

ANNUAL CURRICULUM PLAN 2020 - 2021

INFORMATICS PRACTICES (NEW) - CLASS XII (Code No. 065)

Vision

- *To develop the analytical, problem-solving and logical programming skills of the students through Python Language.*
- *To provide them an insight into data handling concepts and plotting libraries.*
- *To enable students to work on data structures and apply operations on them – Series and Data frames.*
- *To enable them to visualize data using relevant graphs.*
- *To inculcate among students the data-handling techniques related to database management through SQL Language and use its aggregate functions.*
- *To let them know how to Import/Export data between SQL database and Pandas.*
- *To acquaint students with the basics of networking and its related terminologies. To provide them knowledge of Internet and Web Technologies, identify security issues and configure browser settings.*
- *To make them understand the Societal Impacts of Computers and Technology, Ethical Issues, Cyber Crime, Open Source Philosophies and Health Concerns of technological use.*

TERM PERIOD – APRIL TO SEPTEMBER

Unit & Chapter	Transactional Strategies/ Innovative Pedagogy	Learning Outcomes	Skill Development
<p><i>Database Query using SQL</i></p> <ul style="list-style-type: none"> • MATH functions : power, round, mod. • TEXT functions : ucase, lcase, mid, substr, length, left, right, instr, ltrim, rtrim, trim. • DATE functions : now, date, month, monthname, year, day, dayname. • AGGREGATE functions: max, min, avg, sum, count, count(*) • Querying and manipulating using GROUP BY, ORDER BY and HAVING clause. • Operations on Relations – Union, Intersection, Minus, Cartesian Product, Join 	<p>Activation and use of prior knowledge.</p> <p>Use of text structures</p> <p>Summarisation</p> <p>Computational Thinking</p> <p>Learning by Doing</p> <p>Adaptive Learning</p> <p>Virtual Classrooms - Demonstration through online screen share by teacher.</p> <p>Real-Time Evaluation of Students' Practicals through screen sharing.</p>	<p>Student can use SQL for storing and retrieving data from the RDBMS.</p> <p>Ability to arrive at a normalized design of tables and other database objects in RDBMS.</p> <p>They will be able to relate the learning with their real life experiences.</p>	<p><u>Core Skills</u> - Structuring, managing database and its analysis.</p> <p><u>Life Skills</u> - Self-Directed, Engaged Learning</p> <p><u>Art Integration</u> - Prepare a report on the comparative study of records from a school management database.</p> <p><u>Inter-disciplinary Linkage</u> - Mathematical functions.</p>

Unit & Chapter	Transactional Strategies/ Innovative Pedagogy	Learning Outcomes	Skill Development
<p><i>Societal Impacts</i></p> <ul style="list-style-type: none"> • Digital Footprints – Active and Passive, definition and how to manage them on personal devices. • Net and Communication Etiquettes • Ethical Issues: Intellectual Property Right and Plagiarism • Open Source Philosophy : OSS, FLOSS, Freeware, Free Software and Proprietary. • Copyright and License, types of licensing. • Cyber Crime, Cyber Law and IT Laws • E-Waste Management: E-Waste Disposal Process, Benefits of E-Waste Cycling • Health Concerns with Technology usage in a wise manner/ • Threats to Data : Viruses, Spyware, Adware, Spamming, PC Intrusion, Eavesdropping, Phishing and Pharming. • Data Protection Solutions : Viruses, Spyware, Adware, Spamming, PC Intrusion, Eavesdropping, Phishing and Pharming attacks. • Firewall – Security solution. 	<p>Activation and use of prior know-ledge.</p> <p>Reading text structures</p> <p>Explaining text structures</p> <p>Personal response to text</p> <p>Summarisation</p> <p>Learning through Group Discussions</p> <p>Context Based Learning</p> <p>Virtual Classrooms through online teaching</p> <p>Assessment of student’s learning through real-time AV monitored Viva voce based on the Unit.</p>	<p>Students will become aware of impacts of technological trends on the society.</p> <p>They will be able to relate the learning with their real life experiences.</p>	<p><u>Core Skills</u> - Digital literacy</p> <p><u>Life Skills</u> - Online etiquettes, preventive behaviour against Cyber Crime, appropriate usage of social networks.</p>

