ARMY PUBLIC SCHOOL GOPALPUR

SPLIT-UP SYLLABUS FOR COMPUTER SCIENCE (083) CLASS - XI

(NEW SYLLABUS)

(Session 2020-21)

DISTRIBUTION OF MARKS

Unit No.	UnitName	Marks	Periods	
			Theory	Practical
1.	Computer Systems and Organization	10	10	2
2.	Computational Thinking and Programming	35	60	45
3.	Data Management–1	15	30	23
4.	Society, Law and Ethics–1	10	10	--
5.	Practical	30		
	Total	100	110	70

MONTH- WISE DISTRIBUTION

Month	Topics to be covered	Th.	Pr.
June	**Unit 1: Computer Systems and Organization (CSO)** Basic computer organization: description of a computer system and mobile system, CPU, memory, hard disk, I/O, battery. • Types of software: application, System, utility. • Memory Units: bit, byte, MB, GB, TB, and PB. • Boolean logic: OR, AND, NAND, NOR, XOR, NOT, truth tables, De Morgan's laws • Information representation: numbers in base 2, 8, 16, binary addition • Strings: ASCII, UTF8, UTF32, ISCII (Indian script code), Unicode • Basic concepts of Flowchart • Concept of Compiler & Interpreter • Running a program: Notion of an operating system, how an operating system runs a program, idea of loading, operating system as a resource manager. • Concept of cloud computing, cloud(public/private), introduction to parallel computing.	10	2
July	**Unit 2: Computational Thinking andProgramming** Basics of Computational Thinking: Decomposition, Pattern Recognition/Data representation, Generalization/Data Abstraction and algorithm. Familiarization with the basics of Python programming: a simple "hello world" program, process of writing a program (Interactive & Script mode), running it, and print statements; simple data-types: integer, float, string. • Features of Python, Python Character Set, Token & Identifiers, Keywords, Literals, Delimiters, operators. • Comments: Single line &Multiline/Continuation statements), Clarity &Simplification of expression. • Introduce the notion of a variable, and methods to manipulate it (concept of L-value and R-value even if not taught explicitly). • Knowledge of data types and operators: accepting input from the console, assignment statement, expressions, operators and their precedence.	25	10

Month	Content		
August	• Operators &types: Binary Operators-Arithmetic, Relational operators, Logical Operators, Augmented Assignment operators. • Conditional statements: if, if-else, if-elif-else; simple programs: e.g.: absolute value, sort 3numbers, and divisibility. • Notion of iterative computation and control flow: for (range(), len()),while, flowcharts, suggested programs: Interest calculation and factorials, etc.	15	15
September	• Idea of debugging: errors and exceptions; debugging: pdb, breakpoints. • Lists, tuples and dictionary: finding the maximum, minimum, mean; linear search on list/tuple of numbers, and counting the frequency of elements in a list using a dictionary. Introduce the notion of accessing elements in a collection using numbers and names. • Sorting algorithm: bubble and insertion sort; count the number of operations while sorting.	10	10
October	• Strings:Traversing,compare,concat,substring. • Introduction to Python modules: Importing math (sqrt, cell, floor, pow, fabs, sin, cos, tan, random (random, randint, randrange), statistics (mean, median, mode)modules.	10	10
November	**Unit 3: Data Management (DM-1)** • Relational databases: Concept of a database, relations, attributes and tuples, keys- candidate key, primary key, alternate key, foreign key; Degree and cardinality of a table. • Use SQL – DDL/ DML commands to CREATE TABLE, INSERT INTO, UPDATE TABLE, DELETE FROM, ALTER TABLE,MODIFY TABLE, DROP TABLE, keys, and foreign keys; to view content of a table: SELECT- FROM- WHERE-ORDER BY alongwith BETWEEN, IN, LIKE, (Queries only on single table)	20	15
December	• Aggregate functions – MIN,MAX,AVG,COUNT,SUM • Basics of NoSQL databases. **UNIT 4: Society, Law and Ethics (SLE-1)- Cyber Safety**	10	8
	• Cyber safety: safely browsing the web, identity protection, confidentiality, social networks, cyber trolls and bullying	2	
January	• Appropriate usage of social networks: spread of rumors, and common social networking sites(Twitter, LinkedIn and Facebook)and specific usage rules. • Safely accessing websites: adware, malware, viruses, Trojans • Safely communicating data: secure connections, eavesdropping, and phishing and identity verification.	8	

February	Revision, Project Work, Session Ending Examinations.		