

Access to H.E. National Programme Unit



Unit Title	Number Systems and Data Representation		
Graded Unit Code:	GA33MTH21	Ungraded Unit Code:	UA33MTH21
Pathway(s)	Computing		
Module(s)	Maths for Computing Mathematics		
Level	3	Credit Value	3
Valid from:	1st August 2019	Valid to:	31 st July 2024

The following QAA grade descriptors must be applied if you are delivering the graded version of this unit:

1	Understanding of the Subject
3	Application of skills
7	Quality

LEARNING OUTCOMES	ASSESSMENT CRITERIA
The learner will:	The learner can:
1. Understand the relationships between number systems used in computing	1.1 Explain binary (base 2) representation of numbers and why electronic computer systems represent and manipulate data in binary format 1.2 Explain octal (base 8) and hexadecimal (base 16) representation and their importance in computing 1.3 Represent denary (base 10) numbers in pure binary, hexadecimal and binary coded decimal and convert numbers between these formats

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<p>2. Understand the different binary representations of numbers and perform calculations</p>	<p>2.1 Explain and use binary representations of signed integers including, one's-complement, two's-complement and base -2</p> <p>2.2 Use binary notation to represent simple fractions, e.g. 1/2, 3/4, 5/8 etc.</p> <p>2.3 Show how floating point numbers may be represented using binary notation (sign, mantissa, exponent), including the use of normalisation</p> <p>2.4 Add and subtract positive integers expressed in binary (up to 7 bits) and multiply positive integers expressed in binary (up to 4 bits.)</p>
<p>3. Understand the representation of alphanumeric characters using the ASCII and Unicode systems</p>	<p>3.1 Describe the ASCII, extended ASCII and Unicode character sets and the minimum requirements for storing characters in computer memory</p> <p>3.2 Evaluate the factors affecting the development of character representation systems, e.g. need, storage and processing overheads</p>