Module 2 Data Analytics for Finance

Module Title:	Data Analytics for Finance
Module Code:	M2
Module Leader:	Dr. Prem Sagar Gompa
Stage (if relevant):	Award
Assessment title:	
Assessment Number (if relevant):	1
Assessment Type:	
Restrictions on Time/Length:	
Individual/Group:	Individual
Assessment Weighting:	50%
Issue Date:	24th September, 2025
Hand In Date:	10th December, 2025
Planned Feedback Date:	*No later than 4 weeks following submission*
Mode of Submission:	Via MOODLE upload

Assessment Overview This comprehensive assessment evaluates student understanding across several key areas of financial data analytics involving the practical application of Python skills to a real-world dataset. The assessment is designed to test both technical proficiency and analytical capabilities.

Obtain the following data from FactSet:

- 5-years daily closing prices for the NASDAQ Index.
- 5-years daily closing prices for the Dow Jones Industrial Average Index (DJIA).
- 5-years daily closing prices for 3 constituent companies of your choice from each of the NASDAQ and the DJIA.
- 5-years daily closing prices for 2 traded commodities of your choice.
- 5-years daily closing prices for 3 listed commercial bonds of your choice.

Obtain from an open data source:

- Utilising an API call on one open data source for 5 years of economic data for a single category (e.g. GDP, CPI, Unemployment Rates). A list of open data APIs can be found here.

Required characteristics:

- All the data obtained should be up to the last day of trading or the last date that the data exists for before your most recent birthday.
- The raw data utilised must be a mix of formats. A minimum of three different data formats such as *csv*, *json*, *yaml*, *xml*, *Excel* or similar form and must be utilised and provided as part of your submission.
- Analysis must be undertaken in Google Colab.

Requirement:

a. Develop code in Google Colab to capture and explore the data obtained from Factset.
b. Prepare the data for analysis.
c. Perform basic statistical analysis on the data. Perform appropriate time series analysis (including time series manipulation) necessary to develop a deeper understanding of the data.
d. Provide appropriate graphical illustrations of all analysis.

e. Evaluate any relationship between the NASDAQ and the chosen constituent company stocks closing prices.
f. Evaluate any relationship between the DJIA and the chosen constituent company stocks closing prices.
g. Rebase the NASDAQ and DJIA to the closing value of the first day of trade in 2023.

Marks will be awarded as follows:

- Effective well documented use of Python - 20%.
- Utilisation of Python and APIs to obtain data - 15%.
- Effectiveness of Financial Data Analytics - 20%.
- Use of Data Analytics and Related Python Libraries - 10%.
- Code implementation, including code comments - 20%.
- Statistical graphics e.g. scatter plot, moving average, time series resampling etc. - 15%.