DESCRIPTION OF ELECTIVE COURSE

Name of the school: **Haute école de gestion de Genève**	**Academic Year:** **2025-2026**

FIRST PART: DESCRIPTION OF MODULE	
1. Domain	Business and Services
2. Department	International Business Management
3. Course name	**Quantitative Forecasting and Decision-Making**
4. Code	31003
5. Type of education	☒ Bachelor ☐ Master ☐ MAS ☐ ☐ DAS / CAS / single days
6. Number of ECTS Credits	5
7. Prerequisites	☒ Validation of the modules in semesters 1 and 2 ☒ Attendance of the modules in semesters 3 and 4 for full-time students, and semesters 5 and 6 for part-time students ☐ ………………………..
8. Teaching language	☐ French ☐ German ☒ English ☐ Other: ………………………….
9. Objectives	Today's business world is data-driven. Many sectors and many functions are overwhelmed with data that is unfortunately often unused. However, with proper quantitative methods, data can be transformed into information that is useful to run a business. This course is articulated around a catalog of quantitative methods that can be used in a day-to-day business. The first objective is to know how to handle data, in which situation it can be useful, and how it can be used as a communication tool. The second objective is to master (quantitative) forecasting techniques for business purposes. Those include mostly (but are not limited to) statistical tools for time series. The third objective is to highlight the use of data in decision-making processes, covering methods and heuristics, to help business managers to make and justify substantiated decisions.

More precisely, at the end of this course, students should be able to:

- Acquire a general business knowledge of forecasting and decision-making.
- Visualize and explain data in a management context.
- Identify the principles and advantages of various forecasting methods.
- Describe and apply various statistical techniques for forecasting.
- Generate forecasts with different patterns, such as, e.g., trends or seasonality.
- Experiment various decision-making models and heuristics, especially under uncertainty or risks.
- Link forecasting with other strategic aspects of business, in particular marketing or innovation management.

10. Contents *(General themes and descriptions, the accurate content may change)*	The course is articulated along the three following themes: Data and business: 1. Why is it important for decision makers to incorporate data-driven decision making? 2. The use of data for communication and decision making. Data analysis, visualization, presentation, and storytelling. 3. Forecasting and strategic planning. How to manage the present from the future? Forecasting and statistical analysis: 4. Basics and general notions. Qualitative and quantitative methods. 5. Forecasting techniques (e.g., smoothing, regressions, time series decompositions, AR models). 6. Analysis techniques (e.g., clustering). 7. How to use AI for forecasting. Decision making: 8. Decision making in a certain/uncertain future. Decision trees. 9. Multicriteria decision making. How to balance multiple objectives? Scoring heuristics. 10. Scenario analysis. Bayesian analysis. 11. How to use AI for decision-making. Examples and use cases cover various areas of business, such as, e.g., marketing and sales, trading, finance, innovation strategy, operations, or technology, for the students to be able to apply generic tools and techniques in various contexts.
11. Evaluation	The grading of the module shall be based on: - Mid-term assessments during weeks 1 to 15 according to the decision of the instructor. (The methods and weightings are communicated by the instructor before the evaluations)
12. Remediation/repetition	☒ Compulsory remediation if the module grade is between 3.5 and 3.9 / 6. When subject to a remediation, only the grade of the remedial exam will be taken into account (maximum grade 4.0). A repeated module cannot benefit from a remedial exam. ☐ No remediation

13. Coordinator / main instructor	Alexandre Caboussat

SECOND PART: LOCATION OF THE MODULE IN THE STUDY PLAN	
14. Level	☐ Basic module ☐ Advanced module ☒ Specialized module ☐ Other: …………….……
15. Characteristics	☒ Module is mandatory (which could lead to final dismissal from the program, cf. art.15, al.1, « Statut des étudiant-e-s bachelor »)
16. Type	☒ Main module ☐ Module linked to main module ☐ Optional module ☐ Other: …………………...
17. Time organization	☒ Module over 1 semester ☐ Module over 2 semesters ☐ Spring semester ☒ Fall semester ☐ Other