

Bhartiya Vidya Mandir Sen. Sec. School, Sector 39, Chandigarh Road, Ludhiana

CLASS - XII Stream-Science Subject: Informatics Practices Session :2024-2025

BOOK: Informatics Practices With Python By Preeti Arora

Month	Unit/Chapter/Topic	Learning Objective	Resources/Art-Integrated Pedagogy Tools Used/E-Resources	Learning Outcomes / Skills Learnt by Students
APRIL	Data Handling using Pandas -I	Introduction to Python libraries- Pandas, Matplotlib.	Lecture Method	Python Pandas
		Data structures in Pandas - Series and Data Frames. Series: Creation of Series from – ndarray, dictionary, scalar value; mathematical operations; Head and Tail functions;	Practical Implementation	Data Structures in Pandas
		Data Frames: creation - from dictionary of Series, list of dictionaries, Text/CSV files; display; iteration;	Practical Implementation	What are Data Frames? Creation of Data Frames
		Selection, Indexing and Slicing. 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	Practical Implementation	Boolean Indexing, CSV files

	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.	Practical Implementation	Creation of graphs using Pandas
MAY	Database Query using SQL	Revision of database concepts and SQL commands covered in class XI	Lecture Method	SQL and its Functions
		Math functions: POWER (), ROUND (), MOD (). Text functions: UCASE ()/ UPPER (), LCASE ()/ LOWER (), MID ()/ SUBSTRING () /SUBSTR (), LENGTH (), LEFT (), RIGHT (), INSTR (), LTRIM (), RTRIM (), TRIM ().	Lecture Method	Math Functions
		Date Functions: NOW (), DATE (), MONTH (), MONTHNAME (), YEAR (), DAY (), DAYNAME (). Aggregate Functions: MAX (), MIN (), AVG (), SUM (), COUNT (); using COUNT (*).	Practical Implementation	Date and Time functions

		Querying and manipulating data using Group by, Having, Order by. Working with two tables using equi-join	Lecture Method & Practical implementation	Group by ,having clause and working with Equi-join
JUNE	SUMMER VACATION			
JULY	Societal Impacts	Digital footprint, net and communication etiquettes, data protection, intellectual property rights (IPR), plagiarism, licensing and copyright, free and open source software (FOSS),	Lecture Method	What are Digital FootPrints,Netiquettes, FOSS
AUGUST		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.		cybercrime and cyber laws, hacking, phishing, cyber bullying,
SEPTEMBER	TERM 1 EXAMINATION			

OCTOBER	Introduction to Computer Networks	Introduction to networks, Types of network: PAN, LAN, MAN, WAN.	Lecture Method	What is networks, Types of network: PAN, LAN, MAN, WAN.
NOVEMBER		Network Devices: modem, hub, switch, repeater, router, gateway Network Topologies: Star, Bus, Tree, Mesh	Lecture Method	Network Devices: modem, hub, switch, repeater, router, gateway Network Topologies: Star, Bus, Tree, Mesh
DECEMBER	Introduction to Computer Networks	Network Topologies: Star, Bus, Tree, Mesh. Introduction to Internet, URL, W W W, and its applications- Web, email, Chat, VoIP.	Lecture Method	Network Topologies: Star, Bus, Tree, Mesh. Introduction to Internet, URL, W W W, and its applications- Web, email, Chat, VoIP.
JANUARY		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	Lecture Method	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