

Higher Computing – Success Criteria

Skills, knowledge and understanding for the course:

- ✓ Using of computational thinking across a range of contexts.
- ✓ Analysing problems within computing science across a range of contexts including:
 - designing
 - implementation
 - testing
 - evaluating
- ✓ Developing skills in computer programming and the ability to read and interpret code
- ✓ Using appropriate terminology for computing concepts
- ✓ Show an understanding of legal implications and environmental impact of computers
- ✓ Applying computing science concepts and techniques to create digital solutions

Skills, knowledge and understanding for the assessment:

Topic	I can...
Computer Systems	
Data Representation	<input type="checkbox"/> write decimal numbers in binary <input type="checkbox"/> explain what is meant by two's complement <input type="checkbox"/> write decimal numbers in two's complement and vice versa <input type="checkbox"/> explain what is meant by floating point representation <input type="checkbox"/> explain the storage impacts on the mantissa and exponent <input type="checkbox"/> explain what is meant by Unicode <input type="checkbox"/> compare Unicode with ASCII <input type="checkbox"/> compare the bitmap graphics with vector graphics
Computer Systems	<input type="checkbox"/> explain the fetch execute cycle <input type="checkbox"/> explain the read/write cycle <input type="checkbox"/> explain the impact the number of cores has on computer performance <input type="checkbox"/> explain the impact the width of the data bus has on computer performance <input type="checkbox"/> explain the impact the cache memory has on computer performance <input type="checkbox"/> explain the impact the clock speed has on computer performance
Environmental Impact	<input type="checkbox"/> explain the term intelligent system <input type="checkbox"/> discuss intelligent heating systems <input type="checkbox"/> discuss intelligent traffic control systems <input type="checkbox"/> discuss intelligent car management systems
Security	<input type="checkbox"/> explain the impact of breaking the Computer Misuse Act 1990 <input type="checkbox"/> explain the term tracking cookies <input type="checkbox"/> explain the term DOS <input type="checkbox"/> explain the difference between public and private keys in encryption <input type="checkbox"/> explain the term digital certificates <input type="checkbox"/> explain the term digital signatures
Assessment 1	
Database Design and Development	
Analysis	<input type="checkbox"/> identify the end-user requirements of a database <input type="checkbox"/> identify the functional requirements of a database

Design	<ul style="list-style-type: none"> <input type="checkbox"/> explain why we need to use Entity Relationship Diagrams (ERD) <input type="checkbox"/> draw an ERD <input type="checkbox"/> explain what is meant by an entity/table <input type="checkbox"/> explain what is meant by an attribute/field <input type="checkbox"/> explain what is meant by a record <input type="checkbox"/> explain what is meant by the term cardinality <input type="checkbox"/> identify the different types of relationships between two entities. <input type="checkbox"/> explain why we need to use Entity Occurrence Diagrams (EOD) <input type="checkbox"/> draw an EOD <input type="checkbox"/> explain why we use a data dictionary <input type="checkbox"/> make a data dictionary, with the appropriate table headings <input type="checkbox"/> explain the term primary key <input type="checkbox"/> explain the term foreign key <input type="checkbox"/> identify and explain the different data types <input type="checkbox"/> explain what is meant by validation <input type="checkbox"/> explain the validation term presence check <input type="checkbox"/> explain the validation term restricted choice <input type="checkbox"/> explain the validation term field length <input type="checkbox"/> explain the validation term range check <input type="checkbox"/> explain why I would use SQL <input type="checkbox"/> identify the correct order for SQL <input type="checkbox"/> explain select queries, and identify their purpose <input type="checkbox"/> explain insert queries, and identify their purpose <input type="checkbox"/> explain update queries, and identify their purpose <input type="checkbox"/> explain delete queries, and identify their purpose <input type="checkbox"/> explain the purpose of fields in a query <input type="checkbox"/> explain the purpose of tables in a query <input type="checkbox"/> explain the purpose of search criteria in a query <input type="checkbox"/> identify the different types of sort orders <input type="checkbox"/> explain the purpose of grouping fields in a query <input type="checkbox"/> explain the different aggregate functions <input type="checkbox"/> create a query using the different aggregate functions <input type="checkbox"/> design a query to meet a criteria and sort
Implementation	<ul style="list-style-type: none"> <input type="checkbox"/> explain what is meant by referential integrity <input type="checkbox"/> describe the impact of not having referential integrity in a database <input type="checkbox"/> create tables in a database <input type="checkbox"/> link tables within a database, using primary and foreign keys <input type="checkbox"/> enforce referential integrity in my tables <input type="checkbox"/> create an SQL query to match a design <input type="checkbox"/> explain what an insert anomaly is, and the impact of these on data <input type="checkbox"/> create SQL for an insert query <input type="checkbox"/> Explain what an update anomaly is and the impact of these on data <input type="checkbox"/> create SQL for an update query <input type="checkbox"/> Explain what an delete anomaly is and the impact of these on data <input type="checkbox"/> create SQL for a delete query <input type="checkbox"/> create SQL for a select query, to gather data from one table <input type="checkbox"/> explain what is meant by an equi-join <input type="checkbox"/> create an equi-join between two tables <input type="checkbox"/> create SQL for a select query, to gather data from two table