Unit & Chapter	Transactional Strategies/ Innovative Pedagogy	Learning Outcomes	Skill Development
<p><i>Introduction to Computer Networks</i></p> <ul style="list-style-type: none"> • Communication Media: Wired Technologies – Co-Axial, Ethernet Cable, Optical Fiber; Wireless Technologies – Blue Tooth, Infrared, Microwave, Radio Link, Satellite Link • Network Devices: Modem, Hub, Switch, Repeater, Gateway – and their functions • Types of network: LAN, MAN, WAN, PAN • Network Topologies: Point-to-Point, Ring, Mesh, Star, Bus, Tree • History of WWW Web Servers, URLs, Website, Static and Dynamic website, Hosting of Webpages, Internet Applications, Chat, VoIP, Browsers and its settings – Addons, Plugins, Cookies. 	<p>Activation and use of prior knowledge.</p> <p>Reading text structures</p> <p>Explaining text structures</p> <p>Personal response to text</p> <p>Summarisation</p> <p>Learning through Group Discussions</p> <p>Context Based Learning</p>	<p>Students will become aware of basics of networking.</p> <p>They will become familiar with the commonly used components that make up a network.</p> <p>They will be able to relate the learning with their real life experiences while learning about Web, Internet and the related terminologies.</p>	<p><u>Core Skills</u> - Digital literacy</p> <p><u>Art Integration</u> - Prepare a presentation to demonstrate the comparison of various Network Topologies.</p> <p><u>Experiential Learning</u> – Working on addons, plugins and Internet applications.</p>

TERM PERIOD – OCTOBER TO DECEMBER

Unit & Chapter	Transactional Strategies/ Innovative Pedagogy	Learning Outcomes	Skill Development
<p><i>Data Handling using Pandas -I</i></p> <ul style="list-style-type: none"> • 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; Head and Tail 	<p>Activation and use of prior knowledge.</p> <p>Reading text structures</p> <p>Explaining text structures</p> <p>Personal response to text</p> <p>Summarisation</p> <p>Learning through Group Discussions</p>	<p>Ability to understand Pandas, to manipulate data with Pandas.</p> <p>Ability to feed statistical analysis, filter and sort data.</p>	<p><u>Core Skills</u> - Collecting data using a planned methodology, recording data with precision and accuracy, analysing data to draw conclusions, sharing data in a way that is useful to others.</p>

<p>functions; Selection, Indexing and Slicing.</p> <ul style="list-style-type: none"> 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. 	<p>Context Based Learning</p> <p>Virtual Classrooms through online teaching</p> <p>Assessment of student's learning through real-time AV monitored Viva voce based on the Unit.</p>		
Unit & Chapter	Transactional Strategies/ Innovative Pedagogy	Learning Outcomes	Skill Development
<p>Data Visualization</p> <ul style="list-style-type: none"> 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. 	<p>Activation and use of prior know-ledge.</p> <p>Reading text structures</p> <p>Explaining text structures</p> <p>Personal response to text</p> <p>Summarisation</p> <p>Learning through Group Discussions</p> <p>Context Based Learning</p> <p>Virtual Classrooms through online teaching</p> <p>Assessment of student's learning through real-time AV monitored Viva voce based on the Unit.</p>	<p>Conduct exploratory data analysis using visualization.</p> <p>Craft Visual presentations of data for effective communication.</p> <p>Using knowledge of perception and cognition to evaluate visualization design alternatives.</p> <p>Provides new insights into a research question or communicate information to the viewer.</p> <p>Ability to plot data with MatPlotLib.</p>	<p><u>Core Skills</u> - Ability to identify patterns, correlations and trends.</p> <p><u>Art Integration</u> - Prepare a line-plot to study the trend of growth of Coronavirus cases in India.</p> <p><u>Interdisciplinary Linkage</u> – Mathematics</p>