

Module description

Field of study: Business, Management and Services

Degree course: BSc HES-SO in International Business Management

Major: N/A

Subject to the *Règlement sur la formation de base (Bachelor et Master) à la HES-SO* (R-FB hereafter) and *Regulations for the degree programme Bachelor of Science HES-SO in International Business Management* (R-IBM hereafter; collectively *program regulations* hereafter); and *Règlement d'études des filières Bachelor de la HEG* (RE-HEG hereafter).

1. Title of module	Quantitative Methods I	2026-2027
Code: 3162	Revision date / Effective date: 2026-08-17 / 2026-09-14	
Equivalent to: 3071	ECTS Credits: 6 Credits	
Level: ☒ Basic module ☐ Further studies module ☐ Advanced module ☐ Specialised module ☐ Other: ...	Type of course: ☒ Bachelor's ☐ Master's ☐ MAS ☐ DAS ☐ CAS ☐ Other: ... Characteristic: ☒ Compulsory module	
Type: ☐ Main module ☐ Module linked to main module ☐ Optional or subsidiary module ☐ Other: ...	Time schedule: ☐ Module over 1 semester ☒ Module over 2 semesters ☐ Spring semester ☐ Autumn semester ☐ Other: ...	

2. Organisation

Primary teaching language:

- | | |
|---|-------------------------------------|
| ☒ English | ☐ French |
| ☐ German | ☐ Italian |
| ☐ Spanish | ☐ Other: ... |

Module composition

Module composed of the course units: 31621-Quantitative Methods I-I; 31622-Quantitative Methods I-II

Attendance:

Attendance is mandatory for all classes and other activities specified in the module description or syllabus, per art. 24 of the *RE-HEG* and unjustified absence may entail penalties. Where unjustified absence carries penalties, attendance is regularly monitored via written or digital signature, and any penalties are applied in accordance with institutional regulations.

Penalties for absences:

- ☐ Attendance at all scheduled teaching activities is mandatory and constitutes a condition for validation of the module. Students whose attendance falls below 80% of these activities are not eligible to be registered for the final examination which entails failure of the module.
- ☐ Attendance at all scheduled teaching activities is mandatory. Each unjustified absence results in a grade penalty of 0.5/6 applied to the final module grade.
- ☐ Each unjustified absence at scheduled course activities identified as mandatory or compulsory in the module description or syllabus entails a grade penalty of 0.5/6 applied to the final module grade...
- ☐ Absence from activities identified as mandatory or compulsory in the module description or syllabus results in the student not being entitled to receive a grade for any associated assessment.

- ☒ Attendance at all scheduled teaching activities contributes directly to the achievement of learning outcomes. Absences are not directly penalised. Attendance may nevertheless be monitored for pedagogical purposes.
- ☐ Additional details: (optional)

3. Prerequisite

- ☐ To have validated the module
- ☐ To have followed the module
- ☒ No prerequisite
- ☐ Other: ...

4. Skills to be gained / general learning objectives

Quantitative methods are the basis tools that allow any firm to use quantitative reasoning, statistical learning, optimization, and foresight tools to guide high-stakes business decisions in a data-driven economy. The first module of the quantitative methods sequence is about understanding the data and the models, and about extracting value, information and knowledge from data.

At the end of the course, students are able to:

Understand why numbers drive decisions.
Use mathematics tools to model and solve problems in the fields of economics, management and finance.
Turn business questions into a quantitative formalism involving calculus tools.
Measure change, margins and growth.
Optimize value.
Understand the time value of money.
Perform project valuation.
Make sense of data in a business environment.
Summarize and describe data using numerical measures.
Understand basic notions of probability and use some probability distributions.
Elicit the structure behind the data with vectors and matrices.

5. Teaching and content

The content of the module is organized along the following topics:

Calculus

Functions of one variable, operations on functions, derivatives, differentiation rules, applications of the derivative, curve sketching, optimization in one variable. Optimization in one variable, applications of optimization, integration.

Descriptive statistics

Sampling techniques, data types, graphs and charts).
Numerical measures (measures of location and variation, correlations).

Probability

Fundamental notions and rules of probability.
Some discrete and continuous probability distributions.

Financial mathematics

Financial mathematics: interest rates, present value, annuities, net present value, portfolio return.

Linear algebra

Matrix algebra: operations on matrices, determinant, inverse, applications

The teaching methods include lectures and regular homework.

6. Assessment and validation methods

Final exams at the end of each semester accounting for 80% of the grade, and a mid-term during the Fall semester accounting for 20% of the grade.

☒ Further details regarding assessment and validation methods are specified in the module or course unit syllabus available on the Cyberlearn Moodle page of the module or course unit.

7. Remediation and repetition

Module repetition and remediation are governed by the *program regulations* as well as the *RE-HEG*.

Remediation

Module eligible for remediation if the overall module grade is between 3.5 and 3.9, in accordance with Art. 29 R-FB. In case of remediation, grades for continuous assessments or bonus grades are not carried over.

☐ Module composed of multiple course units evaluated individually: remediation applies exclusively to those course units for which the grade obtained is below 4.0. Remediation takes the form of an additional assessment for each course unit concerned, covering the learning objectives of that course unit, as determined by the relevant course-unit coordinator.

☒ Module consisting of a single course unit, or of two integrated course units evaluated jointly at module level: remediation takes the form of one additional assessment covering the learning objectives of the module as a whole.

Repetition

In the event of module repetition, students are required to complete the module in accordance with the following provisions: for modules comprising more than two course units, only those course units for which a grade below 5.0 was obtained must be repeated; for modules comprising one or two course units, students repeating the module must repeat all course units in their entirety, irrespective of the grades previously obtained. Grades or assessment results obtained during a previous attempt are otherwise not carried over.

☐ In case of accelerated repetition per Art 7 of the R-IBM, grades for continuous assessments are carried over.

☒ In case of accelerated repetition per Art 7 of the R-IBM, grades for continuous assessments are not carried over and are replaced as follows: *The content and objectives of all module evaluations are incorporated in the accelerated repetition exam.*

8. Remarks

Further details regarding points 5, 6, 7, 9 & 10 may be specified in a module or course unit syllabus available on the Cyberlearn Moodle page of the module or course unit.

The institution reserves the right to modify the content and organization of the module.

9. Bibliography

10. Faculty

Prof. Alexandre Caboussat
Dr Jan Erik Meidell
Dr Arnold Vialfont
Dr Pierre Kirner
External lecturers

Filename : 3162_ModuleDescr_Quantitative-Methods-I_26-27_V2.docx

Faculty responsible for the module:

Prof. Alexandre Caboussat

Module description validated on
2026-06-30

Module description validated by
Astrid Dauverné