



Department of Accounting and Finance

AG443 Data and Textual Analytics for Accounting & Finance

2026/27 Semesters 1 & 2

20 Module Credits

Module Details

Module Description

This module equips students with the skills and knowledge necessary to work with both structured financial data and unstructured textual data in a financial context. As the financial services sector increasingly relies on data-driven insights, students are introduced to methods for analysing financial time series, fundamental financial data, and qualitative information drawn from sources such as corporate reports, news articles, and social media.

The module is delivered across both semesters. Semester One focuses on financial data analytics, where students develop predictive models using tools such as machine learning, and learn to present output through clear and interpretable visualisations. Semester Two focuses on textual analytics, covering traditional methods such as dictionary and machine learning approaches, before moving on to more advanced natural language processing (NLP), including transformer-based models such as BERT and large language models (LLMs). Analysis is conducted throughout using the open-source Python programming language.

Emphasis is placed on developing critical thinking alongside technical proficiency, including the treatment of incomplete data, the selection of appropriate methods for a given scenario, and the ethical, privacy and regulatory considerations that arise when working with large and novel datasets. Though students will develop foundational programming skills, the focus in the latter aspects of the module is on selection of, and justification for, appropriate methods to conduct and present results in different contexts.

Teaching Hours

Teaching runs across five weeks in Semester One and five weeks in Semester Two. Each teaching week comprises a two-hour lecture and a one-hour computer lab.

- Semester One: Financial Data Analytics
Wednesday 9am-11am (weeks 3-7) in LT501.
Thursday 12-1pm (weeks 4-8) in JW410.
- Semester Two (Weeks 6 to 11): Textual Analytics
Tuesday 9am-11am in TBC.
Wednesday 12-1pm in TBC.

Honours students attend alongside the postgraduate cohort taking the equivalent postgraduate modules. Specific dates, times and room allocations will be confirmed on the module MyPlace page ahead of each semester.

Prerequisites

BF124 Introduction to Finance and Financial Analysis, BF123 Introduction to Finance and Financial Statistics, or AG105 Introduction to Finance and Financial Statistics, and acceptance into Honours year.

Contact Details

Lecturers: Dr Panagiotis Loukopoulos/James Bowden

Room number: Stenhouse Wing 3.22, Stenhouse Wing 3.09

Office Hours: Wednesday from 11:00 to 13:00/Wednesdays 9.30am - 11.30am

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Module Learning

Module Aims

The module aims to develop the technical and analytical skills required to leverage both structured financial data and unstructured textual data within an accounting and finance context. It introduces students to the tools, techniques and libraries used to obtain, clean and analyse large and computationally challenging datasets, and to the natural language processing methods used to extract meaning from qualitative financial information. Throughout, the module develops critical thinking about the selection, accuracy and limitations of analytical methods, and about the ethical, privacy and regulatory considerations of using large, novel datasets and machine learning models. The overall aim is to prepare students for an increasingly data-driven financial services sector by bridging the gap between traditional finance theory and modern, data-driven practice.

Learning Objectives and Outcomes

The following learning outcomes will contribute to your self-analysis and reflection in your Student's Personal Development Planning (SPDP). These learning outcomes will be assessed using the methods explained in the "Assessment and Feedback Details" section of this Outline.

Subject-specific knowledge and skills

On completing this module students will be able to:

- A1.** Critically evaluate and implement a range of analytical methods for financial data, including advanced data filtering and cleaning techniques for structured datasets and textual analysis methods spanning dictionary-based and transformer-based models, selecting appropriate techniques for a given analytical context.
- A2.** Apply machine learning and natural language processing (NLP) tools to both structured and unstructured financial data, including regression, classification and clustering algorithms and sentiment extraction from financial texts, evaluating the accuracy, limitations and potential biases inherent in each approach.
- A3.** Evaluate the extent to which ethical and privacy issues apply to different financial datasets and analytical methods, with reference to responsible data use and compliance with relevant UK legal and regulatory frameworks, including considerations specific to the use of large language models (LLMs) in finance.
- A4.** Critically interpret and evaluate the outputs of data analytics and textual analysis methods, drawing on knowledge of both structured and unstructured financial data sources to identify the most appropriate analytical approach for a given scenario, and to reason about the limitations and implications of the results obtained.

