CLASS XI **SUBJECT- INFORMATICS PRACTICE (065)**

Sl. No	Month	No. of working days	Name of chapter/topic to be covered	Teaching aids/ e-content/ innovative practices	Test/examination to be executed
1	June & July 2024	33	**Unit 1: Introduction to Computer System** Introduction to computer and computing: evolution of computing devices, components of a computer system and their interconnections, Input/output devices. Computer Memory: Units of memory, types of memory – primary and secondary, data deletion, its recovery and related security concerns. Software: purpose and types – system and application software, generic and specific purpose software.	https://t.ly/AUfe-	Class Tests
2	August	24	**Unit 2: Introduction to Python** Basics of Python programming, Python interpreter - interactive and script mode, the structure of a program, indentation, identifiers, keywords, constants, variables, types of operators, precedence of operators, data types, mutable and immutable data types, statements, expressions, evaluation and comments, input and output statements, data type conversion, debugging. Control Statements: if-else, if-elif-else	https://t.ly/9Qwki	**Periodic Test-1**
3	September	22	Control Statements: while loop, for loop Lists: list operations - creating, initializing, traversing and manipulating lists, list methods and built-in functions.len(),list(),append(),insert(), count(),index(),remove(), pop(), reverse(), sort(), min(),max(),sum()	https://t.ly/_ekYT	Class Tests
4	October	16	Dictionary: concept of key-value pair, creating, initializing, traversing, updating and deleting elements, dictionary methods and built-in functions: dict(), len(), keys(), values(), items(), update(), del(), clear()	https://t.ly/_ekYT	Class Tests

5	November	22	**Unit 3: Database concepts and the Structured Query Language** Database Concepts: Introduction to database concepts and its need, Database Management System. Relational data model: Concept of domain, tuple, relation, candidate key, primary key, alternate key Advantages of using Structured Query Language, Data Definition Language, Data Query Language and Data Manipulation Language, Introduction to MySQL, creating a database using MySQL, Data Types Half Yearly/Mid Test 3rd/4th week of month	https://t.ly/FxsSm	**Half Yearly Exam**
6	December	18	Data Definition: CREATE DATABASE, CREATE TABLE, DROP, ALTER Data Query: SELECT, FROM, WHERE with relational operators, BETWEEN, logical operators, IS NULL, IS NOT NULL Data Manipulation: INSERT, DELETE,UPDATE	https://t.ly/VhMa6	Class Tests
7	January 2025	24	Unit 4: Introduction to the Emerging Trends Artificial Intelligence, Machine Learning, Natural Language Processing, Immersive experience (AR, VR), Robotics, Big data and its characteristics, Internet of Things (IoT), Sensors, Smart cities, Cloud Computing and Cloud Services (SaaS, IaaS, PaaS); Grid Computing, Block chain technology.	https://ncert.nic.in/textbook.php?keip1=2-8	**Periodic Test II**
8	February	22	REVISION, Submission of Practical and Project works Final Practical Examination. Revision work		Revision Tests/Slip Tests
9	March	Session Ending Examination			
CBSE curriculum 2024-25 – Class XI Informatics Practices			https://www.cbseacademic.nic.in/web_material/CurriculumMain25/SrSec/Informatics_Practices_SrSec_2024-25.pdf		
NCERT Text Book: (Rationalised content)			https://ncert.nic.in/textbook.php?keip1=0-8		

CLASS XI **SUBJECT- COMPUTER SCIENCE (083)**

Sl. No	Month	No. of working days	Name of chapter/topic to be covered	Teaching aids/ e-content/ innovative practices	Test/ examination to be executed
1	June & July 2024	33	**Unit I: Computer Systems and Organisation** ● Basic computer organisation: Introduction to Computer System, hardware, software, input device, output device, CPU, memory (primary, cache and secondary), units of memory (bit, byte, KB, MB, GB, TB, PB) ● Types of software: System software (Operating systems, system utilities, device drivers), programming tools and language translators (assembler, compiler, and interpreter), application software ● Operating System(OS): functions of the operating system, OS user interface ● Boolean logic: NOT, AND, OR, NAND, NOR, XOR, NOT, truth tables and De Morgan's laws, Logic circuits ● Number System: Binary, Octal, Decimal and Hexadecimal number system; conversion between number systems ● Encoding Schemes: ASCII, ISCII, and Unicode (UTF8, UTF32)		Class Test
2	August	24	**Unit II: Computational Thinking and Programming - I** ● Introduction to Problem-solving: Steps for Problem-solving (Analyzing the problem, developing an algorithm, coding, testing, and debugging), representation of algorithms using flowchart and pseudo code, decomposition ● Familiarization with the basics of Python programming: Introduction to Python, Features of Python, executing a simple "hello world" program, execution modes: interactive mode and script mode, Python character set, Python tokens(keyword, identifier, literal, operator, punctuator), variables, concept of l-value and r-value, use of comments. ● Knowledge of data types: Number(integer, floating point,complex), boolean, sequence(string, list, tuple), None, Mapping(dictionary), mutable and immutable data types.		Perodic Test - 1

