

**National Institute of Technical Teachers Training and Research, Chandigarh**  
**Department of Computer Science and Engineering**

TAC No.	HBCSE-1
Name of the Course	Applied Data Science: Tools, Techniques, and Use Cases (20.04.2026 – 24.04.2026)
Course Outcomes	<ul style="list-style-type: none"> <li>➤ Understand the fundamental concepts of Data Science</li> <li>➤ Implement data cleaning and feature engineering techniques</li> <li>➤ Implement data visualisation and exploratory data analysis</li> </ul>
Course Contents	<ul style="list-style-type: none"> <li>➤ Essentials of Data Science and Machine Learning</li> <li>➤ Numpy and Pandas: Python Libraries for Data Science</li> <li>➤ Handling Missing Values</li> <li>➤ Image Data Pre-processing</li> <li>➤ Detecting and Treating Duplicates</li> <li>➤ Dealing with Inconsistent Data</li> <li>➤ Feature Scaling</li> <li>➤ Feature Selection</li> <li>➤ Feature Encoding</li> <li>➤ Binning / Discretization of continuous variables</li> <li>➤ Outlier Detection &amp; Treatment</li> <li>➤ Data Visualisation</li> <li>➤ Exploratory Data Analysis</li> <li>➤ AI Tools for Data Analysis and Visualization</li> <li>➤ Case Studies</li> </ul> <p><b>Tool Stack:</b> Python Libraries: Numpy, Pandas, Scikit-Learn, Matplotlib, Seaborn, OpenCV/PIL/Pillow, Jupyter Notebook/Google Colab.</p> <p><b>Pedagogy:</b> 20% Theory, 80% Hands-on Lab Sessions.</p> <p>Note: Some content may change, subject to the availability of the experts.</p>
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