	<input type="checkbox"/> create a nested query <input type="checkbox"/> create queries using aggregate functions <input type="checkbox"/> explain the term wildcard operator <input type="checkbox"/> create queries using wildcard operators
Testing	<input type="checkbox"/> explain how to check a query returns correct results
Evaluation	<input type="checkbox"/> explain what is meant by fitness for purpose <input type="checkbox"/> explain what is meant by accuracy of output

Assessment 2

Website Design and Development

Analysis	<input type="checkbox"/> identify the end-user requirements of a website <input type="checkbox"/> identify the functional requirements of a website
Design	<input type="checkbox"/> create a website structure included a homepage and have a minimum of 4 extra pages <input type="checkbox"/> create a website structure with both internal and external links <input type="checkbox"/> explain the term wireframe <input type="checkbox"/> create a suitable user interface using a wireframe <input type="checkbox"/> create a low fidelity prototype <input type="checkbox"/> create a wireframe showing a navigational bar <input type="checkbox"/> create a wireframe with both vertical and horizontal placement of media <input type="checkbox"/> create a wireframe with an input form <input type="checkbox"/> create a wireframe with consistent use of links <input type="checkbox"/> create a wireframe with consistent layout <input type="checkbox"/> create a wireframe with a variety of media types
Implementation (HTML)	<input type="checkbox"/> identify the different tags used in HTML <input type="checkbox"/> create HTML which makes use of sections <input type="checkbox"/> create HTML which will create a use form <input type="checkbox"/> create a form which makes use of validation on its inputs
Implementation (CSS)	<input type="checkbox"/> explain how CSS can control the appearance of a website <input type="checkbox"/> explain how CSS can control the alter the position of media <input type="checkbox"/> explain the term display within CSS <input type="checkbox"/> explain the term float within CSS <input type="checkbox"/> explain the term margins/padding within CSS <input type="checkbox"/> create CSS rules to create a horizontal navigation bar
Implementation (JavaScript)	<input type="checkbox"/> explain the impact of Onmouseover <input type="checkbox"/> create JS to implement onmouseover <input type="checkbox"/> explain the impact of Onmouseout <input type="checkbox"/> create JS to implement Onmouseout <input type="checkbox"/> explain the impact of onclick <input type="checkbox"/> create JS to implement onclick
Testing	<input type="checkbox"/> explain what is meant by accuracy of output <input type="checkbox"/> explain how to test a website is accurate <input type="checkbox"/> explain the term compatibility <input type="checkbox"/> explain how to test a website is compatible
Evaluation	<input type="checkbox"/> explain what is meant by fitness for purpose

FAB 1

Software Design and Development

Development Methodologies	<input type="checkbox"/> explain what is meant by an iterative design process <input type="checkbox"/> explain what is meant by the agile methods
Analysis	<input type="checkbox"/> identify the functional requirements of a program

	<input type="checkbox"/> identify the inputs, processes and outputs. <input type="checkbox"/> identify the purpose of a program <input type="checkbox"/> identify the scope of a program <input type="checkbox"/> identify the boundaries of a program
Design	<input type="checkbox"/> explain what is meant by a structured diagram <input type="checkbox"/> create a structured diagram <input type="checkbox"/> explain what is meant by pseudocode <input type="checkbox"/> create pseudocode <input type="checkbox"/> explain what is meant by dataflow <input type="checkbox"/> show dataflow on my design of my program <input type="checkbox"/> explain what is meant by a wireframe <input type="checkbox"/> create a wireframe
Implementation (Data Types and Structures)	<input type="checkbox"/> identify the different data structures <input type="checkbox"/> create code to use the different data structures <input type="checkbox"/> explain why records are an efficient coding structure <input type="checkbox"/> create code using records
Implementation (Computational Constructs)	<input type="checkbox"/> create code the makes use of parameter passing <input type="checkbox"/> create code the makes use of subprograms <input type="checkbox"/> create code the makes use of predefined functions <input type="checkbox"/> create code the uses file handling
Implementation (Algorithm Specification)	<input type="checkbox"/> explain the “linear search” algorithm <input type="checkbox"/> create code to implement the “linear search” algorithm <input type="checkbox"/> explain the “find minimum and maximum” algorithm <input type="checkbox"/> create code to implement the “find minimum and maximum” algorithm <input type="checkbox"/> explain the “count occurrences” algorithm <input type="checkbox"/> create code to implement the “count occurrences” algorithm
Testing	<input type="checkbox"/> explain the difference between a syntax, logic and execution error <input type="checkbox"/> explain the difference between the terms normal, extreme and exceptional test data <input type="checkbox"/> explain the term debugging <input type="checkbox"/> identify different debugging techniques
Evaluation	<input type="checkbox"/> explain what is meant by fitness for purpose <input type="checkbox"/> explain what is meant by robustness <input type="checkbox"/> explain what is meant by readability <input type="checkbox"/> explain what is meant by efficient use of coding
FAB 2	

What will be taken into consideration when deciding on a teacher-estimated grade for Higher Computing Science?

- 4 x Internal Assessments each assessing individual units.
- FAB 1 Assessment (Dec) assessing 60% of the course.
- FAB 2 Assessment (Feb/March) assessing 100% of the course.
- Assignment Work – worth 31% of final grade.
- Commitment and Quality in class/homework.
- Attendance at Supported Study.