			● Operators: arithmetic operators, relational operators, logical operators, assignment operators, augmented assignment operators, identity operators (is, is not), membership operators (in not in) ● Expressions, statement, type conversion, and input/output: precedence of operators, expression, evaluation of an expression, type-conversion (explicit and implicit conversion), accepting data as input from the console and displaying output. ● Errors- syntax errors, logical errors, and run-time errors		
3	September	22	● Flow of Control: introduction, use of indentation, sequential flow, conditional and iterative flow ● Conditional statements: if, if-else, if-elif-else, flowcharts, simple programs: e.g.: absolute value, sort 3 numbers and divisibility of a number. ● Iterative Statement: for loop, range(), while loop, flowcharts, break and continue statements, nested loops, suggested programs: generating pattern, summation of series, finding the factorial of a positive number, etc. ● Strings: introduction, string operations (concatenation, repetition, membership and slicing), traversing a string using loops, built-in functions/methods–len(), capitalize(), title(), lower(), upper(), count(), find(), index(), endswith(), startswith(), isalnum(), isalpha(), isdigit(), islower(), isupper(), isspace(),lstrip(), rstrip(), strip(), replace(), join(), partition(), split()		Class Test
4	October	16	●Lists: introduction, indexing, list operations (concatenation, repetition, membership and slicing), traversing a list using loops, built-in functions/methods–len(), list(), append(), extend(), insert(), count(), index(), remove(), pop(), reverse(), sort(), sorted(), min(), max(), sum(); nested lists, suggested programs: finding the maximum, minimum, mean of numeric values stored in a list; linear search on list of numbers and counting the frequency of elements in a list.		Class Tests
5	November	22	● Tuples: introduction, indexing, tuple operations (concatenation, repetition, membership and slicing); built-in functions/methods – len(), tuple(), count(), index(), sorted(), min(), max(), sum(); tuple assignment, nested tuple; suggested programs: finding the minimum, maximum, mean of values stored in a tuple; linear search on a tuple of numbers, counting the frequency of elements in a tuple. ● Dictionary: introduction, accessing items in a dictionary using keys, mutability of a dictionary (adding a new term, modifying an existing item), traversing a dictionary, built-in functions/methods		Half Yearly

			– len(), dict(), keys(), values(), items(), get(), update(), del(), del, clear(), fromkeys(), copy(), pop(), popitem(), setdefault(), max(), min(), sorted(); Suggested programs: count the number of times a character appears in a given string using a dictionary, create a dictionary with names of employees, their salary and access them		
6	December	18	Introduction to Python modules: Importing module using 'import <module>' and using from statement, importing math module (pi, e, sqrt(), ceil(), floor(), pow(), fabs(), sin(), cos(), tan()); random module (random(), randint(), randrange()), statistics module (mean(), median(), mode()).		Class Tests/Unit Tests/Slip Tests
7	January 2025	24	**Unit III: Society, Law and Ethics** ● Digital Footprints ● Digital Society and Netizen: net etiquettes, communication etiquettes, social media etiquette ● Data Protection: Intellectual property rights (copyright, patent , trademark), violation of IPR(plagiarism, copyright infringement, trademark infringement), open source software and licensing (Creative Commons, GPL and Apache) ● Cyber Crime: definition, hacking, eavesdropping, phishing and fraud emails, ransomware, cyber trolls, cyber bullying ● Cyber safety: safely browsing the web, identity protection, confidentiality ● Malware: viruses, trojans, adware ● E-waste management: proper disposal of used electronic gadgets. ● Information Technology Act (IT Act) ● Technology and society: Gender and disability issues while teaching and using computers		Periodic Test II
8	February	22	Comprehensive Revision, Practical Examination and Project Submission		Revision Test / Slip Tests
9	March		Session Ending Examination		Session Ending Examination
CBSE curriculum 2024-25 – Class XI Computer Science			https://www.cbseacademic.nic.in/web_material/CurriculumMain25/SrSec/Computer_Science_SrSec_2024-25.pdf		
CBSE Text Book:			https://cbseacademic.nic.in//web_material/doc/cs/1_Computer-Science-Python-Book-Class-XI.pdf		
NCERT Text Book: (Rationalised Content)			https://ncert.nic.in/textbook.php?kecs1=0-11		