Cognitive abilities and non-subject specific skills

During this module students will develop skills in:

- B1.** Critically assessing and synthesising diverse data sources, forming well-reasoned arguments and decisions in financial contexts, including an awareness of the associated biases and a judgement of which information is most relevant in the context of accounting and finance research
- B2.** Communicating complex financial data analyses and insights in a clear and concise manner, tailored to both specialist and non-specialist audiences.
- B3.** Using data visualisation tools to present analytical findings, enhancing the clarity and impact of financial reports.
- B4.** Ethical reflection and responsible decision-making, considering the broader societal impacts of data-driven strategies, financial innovations, and state-of-the-art “black box” approaches to data and textual analysis, such as large language models.

Module Structure

Timetable

The teaching programme may be subject to minor changes. Financial data analytics is covered in Semester One and textual analytics in Semester Two. As an indicative guide, the programme is as follows:

Semester One – Financial Data Analytics

Week One: Introduction to Data Analytics in Finance; Ethical, Privacy and Regulatory Considerations

Week Two: Obtaining and Importing Large Datasets; Data Filtering and De-noising of High-Frequency Datasets

Week Three: Descriptive Statistics and Statistical Techniques; Machine Learning Techniques in Finance (Traditional ML Methods)

Week Four: Machine Learning Techniques in Finance (Deep Learning); Time Series Analysis and Forecasting

Week Five: Data Representation and Visualisation; Consolidation of Learning

Semester Two – Textual Analytics

Week One: Introduction to Text Analytics in Finance; Textual Representation; Associated Biases

Week Two: Word Frequency Counts and Dictionary Methods; Text Similarity and Readability Measures

Week Three: Supervised and Unsupervised Machine Learning Techniques for Text Classification

Week Four: Transformer Architecture and Large Language Models (LLMs)

Week Five: Beyond Textual Data: Multimodal Analysis

Assessment and Feedback Details

1. Individual Assignment worth 50%. Due: 12pm on Monday 9th November (week 8). Marks and feedback will be released on or before Monday 30th November 2026, 12pm.
2. Final Exam worth 50%. Date: TBC, during the Semester Two exam diet.

An overall weighted average mark of 40% is required to pass the module.

Assessment

Students are expected to complete all elements of assessment in the module. Non-submission of any element will lead to an overall mark of zero for the module. Personal circumstances will be considered in line with the Procedure for the Consideration of Academic Mitigation by a Board of Examiners

Exam Paper/Class Test Paper Identification Requirements

Students must follow all instructions in the examination booklet/class test booklet and on the examination paper/class test paper relating to candidate identification. Failure to follow these requirements may result in a mark of zero being awarded for the module.

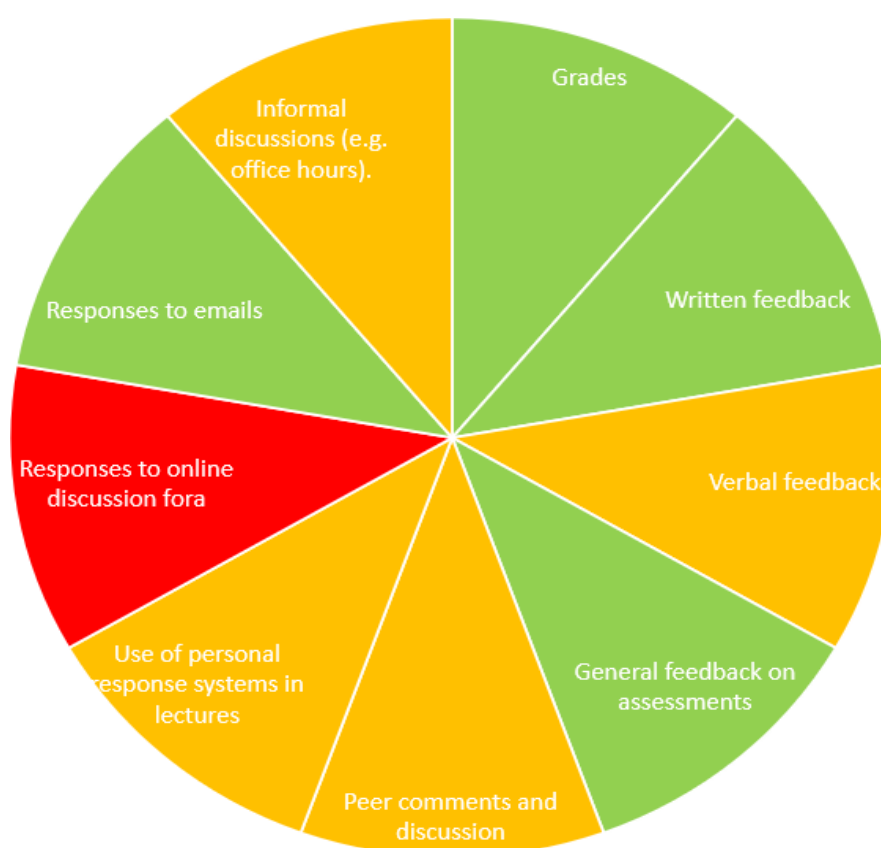
The assessments promote effective student learning by offering two different assessment types, increasing in complexity and breadth as the module progresses, with various methods of feedback for both formative and summative tasks. Feedback practices are appropriate, fair and transparent through the development of a relevant grading rubric, and are clearly communicated to students through the “wheel of feedback” outlined below. Feedback practices will be continuously reviewed, with a conscious effort to avoid bunching of exams. As such, there may be some adjustment to the scheduled assessment dates outlined above.

