# P01 Student Instructions – Descriptive Statistics and Visualisation

**Objectives:** - Understand measures of central tendency and dispersion - Compute summary statistics using spreadsheet functions or Python - Visualise data distributions using histograms

**Prerequisites:** Basic knowledge of Microsoft Excel or Python **Estimated Time:** 2 hours **Learning Outcomes:** - Calculate mean, median, mode, variance and standard deviation - Generate histograms and interpret the distribution - Compute correlations among numeric variables

**Dataset Description:** | Column | Type | Description | |——-|——|————-| | Student\_ID | int64 | Synthetic column | | Mathematics | float64 | Synthetic column | | Physics | float64 | Synthetic column | | Chemistry | float64 | Synthetic column | | Computer | float64 | Synthetic column | | Age | int64 | Synthetic column |

**Tasks and Steps:** 1. Load the synthetic dataset into Excel or Python 2. Compute mean, median, mode, variance and standard deviation for each numeric column 3. Calculate the correlation matrix of numeric variables 4. Create a histogram for Mathematics scores and interpret its shape 5. Document your findings in the report

**Formulas / Methods:** - Mean: (= rac{x\_i}{n}) - Median: middle value after sorting the data - Mode: most frequently occurring value - Variance: (^2 = rac{(x\_i - )^2}{n-1}) - Standard deviation: (= )

**Submission Checklist:** - Completed calculation table for all statistics - Histogram plot saved - Written interpretation of distribution and correlations

**मराठी सारांश (Marathi Summary):** ही प्रात्यक्षिकामध्ये आपण सरासरी, माध्यम, मोड, विचलन आणि मानक विचलन यांसारख्या सांख्यिकीय उपायांची गणना करणार आहोत आणि डेटाचे वितरण समजून घेण्यासाठी हिस्टोग्राम तयार करू.