Course Syllabus

Course Title:	Data Analysis for Scientific and Engineering Studies
Department:	DA@SPACE_AC (Assumption College)
Year:	2021
Status:	-
Required:	Basic Mathematical Knowledge: Algebra, Geometry and Statistics Basic Knowledge on Physics, Astrophysics, Astronomy and Science Basic Knowledge on Mechanical and Electrical Engineering Basic Programming Skills
Curriculum:	Fundamental and Advanced Statistics with Methodology, Software Usages and Applications in Scientific and Engineering Studies
Hours/week:	1–2 hours

Course Outlines
1. Types of Data and Data Acquisition
2. Mathematics
   - Introductory Vectors and Matrices
   - Statistics: Definitions and Keywords
   - Statistical Analysis: Data Distribution
     o Frequency Distribution Table
     o Class Interval
     o Boundaries
     o Frequency Distribution Graph
     o Data Positioning: Quartile, Decile and Percentile
   - Statistical Analysis: Central Tendency
     o Mean, Median, Mode and Range
     o Deviations: Standard, Mean, Quartile
     o Coefficients of Variation, Deviation and Range
     o Standard Score (z-score)
     o Normal Distribution
   - Correlations of Data and Functions
   - Data Visualization
3. Scientific Experimentation
   - Significant Figures and Uncertainty
   - Measurement Tools and Techniques
   - Data Filtering Methods
   - Regressions
4. Data Analysis
   - Quantitative Analysis
   - Qualitative Analysis and Spatial Analysis
   - Real-world Applications and Examples

*All topics will be later applied in MATLAB