UNIVERSITY of BRADFORD

Module Descriptor

Information Theory and Data Communication

Module Code:	COS7007-B
Academic Year:	2018-19
Credit Rating:	20
School:	Department of Computer Science
Subject Area:	Computer Science
FHEQ Level:	FHEQ Level 7 (Masters)

Pre-requisites:

Co-requisites:

Contact Hours

Type	Hours
Lectures	24
Laboratory	24
Directed Study	152

Availability Periods

Occurrence	Location/Period
BDA	University of Bradford / Semester 1 (Sep - Jan)

Module Aims

The aim of this module is to introduce and apply basic principles of information theory for data communication. The focus is on concepts and techniques for reliably transmitting and efficiently processing data.

Outline Syllabus

1. Introduction. 2. Review of probability and statistics. 3. Elements of information theory and data communication. 4. Data compression and algorithms. 5. Data transmission. 6. Techniques for data storage and security systems.

Module Learning Outcomes

On successful completion of this module, students will be able to...

1 Gain practical understanding of how data can be quantitatively measured, and effectively processed and communicated using information-theoretic principles;

Demonstrate knowledge and general understanding on the fundamental limits for data communication and a number of factors affecting the reliability of data communication.

2 Demonstrate knowledge of information-theoretic principles underlying any data compression and communication systems;

Apply the principles to design efficient compressor/decompressor and reliable transmission schemes for data communication.

3 Acquire confidence in applying rigorous analytical approaches to assess problems in random environments.

Deploy efficient time-management and problem formulation and solving skills to solve complex practical problems.

Write and communicate in concise, clear and coherent manner.

Learning, Teaching and Assessment Strategy

A series of lectures will provide the essential theories and concepts. Laboratory sessions will provide practical applications of the concepts. Oral feedback is given during the practical classes as appropriate. Module assessment consists of two coursework exercises aimed to test skills, knowledge and understanding on theoretical concepts to solve relevant practical problems. The supplementary assessment follows the coursework format to address deficiencies encountered at the first attempt.

Mode of Assessment

Type	Method	Description	Length	Weighting	Final Assess'
Summative	Coursework	Coursework 2 (group) - Exercises on data transmission	0 hours	50%	Yes
Referral	Coursework	Supplementary coursework assessment (individual coursework)	0 hours	100%	No
Summative	Coursework	Coursework 1	0 hours	50%	No

(individual) - Exercises on data compression and algorithms.

Legacy Code (if applicable)

CM-0439D

Reading List

To view Reading List, please go to **rebus:list**.