Module Code	ZD-2401			
Module Title	Introduction to Data Analysis and Visualization			
Degree/Diploma	Undergraduate GenNEXT Bachelor degree			
Type of Module	Breadth			
Modular Credits	4	**Total Student Workload**	8	hours/week
		Contact Hours	4	hours/week
Prerequisite	None			
Anti-requisite	ZD-1201 Introduction to Data Analytics			

Aims

Students shall be able to analyse data and generate powerful reports and dashboard for business or research data to help people make decisions and take action.

Learning Outcomes

On successful completion of this module, a student will be expected to be able to:

Lower order:	0%	
Middle order:	10%	- Interpret business or research questions from data using calculated fields - Apply descriptive statistics and data visualization on a sample data
Higher order:	90%	- Perform statistical operations and visualization of data to conduct insightful analysis - Perform critical analysis and justify use of different data exploratory techniques and statistical tests - Perform estimation and prediction analysis for univariate and multivariate data - Present the data analysis results for a real-world project

Module Contents

- Data pre-processing: data cleaning, handling missing data, graphical methods for identifying outliers, measures of centre and spread
- Exploratory data analysis: exploring categorical and numeric variables, exploring multivariate relationships
- Data analytics tool: basic commands, graphics, indexing data, loading data, graphical and numerical summaries
- Statistical learning: regression versus classification problems, bias-variance trade-off; simple linear regression, multiple linear regression, logistic regression, leave-one-out cross-validation, k-fold cross-validation
- Data analysis and visualization: connecting to data, filtering and sorting, aggregation, calculated fields, symbol map, trend lines, forecasting, dashboard, story
- Case study using visualization tool: apply knowledge on real dataset and create a dashboard to present a story

Assessment	Formative Assessment	Interactive quizzes and feedback
	Summative Assessment	Examination: 0%
		Coursework: 100% - Two lab tests (30%) - Four class tests (50%) - One project (20 %)