MGT-432

Data science for business

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Cursus	Sem.	Type
Energy Management and Sustainability	MA1, MA3	Opt.
Financial engineering	MA1, MA3	Opt.
Management, Technology and Entrepreneurship minor	H	Opt.
Managmt, tech et entr.	MA1, MA3	Opt.

Language of teaching	English
Credits	6
Withdrawal	Unauthorized
Session	Winter
Semester	Fall
Exam	During the semester
Workload	180h
Weeks	14
Hours	**4 weekly**
Courses	3 weekly
TP	1 weekly
Number of positions	**100**

It is not allowed to withdraw from this subject after the registration deadline.

Remark

MA3 only

Summary

Students will learn the basic concepts of Data Science so that they can make better business decisions. Students will also learn how to apply these concepts to real programming problems.

Content

This course introduces students to some of the programming tools used by data scientists to address real world business analytics problems. Accordingly, the course objectives are three fold: (1) to develop an understanding of how Data Science methods can support decision making in business environments; (2) to gain familiarity with how Data Science tools function through experience in addressing real-word problems and programming real-world solutions; (3) to evaluate the strengths and weaknesses of alternative approaches. The course is particularly applicable for students interested in working for, or learning about, data-driven companies.

Keywords

Data science; data analysis; business analytics; python; data-driven management

Learning Prerequisites

Required courses

All students must have the following prerequisites:
Statistics: Prior to taking this course, all students must complete at least one course in statistics. You should have a basic understanding of descriptive statistics, the OLS linear regression model, and multiple regression.
General Programming: Prior to taking this course, all students must complete at least one course in a general computer programming language.
Python Programming:Â Prior to taking this course, all students must know the syntax and data structures of Python 3. There are numerous online tutorials and courses to help you learn the basics of Python in short order. We recommend the "Python for Beginners"## track at JetBrains Academy: https://hi.hyperskill.org It provides interactive, bite-sized exercises, and also helps you track your progression of study with a nice tracking tool: https://hyperskill.org/knowledge-map. However, the JetBrains option may take up to 34 hours to complete. For students who are already comfortable with programming,

but who need to quickly learn the basics of Python, we recommend the 7-hour Python tutorial at Kaggle: https://www.kaggle.com/learn/python. The Kaggle course provides a fast overview of Python, but it assumes basic knowledge of computing and programming languages. If you do not know Python, and you cannot complete one of the two tutorials above by the end of the second week of class, then you should delay taking this course until you have the necessary skills.

Important concepts to start the course

Descriptive statistics
The OLS linear regression model
Multiple regression
Basic Python programming

Learning Outcomes

By the end of the course, the student must be able to:

- Formulate prediction models
- Assess / Evaluate the performance of prediction models
- Describe their findings to others

Transversal skills

- Access and evaluate appropriate sources of information.
- Take feedback (critique) and respond in an appropriate manner.
- Plan and carry out activities in a way which makes optimal use of available time and other resources.
- Assess one's own level of skill acquisition, and plan their on-going learning goals.
- Assess progress against the plan, and adapt the plan as appropriate.
- Collect data.

Teaching methods

Weekly lectures, demonstrations, assignments, and exercises.

Expected student activities

Attending class regularly to both acquire content and to review problem sets and exercises. Take home, open-book exams will be given on the day of regularly scheduled class

Assessment methods

50 points	Qualifying Exam
450 points	Assignments
50 points	Individual Report
200 points	Group Project
250 points	Final Exam

Supervision

Office hours	Yes
Assistants	Yes
Forum	No

Resources

Virtual desktop infrastructure (VDI)

No

Bibliography

Textbook: "Data Science for Business" by Provost & Fawcett. (2013) Publisher: O'Reilly Media; ASIN: B017PNWLKQ
A list of additional readings will be distributed at the beginning of the course.

Ressources en bibliothèque

- Data Science for Business / Provost