HIGHER COMPUTING SCIENCE

Week	Content		Homework (MS Forms)	Assessment
	Computer Systems	Software Design and Development		
1 June	Introduction to course How a computer stored integers and floating point numbers 2s Complement	Revision of Visual Basic (arrays, loops, selection, data types)		
2 June	Storing text (ASCII and Unicode) Bit mapped graphics (mono and colour) Vector Graphics (comparison to bit mapped)	VB Modules Analysis Identify the: ⬚ purpose ⬚ scope ⬚ boundaries ⬚ functional requirements	Computer Systems 1	
3 June		Revision on visual Basic (pseudocode to complex problems with 1D parallel arrays)		

4 Aug	Fetch and Execute cycle computer system performance: ▯ number of processors (cores) ▯ width of data bus ▯ cache memory ▯ clock speed	VB Parameters(formal and actual) Scope (local and global) Data Flow (structure diagram and pseudocode) Parallel Arrays	SDD HW 1	
5 Aug	Describe the environmental impact of intelligent systems: ▯ heating systems ▯ traffic control ▯ car management systems Security Risks Computer Misuse Act 1990: tracking cookies	User defined Functions Standard Algorithms using 1D array and array of records ▯ linear search ▯ find minimum and maximum ▯ count occurrences	Computer Systems 2	
6 Sep	DOS (Denial of Service) attacks: — symptoms o slow performance, inability to access — effects o disruption to users and businesses — costs o lost revenue, labour in rectifying fault — type of fault	Standard Algorithms Practical work		

	o bandwidth consumption, resource starvation, Domain Name Service (DNS) — reasons o financial, political, personal			
7 Sep	Describe how encryption is used to secure transmission of data: ⬜ use of public and private keys ⬜ digital certificates ⬜ digital signatures	Comparison of iterative (waterfall and agile) Analysis Visual Basic – String Manipulation (sub strings)	SDD 2	
8 Sep	Revision for CS Block Test	Visual basic Modulus and FP to Integer Visual Basic – File Handling Visual Basic – String Tokens	SDD 3	CS Block Test
9 Sep	Records and Arrays of records			
10 Oct	Evaluation ⬜ efficient use of coding constructs ⬜ usability ⬜ maintainability ⬜ robustness			½ block test SDD

11 Oct	VB – Practice (Bob's decking Task and extension tasks)	SDD 4	
12 Oct	VB – Practice (Bob's decking Task and extension tasks)		
13 Oct	VB – Practice (Pokemon Task and extension tasks)		
14 Nov	VB – Practice (Pokemon Task and extension tasks)		SDD Block

Week	Database Design and Development	Homework	Assessment
15 Nov	Analysis – end user and functional requirements cardinality of relationship (one-to-one, one-to-many, many-to-many) Keys – compound, primary and foreign Attribute types (text, number,date,time,Boolean) Revision of using MS Access		
16 Nov	ER Diagrams with 3 or more tables Revision on SQL (SELECT, UPDATE, DELETE and INSERT) Using wildcards	Database 1	
17 Nov	Types of validation Complex queries using calculated fields and grouping (aggregate functions)	Database 2	
18 Dec	Aggregate functions (MIN, MAX, AVG, SUM, COUNT) Alias and computed values in SQL	Database 3	

19 Dec	Tasks on creating and using a relational database Testing and evaluating a database		Database Unit Test
20 Dec	SQA Revision Tasks for SDD		
21 Dec	Revision for Prelim	Prelim revision from printed past papers	

Coursework Assignment and prelim		**Homework**	**Assessment**
22 Jan	Revision for Prelim	Prelim revision from printed past papers	
23 Jan	Revision for Prelim	Prelim revision from printed past papers	
24 Jan	Prelim	Prelim	Prelim
25 Jan	Coursework assignment (practice)	Prepare for assignment	
26 Feb	Coursework assignment (practice)	Prepare for assignment	
27 Feb	Coursework assignment (practice)	Prepare for assignment	

28 Feb	SQA Assignment	Prepare for assignment	
29 Feb	SQA Assignment		
29 Mar	Revision for SQA Examinations		
30 Mar	Revision for SQA Examinations	Revision HW1	
31 Mar	Revision for SQA Examinations		
32 Mar	Revision for SQA Examinations	Revision HW2	
33 Mar	Revision for SQA Examinations		
34 Mar	Revision for SQA Examinations	Revision HW3	
37 Apr	Revision for SQA Examinations		