

Social Media and Web Analytics (F000799)

Course size *(nominal values; actual values may depend on programme)*

Credits 6.0

Study time 180 h

Course offerings and teaching methods in academic year 2023-2024

A (semester 2)

English

Gent

group work

lecture

seminar

Lecturers in academic year 2023-2024

Bogaert, Matthias

EB23

lecturer-in-charge

Offered in the following programmes in 2023-2024

[Master of Science in Business Engineering\(main subject Data Analytics\)](#)

crdts

offering

6

A

[Exchange programme in Economics and Business Administration](#)

6

A

Teaching languages

English

Keywords

Social media analytics, Web analytics, Network analysis, Sentiment analysis, PageRank,
Social Media Optimization, Network visualization, Natural language processing

Position of the course

This course focuses on the three levels of social media analytics (network, user, message) and the various aspects related to web analytics. Students will collect their own data from social media and the web and perform several analyses in R. The global objective of the course is to train students in the collection and analysis of social media and web data.

Contents

Topics include, but are not limited to:

Social Media Analytics: the Network

- Network analysis (e.g., adjacency: Euclidean, Manhattan, kernel methods: rbf kernel, QAP regression, Exponential-Family Random Graph Models)
- Network visualization (e.g., Fruchterman-Reingold)
- Network clustering (e.g., Walktrap, edge betweenness method)
- Describing networks in numbers (e.g., density, transitivity, degree, betweenness)
- Network representation learning
- Data collection from social media

Social Media Analytics: the User

- Event attendance prediction
- Tie strength
- Movie watching behavior and box office sales
- Donation behavior

Social Media Analytics: the Message

- Text mining
- Word clouds
- Sentiment analysis
- Retweet analysis
- Word networks
- Topic modeling

- Word embeddings
- Deep learning for text analysis

Web Analytics:

- PageRank
- Web crawling
- Web Mining

Initial competences

Mastery of the basics of R. The course builds on the competencies and skills acquired in the course Machine Learning.

Final competences

- 1 Knowing and understanding the theoretical concepts and analytical methods.
- 2 Extracting data from social media and the web.
- 3 Analyzing of social media and web data.
- 4 Interpreting, communicating and evaluating your findings in a business context.
- 5 Applying the analytical methods in the statistical programming language R.

Conditions for credit contract

Access to this course unit via a credit contract is determined after successful competences assessment

Conditions for exam contract

This course unit cannot be taken via an exam contract

Teaching methods

Group work, Seminar, Lecture

Learning materials and price

Learning materials are a slides, (scientific) papers, and cases. Everything will be available complimentary on the online platform Ufora.

References

Several scientific articles:

- Newman, M. E. J., Girvan, M., Feb. 2004. Finding and evaluating community structure in networks. *Physical Review E* 69 (2), 026126.
- Fruchterman, T. M., Reingold, E. M., 1991. Graph Drawing by Force-directed Placement. *Software-Practice and Experience* 21 (11), 1129–1164.
- Lismont, J., Ram, S., Vanthienen, J., Lemahieu, W., & Baesens, B. (2018). Predicting interpurchase time in a retail environment using customer-product networks: An empirical study and evaluation. *Expert Systems with Applications*, 104, 22-32.
- Ballings, M., Van den Poel, D., 2015. CRM in social media: Predicting increases in Facebook usage frequency. *Eur. J. Oper. Res.* 244, 248–260.
- Ballings, M., Van den Poel, D., Bogaert, M., 2016. Social media optimization: Identifying an optimal strategy for increasing network size on Facebook. *Omega-Int. J. Manage. Sci.* 59, 15–25.
- Bogaert, M., Ballings, M., Van den Poel, D., 2016. The added value of Facebook friends data in event attendance prediction. *Decis. Support Syst.* 82, 26–34.
- Schetgen, L., Bogaert, M., & Van den Poel, D. (2021). Predicting donation behavior: Acquisition modeling in the nonprofit sector using Facebook data. *Decision Support Systems*, 141, 113446.

Course content-related study coaching

Dodona exercises are made available for all sessions. Several group exercises are solved and discussed during the sessions. Students receive extensive tutoring and feedback.

Assessment moments

end-of-term and continuous assessment

Examination methods in case of periodic assessment during the first examination period

Written assessment

Examination methods in case of periodic assessment during the second examination period

Written assessment

Examination methods in case of permanent assessment

Oral assessment, Participation, Presentation, Peer and/or self assessment, Assignment

Possibilities of retake in case of permanent assessment

examination during the second examination period is possible in modified form

Extra information on the examination methods

During class, the students are asked to prepare and present several small exercises.

The group project is a comprehensive exercise in a realistic context where the key concepts used in social media analytics are applied.

The written exam will investigate whether the student knows and understands the aspects of social media and web analytics that were discussed during class. Both theoretical exercises as well as applications will be part of the exam.

Calculation of the examination mark

Written exam (40%) + group project with presentation and written report adjusted by peer assessment (50%) + participation and presentation of exercises during class (10%).

When the student obtains less than 10/20 for either the written exam or the group project, they can no longer pass the course unit as a whole. If the total score does turn out to be a mark of ten or more out of twenty, this is reduced to the highest fail mark (9/20).