University of Bedfordshire

SECTION A

General Unit Information:

Unit Name	Computer Systems Structure
Unit Code	CIS017-1
Level	4
Credit Value	30
Location(s) of Delivery	On Campus and Off Campus
Period(s) of Delivery	15 weeks
Pre-requisites or Restrictions	N/A
Aims and Relevance	Computer systems are being an integral part of our daily life. This unit introduces some of the basic concepts and applications of computer systems. These include an overview of a single computer's architecture, the structure of networked computers and the organisation of data leading to a fundamental grounding in Computing is developed.
Syllabus Content	The lectures are accompanied by practical sessions that deepen the understanding of the lecture content. All programming languages and architectures will be evaluated and contextualized during the course. Introduction to Computer Systems Structures Database systems, and data processing history • Database structures and Entity Relationship models • Database normalisation for designing relational database tables to minimise duplication of information • Using CASE tools in practice, ERM and Normalisation links to OOP • Using MySQL and Oracle to implement designed databases • Using a SQL implementation to define and manipulate data • Using MongoDB as an example understand the architecture of and implement No-SQL databases • Define and recognise different types of data and work with Big Data using the Hadoop ecosystem • Gain an insight into data warehousing • Data Storage and indexing and queries • Introduction to Computer Networks, the OSI and TCP/IP models • Media, network addressing, network protocols, network devices • LAN Technologies • Network security, network management and network troubleshooting

Learning Outcomes

On completion of this unit you should be able to

1. Demonstrate the following knowledge and understanding

Comprehend the underpinning technologies of data communications and computer networking while appraising the basic system structures and the principles around data modification.

2. Demonstrate the following skills and abilities

Utilise problem-solving skills to put together information from different sources in order to design, develop and implement a databases or computer network.

PSRB Outcomes and/or Apprenticeship Standard

N/A

Summary Learning Hours

	Scheduled	Guided	Independent	Autonomous	Placement	Total
Hours	74	73	75	78	0	300
Percentage	25%	24%	25%	26%	0%	100%

Approach to Learning

All five dimensions to realistic learning (meaningful, active, reflective, challenging and collaborative) are addressed.
Delivery will be achieved by a combination of formal lectures, lab-based practical sessions, and independent study. In addition, the Blackboard Virtual Learning Environment will be used to aid the delivery of the unit content.
The following specific elements are included:

1. Lectures provide the underpinning theory.
2. Lab-based practical sessions require employment of measurement techniques and provide hands-on experience.
3. Guided and unsupervised studies enable review of relevant technical topics using electronic and paper based resources.
4. Students' self-directed study to strengthen the acquired knowledge and skills.

Assessment Summary

No	Assessment Method	Learning Outcome(s)	Weight	Submission Week	Length of Assessment
1	Coursework - Case Study	1 and 2	30	9	N/A
2	Summative in-class test or phase test	1 and 2	70	12	N/A

Learner Development
This Unit particularly focuses on the development of your abilities in the following areas:

Enquiry	The practical classes will let you consolidate what you have learnt during the lectures and obtain useful skills to develop, analyse and evaluate the databases and computer networks. These may be (indicatively) arranged as a two-hour session per week where the first hour is highly interactive with the tutor demonstrating the architecture or database formulation. You will implement the set tasks following the examples given during the second hour of the practical session.

Contextual Understanding, including where employer based	Insight into basic components of computer networks and data bases in modern communications and information systems would be provided during the lectures and practical sessions.
Collaboration	Practical sessions will provide a pace for discussion and collaborative work through implementation, observation and system analysis effectively articulating the findings in a professional format.
Enterprise	You will develop databases based on your own ideas and self-assess the results in view of your own experience of peers using your product.
Assessment 1 Details	You will undertake a case study for a given scenario which will cover database topics taught and practiced during this unit.
Assessment 2 Details	You will undertake 1.5 hour closed book multiple-choice computer-based in class test which will test your knowledge, understanding and comprehension of topics relating to computer networks.
Assessment 3 Details	
Assessment 4 Details	

Threshold Expectations
In order to pass Assessment 1 you will need to :

Manipulate a database using a set of key SQL commands.

Edit and manipulate database records based on requirements given to you

Successfully detect, describe and analyse the main cause of faults within data structures.

In order to pass Assessment 2 you will need to:

Explain the underpinning technologies of data communications and computer networking.

Provide justified solutions to problems in networking media, network structure and protocols, network troubleshooting and security aspects and present diagrammatic designs for simple peer-to-peer networks.

In order to pass Assessment 3 you will need to:

In order to pass Assessment 1 you will need to:

- Investigate a given busines-related case study / scenario
- Determine the database requirements for the scenario
- Apply conceptual / logical modelling techniques to create a Entity Relationship Model and fully normalised set of tables
- Implement and modify a database using a set of SQL commands.
- Edit and manipulate database records based on requirements given to you
- Successfully detect, describe and analyse the main cause of faults within data structures.

In order to pass Assessment 4 you will need to:

In order to pass Assessment 2 you will need to:

- Demonstrate an understanding of data communications and computer networking.
- Recognise solutions to problems in networking media, network structure and protocols, network troubleshooting and security aspects and outline the components of local area networks and technologies.

Section B

Recommended Reading

Core Text - this unit is supported by the following core text:

See https://bedfordshire.rl.talis.com/units/cis017-1.html

Guided Reading

The following is expected reading for this unit. Details of what to read and when will be provide in the BREO site.

See https://bedfordshire.rl.talis.com/units/cis017-1.html

Independent Study

To receive high grades you will need to demonstrate your wider reading. The following resources provide useful background reading for the material in this unit. This is not an exhaustive list and students should read widely from the variety of journals available in the Learning Resources Centre.

See https://bedfordshire.rl.talis.com/units/cis017-1.html

Equality Impact Assessment

Question	Y/N/NA	Additional anticipatory adjustments/actions if necessary
Learning materials will be made available in advance of sessions for students to adapt as appropriate?	Y	
The approach to teaching and learning is sufficiently flexible to enable all students to succeed?	Y	
The approach to group work takes account of the needs of students with disabilities and from diverse backgrounds?	NA	
The approach to practical work takes account of the needs of students with disabilities?	Y	
Students with a protected characteristic* have an equal opportunity to achieve the learning outcomes?	Y	
The assessment tasks provide all students with an equal opportunity to succeed?	Y	
Any other aspects of the unit that might pose potential challenges from an equality or diversity perspective have been considered?	NA	

* Age, Gender reassignment, Marriage and civil partnership, Pregnancy and maternity, Race, Religion and belief, Sex, Sexual orientation

Section C

Administrative Information – Faculty completion	
Faculty	Creative Arts Technologies and Science
Portfolio	CU-COM
School/Department	School of Computer Science and Technology
HECOS Code(s)	100754
Unit Co-ordinator	Susan Brandreth
Apprenticeship ?	No

Courses that this unit is delivered on
BSc (Hons) Information Technology