

- Faculté des sciences économiques
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### Business Analytics: Methods and Models (5MI2003)

Filières concernées	Nombre d'heures	Validation	Crédits ECTS
<b>Master en développement international des affaires</b>	<b>Cours: 4 ph</b>	Voir ci-dessous	6
<b>Master en systèmes d'information</b>	<b>Cours: 4 ph</b>	Voir ci-dessous	6
<b>Master of Science en innovation, orientation Management de la R&amp;D</b>	<b>Cours: 4 ph</b>	Voir ci-dessous	6

ph=période hebdomadaire, pg=période globale, j=jour, dj=demi-jour, h=heure, min=minute

#### Période d'enseignement:

- Semestre Printemps

#### Equipe enseignante

Cotofrei Paul- Professeur associé  
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#### Contenu

The course starts with an overview of the main concepts used in business analytics (decision-making process, systems and models). Then the accent is put on the quantitative approaches to decision making. The main models used in decision analysis (influence diagrams, decision trees) are presented in both contexts - without and with probabilities, together with the two kind of decision-making analysis: risk analysis and sensitivity analysis. One of the most known and applied quantitative model in business analytic, the linear programming, is deeply analysed (optimal solutions, sensitivity analysis, 0-1 variables, case application in marketing, finance, transportation, network distribution, game theory). The last part of the course investigate more sophisticated models as goal programming and analytic hierarchy process (the lasts two models being applied for multicriteria decision problems).

#### Forme de l'évaluation

- Project assignments : 20% of final grade.
- Final written exam (2 hours) during the last week of semester: 80% of final grade.
- Resit: 2 hours written exam during autumn session: 100% of final grade.
- Allowed documents during exams: cours slides with annotations.
- Connected devices are not permitted during the exams. In case of violation of this rule, the students are in a situation of fraud and the unauthorized items will be removed. The exam could be deemed as failed.

#### Documentation

- An introduction to Management Science - Quantitative approaches to decision making, by Anderson, Sweeney, Williams and Martin, Thompson South-Western, 12th/13th edition
- Data Analysis and Decision Making, by S. Albright, W. Winston and C. Zappe, Cengage Learning, 4th edition
- Essentials of Business Analytics, by J. Camm, J. Cochran, M. Fry & all, Cengage Learning, 2015

#### Pré-requis

none

#### Objectifs d'apprentissage

Au terme de la formation l'étudiant-e doit être capable de :

- Apply the phases of the decision-making process
- Discuss the implications of data analysis for a business environment
- Develop an optimal strategy faced with several decision alternatives and uncertainty
- Recognise a decision problem demanding the linear programming approach
- Explain the quantitative models and methodologies applied in a real word case study
- Analyse the consequences of a model parameter change
- Evaluate the limits of the methods for multicriteria decision analysis
- Identify the parameters (objective function and constraints) of a linear program

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**Compétences transférables**

- Apply knowledge to new situations
- Teamwork
- Decision making