CLASS XII **SUBJECT- INFORMATICS PRACTICE (065)**

Sl. No.	Month	No of Working Days	Name of the Chapter/Topic to be covered	Teaching Aids/E-content/innovative practices	Test/examination to be conducted
1	April-May 2024	20	Revision of List, Dictionary **Data Handling using Pandas -I** Introduction to Python libraries- Pandas, Matplotlib. Data structures in Pandas - Series and data frames. **Series**: Creation of series from ndarray, dictionary, scalar value; mathematical operations; series attributes, head and tail functions; selection, indexing and slicing.		Class Test /Monthly Test
2	June-July	33	**Data Frames**: creation - from dictionary of Series, list of dictionaries, Text/CSV files; display; iteration; Operations on rows and columns: add, select, delete, rename; Head and Tail functions; Indexing using Labels, Boolean Indexing; Importing/Exporting Data between CSV files and Data Frames. **Data Visualization** Purpose of plotting; drawing and saving following types of plots using Matplotlib – line plot, bar graph, histogram Customizing plots: adding label, title, and legend in plots.		Class Test /Monthly Test
3	August	24	**Database Query using SQL** Revision of database concepts and SQL commands covered in class XI: Database Concepts: Introduction to database concepts and its need, Database Management System. Relational data model: Concept of domain, tuple, relation, candidate key, primary key, alternate key Advantages of using Structured Query Language, Data Definition Language, Data Query Language and Data Manipulation Language, Introduction to MySQL, creating a database using MySQL, Data Types Data Definition: CREATE DATABASE, CREATE TABLE, DROP, ALTER Data Query: SELECT, FROM, WHERE with relational operators, BETWEEN, logical operators, IS NULL, IS NOT NULL Data Manipulation: INSERT, DELETE, UPDATE		Class Test /Monthly Test
4	September	22	**Unit 2: Database Query using SQL** Math functions: POWER (), ROUND (), MOD (). Text functions: UCASE ()/ UPPER (), LCASE ()/		HALF YEARLY EXAM

			LOWER (), MID ()/ SUBSTRING () /SUBSTR (), LENGTH (), LEFT (), RIGHT (), INSTR (), LTRIM (), RTRIM (), TRIM (). Date Functions: NOW (), DATE (), MONTH (), MONTHNAME (), YEAR (), DAY (), DAYNAME (). Aggregate Functions: MAX (), MIN (), AVG (), SUM (), COUNT (); using COUNT (*). Querying and manipulating data using Group by, Having, Order by. Working with two tables using equi-join		
5	October	16	**Unit 3: Introduction to Computer Networks** Introduction to networks, Types of networks: LAN, MAN, WAN. Network Devices: modem, hub, switch, repeater, router, gateway Network Topologies: Star, Bus, Tree, Mesh. Introduction to Internet, URL, WWW, and its applications- Web, email, Chat, VoIP. Website: Introduction, difference between a website and webpage, static vs dynamic web page, web server and hosting of a website. Web Browsers: Introduction, commonly used browsers, browser settings, add-ons and plug-ins, cookies.		Class Test /Monthly Test
6	November	22	Unit 4: Societal Impacts Digital footprint, net and communication etiquettes, data protection, intellectual property rights (IPR), plagiarism, licensing and copyright, free and open-source software (FOSS), cybercrime and cyber laws, hacking, phishing, cyber bullying, overview of Indian IT Act. E-waste: hazards and management. Awareness about health concerns related to the usage of technology. **Comprehensive Revision**		**Pre-Board 1**
7	December	18	**Comprehensive Revision, Project Completion**		**Pre-Board 2**
8	January 2025	24	**Comprehensive Revision**		CBSE Practicals
9	February	22	**Comprehensive Revision, AISSCE Practical Examination**		
12	March	CBSE – Examination 2024 – 2025			

CBSE curriculum 2024-25 – Class XII Informatics Practices	https://www.cbseacademic.nic.in/web_material/CurriculumMain25/SrSec/Informatics_Practices_SrSec_2024-25.pdf
NCERT Text Book: (Rationalised Content)	https://ncert.nic.in/textbook.php?leip1=0-7
Question Bank	https://cbseacademic.nic.in//web_material/QuestionBank/ClassXII/InformaticsPracticesXII.pdf

