer Networks, 3rd ed, Prentice Hall, 1996, ISBN 0-13-349945-6 D.E. Comer, R.E.Droms, Computer Networks and Internets, 2nd ed, Prentice Hall, 1998, ISBN 0-13-083617-6 J.E.Flood, Telecommunications Switching, Traffic and Networks, Prentice Hall, 1995, ISBN 0-13-033309-3 Ramaswami and Sivarajan, Optical Networks, A Practical Perspective, ISBN 1-55860-445-6 D.E. Comer, Internetworking with TCP/IP, Prentice Hall, ISBN 0-13-018380-6
Specification completed by: Date	Keith Blow 1/6/2009