St. John's Senior School

Subject: Computing **Form: Lower 6th**
Teacher: Evan Zampekos **Term: Autumn 2023**

WEEK	WEEK BEGINNING	TOPIC
1	4th September	Algorithms and programs: Introduction-Flowcharts-Pseudocode. Variables and constants, Identifiers, Mathematical operations (including DIV and MOD), Logical operations
2	11th September	Algorithms and programs: Introduction to python and IDLE Programming constructs
3	18th September	Algorithms and programs: Application of concepts, operations and simple data constructs to complete simple programs and develop the confidence to experiment. Practical experience of programming
4	25th September	Algorithms and programs: Modular programming, Scope of variables, Parameters. Data structures. Progression to a wider range of program tasks, including 1 and 2-dimensional arrays.
5	2nd October	**MINI-TEST**
6	9th October	Algorithms and programs: Searching and sorting algorithms. Practical experience of programming. Progression to a wider range of program tasks, including 1- and 2-dimensional arrays
7	16th October	Data structures: Describe, interpret and manipulate data structures including arrays (up to three dimensions), records, stacks, queues, trees, linked lists and hash tables. Select, identify and justify appropriate data structures for given situations.
		HALF - TERM

8	30th October	Algorithms and programs: Compression algorithms. Testing algorithms. Practical experience of programming
9	6th November	Logical operations: Draw truth tables for Boolean expressions consisting of AND, OR, NOT, XOR, NAND and NOR logical operations. Apply logical operations to combinations of conditions in programming, including clearing registers, masking, and encryption
10	13th November	Algorithms and programs: Explain the use of recursion in algorithms and programs and consider the potential elegance of this approach
11	20th November	Algorithms and programs: Sorting: Explain the need for a variety of sorting algorithms both recursive and non-recursive.
12	27th November	Algorithms and programs: Explain the effect of storage space required, number of comparisons of data items, number of exchanges needed and number of passes through the data on the efficiency of a sorting algorithm. Use Big O notation to determine the efficiency of different sorting algorithms in terms of their time and space requirements and to compare the efficiency of different sorting algorithms.
13	4th December	Algorithms and programs: Searching: Explain and apply a shortest-path algorithm. Describe appropriate circumstances for the use of each searching technique. Use Big O notation to determine the efficiency of linear and binary searches in terms of execution time and space requirements and to compare the efficiency of different searching algorithms.

St. John's Senior School

Subject: Computing   **Form: Lower 6th**
Teacher: Evan Zampekos   **Term: Spring 2024**

WEEK	WEEK BEGINNING	TOPIC
1	3rd January (Wednesday)	**MOCK EXAMINATIONS**
2	8th January	**MOCK EXAMINATIONS**
3	15th January	Algorithms and programs: Compression algorithms. Testing algorithms. Practical experience of programming
4	22nd January	Algorithms and programs: Traversal of data structures: Write and interpret algorithms used in the traversal of data structures
5	29th January	Software engineering: Software tools. Practical experience of programming
6	5th February	Data representation and data types: Representation of data as bit patterns
HALF - TERM		
7	19th February	Data representation and data types: Storage of characters. Data types.
8	26th February	Data representation and data types: Representation of numbers as bit patterns
9	4th March	Design files and records appropriate for a particular application. Organisation and structure of data: Explain the purpose of files in data processing. Define a file in terms of records and fields. Describe how files may be created, organised, updated and processed by programs.
10	11th March	Database systems.
11	18th March	Hardware and communication: Architecture

St. John's Senior School

Subject: Computing   **Form: Lower 6th**
Teacher: Evan Zampekos   **Term: Summer 2024**

WEEK	WEEK BEGINNING	TOPIC
1	16th April (Tuesday)	Hardware and communication: Fetch-execute cycle
2	22nd April	Hardware and communication: Input / output. Secondary storage. Data storage on disc.
3	29th April	Hardware and communication: Networking. Internet. Data transmission: Types and techniques. Communication networks.
4	7th May	The operating system. Principles of programming.
5	13th May	Principles of programming. Program construction.
6	20th May	Systems analysis.
HALF - TERM		
7	3rd June	**END OF TERM EXAMINATIONS**
8	10th June	The need for different types of software systems and their attributes.
9	17th June	Algorithms and programs: Comparing algorithms: Use Big O notation to determine the complexity and efficiency of given algorithms in terms of their execution time, their memory requirements and between algorithms that perform the same task.
10	24th June	Principles of programming: Explain the nature and relative advantages of different programming paradigms and identify possible situations where they may be used. Describe the distinguishing features of different types of programming paradigms, including procedural, event- driven, visual and mark-up languages.

St. John's Senior School

11	1ˢᵗ July	Principles of programming: Describe the role of an object-oriented approach to programming and the relationship between object, class and method.