Module Feedback

The following forms of feedback will assist you in this module:

Feedback category	Details for module	Colour
Grades	Students will receive marks for the individual assignment and the exam for this module.	Green
Written feedback	Students will receive written feedback for the individual assignment and the exam for this module.	Green
Verbal feedback	Students will receive verbal feedback, at the class level, on formative tasks completed during the computer labs.	Amber
General feedback	A document will provide general feedback on key aspects of the summative assessment, including an indication of overall class performance.	Green

Peer comments and discussion	Students are encouraged to share thoughts and feedback during facilitated discussion, or formal group tasks conducted during the computer lab	Amber
Use of personal response systems in lecture	Lecturers will occasionally use personal response systems on an ad-hoc basis during lectures.	Amber
Responses to online discussion forum	As an on-campus class, there is no online discussion forum.	Red
Responses to email	Students are encouraged to use office hours to ask questions relating to the course material. However, students can also e-mail the lecturer with any queries they may have.	Green
Informal discussions	There are weekly bookable one-to-one meetings with the lecturer for any student wishing to discuss questions. These can be booked via the link on the class page.	Amber



Artificial Intelligence

This module teaches text analytics methods, including large language models (LLMs), as subject matter. The use of generative AI tools to produce or assist with assessed work is a separate matter and is governed by the standard departmental policy. You are not permitted to use generative AI tools to complete assessments for this module unless you are a student with an adjustment report on Pegasus where this is explicitly specified as a

“reasonable adjustment”. Any student suspected of using such tools in the preparation of assessed work will be subject to investigation under the Student Discipline Procedure for Academic Misconduct.

Reading List

Please refer to the AG443 MyPlace page to access the reading list.

There is no core textbook for this module. Core reading is provided for each topic in the form of published academic research papers, industry reports and white papers, all made available via the module MyPlace page. The taught content draws in part on research conducted by the module leaders, for example:

Todd, A., Bowden, J. and Moshfeghi, Y., 2024. Text-based sentiment analysis in finance: Synthesising the existing literature and exploring future directions. *Intelligent Systems in Accounting, Finance and Management*, 31(1).

Bowden, J., Cummins, M. and Zhang, H., 2024. *Generative AI for Simplified ESG Reporting in Financial Services*. Financial Regulation Innovation Lab White Paper.

UG Module Manual (Honours)

Please refer to the accounting and finance UG manual module for the following ([Honours Module Manual.docx](#)):

- Tutorial Attendance
- Useful Contacts
- Penalties for Late Submission
- Feedback
- Compensation Scheme
- Universal Marking Guide
- Useful Links

Reassessment

Final year modules are not normally reassessed. Any reassessment is at the discretion of the Board of Examiners and is only offered in exceptional circumstances. Should the Board agree to allow reassessment of this module, the form of resit will be at the discretion of the department and may be in the form of a resit examination or a reassessment of the coursework.