CLASS XII **SUBJECT- COMPUTER SCIENCE (083)**

Sl. No.	Month	No of Working Days	Name of the Chapter/Topic to be covered	Teaching Aids/E-content/innovative practices	Test/examination to be conducted
1	April-May 2024	20	**Unit I: Computational Thinking and Programming – 2** • Revision of Python topics covered in Class XI. (Introduction, conditional statements, iteration, String, List, Tuple, Dictionary, random module)		Class Test /Monthly Test
2	June-July	33	• **Functions**: types of function (built-in functions, functions defined in module, user defined functions), creating user defined function, arguments and parameters, default parameters, positional parameters, function returning value(s), flow of execution, scope of a variable (global scope, local scope) • **Exception Handling**: Introduction, handling exceptions using try-except-finally blocks • Introduction to files, types of files (Text file, Binary file, CSV file), relative and absolute paths • **Text file**: opening a text file, text file open modes (r, r+, w, w+, a, a+), closing a text file, opening a file using with clause, writing/appending data to a text file using write() and writelines(), reading from a text file using read(), readline() and readlines(), seek and tell methods, manipulation of data in a text file		Class Test /Monthly Test
3	August	24	• **Binary file**: basic operations on a binary file: open using file open modes (rb, rb+, wb, wb+, ab, ab+), close a binary file, import pickle module, dump() and load() method, read, write/create, search, append and update operations in a binary file		Class Test /Monthly Test

			• **CSV file**: import csv module, open / close csv file, write into a csv file using csv.writerow() and read from a csv file using csv.reader( ) • implementation of stack using list. Introduction to queue, operations on queue (enqueue, dequeue, is empty, peek, is full), implementation of queue using list.		
4	September	22	Unit II: Computer Networks ● Evolution of networking: introduction to computer networks, evolution of networking (ARPANET, NSFNET, INTERNET) ● Data communication terminologies: concept of communication, components of data communication (sender, receiver, message, communication media, protocols), measuring capacity of communication media (bandwidth, data transfer rate), IP address, switching techniques (Circuit switching, Packet switching) ● Transmission media: Wired communication media (Twisted pair cable, Co-axial cable, Fiber-optic cable), Wireless media (Radio waves, Micro waves, Infrared waves) ● Network devices (Modem, Ethernet card, RJ45, Repeater, Hub, Switch, Router, Gateway, WIFI card) ● Network topologies and Network types: types of networks (PAN, LAN, MAN, WAN), networking topologies (Bus, Star, Tree) ● Network protocol: HTTP, FTP, PPP, SMTP, TCP/IP, POP3, HTTPS, TELNET, VoIP, wireless/mobile communication protocol such as GSM, GPRS and WLL ● Mobile telecommunication technologies: 1G, 2G, 3G, 4G and 5G ● Introduction to web services: WWW, Hyper Text Markup Language (HTML), Extensible Markup Language (XML), domain names, URL, website, web browser, web servers, web hosting **Unit III: Database Management** • Database concepts: introduction to database concepts and its need • Relational data model: relation, attribute, tuple, domain, degree, cardinality, keys (candidate key, primary key, alternate key, foreign key) • Structured Query Language: introduction, Data Definition Language and Data Manipulation Language, data type (char(n), varchar(n), int, float, date), constraints (not null, unique, primary key), create database, use database, show databases, drop database, show tables, create table, describe table, alter table (add and remove an attribute, add and remove primary key), drop table, insert, delete		Class Test /Monthly Test

5	October	16	Select, operators (mathematical, relational and logical), aliasing, distinct clause, where clause, in, between, order by, meaning of null, is null, is not null, like, update command, delete command, aggregate functions (max, min, avg, sum, count), group by, having clause, joins: cartesian product on two tables, equi-join and natural join		HALF YEARLY
6	November	22	• **Interface of python with an SQL database**: connecting SQL with Python, performing insert, update, delete queries using cursor, display data by using fetchone(), fetchall(), rowcount, creating database connectivity applications		**Pre-Board 1**
7	December	18	**Comprehensive Revision, Project Completion**		**Pre Board II**
8	January 2025	24	**Comprehensive Revision**		**PRACTICALS**
9	February	22	**Comprehensive Revision, AISSCE Practical Examination**		
12	March	CBSE – Examination 2024 – 2025			

CBSE curriculum 2024-25 – Class XII Computer Science	https://www.cbseacademic.nic.in/web_material/CurriculumMain25/SrSec/Computer_Science_SrSec_2024-25.pdf
CBSE Text Book:	https://cbseacademic.nic.in//web_material/doc/cs/2_Computer_Science_Python_ClassXII.pdf
NCERT Text Book: (Rationalised Content)	https://ncert.nic.in/textbook.php?lecs1=ps-13
Question Bank	https://cbseacademic.nic.in//web_material/QuestionBank/ClassXII/ComputerScienceXII.pdf