GHENT UNIVERSITY

# Course Specifications

Valid as from the academic year 2025-2026

## 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 2025-2026**

| | | | |
|---|---|---|---|
| A (semester 2) | English | Gent | group work<br>lecture<br>seminar |
| B (semester 2) | English | Gent | seminar<br>lecture<br>group work |

**Lecturers in academic year 2025-2026**

| | | |
|---|---|---|
| Bogaert, Matthias | EB23 | lecturer-in-charge |

| **Offered in the following programmes in 2025-2026** | **crdts** | **offering** |
|---|---|---|
| Master of Science in Business Engineering(main subject Data Analytics) | 6 | A |
| Master of Science in Business Engineering (Double Degree)(main subject Data Analytics) | 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 Python. 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 )
- Network visualization
- Network clustering (e.g., 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
- Predictive models for user behavior (e.g., random forest)
- Explainable models for user behaviour (e.g., feature importances and partial dependence)

Social Media Analytics: the Message

- Text mining
- Word clouds
- Sentiment analysis
- Retweet analysis
- Word networks
- Topic modeling
- Word embeddings
- Deep learning for
- Transformer models
- LLMs

Web Analytics:
- PageRank
- Web crawling
- Web Mining

**Initial competences**

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

**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 Being able to use Python to apply these analytical methods

**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

**Study material**

Type: Slides

Name: Slides theory
Indicative price: Free or paid by faculty
Optional: no
Language : English
Available on Ufora : Yes
Online Available : Yes
Available in the Library : No
Available through Student Association : No

Type: Software

Name: Code files in Python
Indicative price: Free or paid by faculty
Optional: no

**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**

Notebooks 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.
Students taking the course at 4 credits will be given a small group assignment.
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**

6 SP
Written exam (40%) + group project with presentation and written report adjusted by peer assessment (55%) + participation and presentation of exercises during class (5%).
4 SP
These students will receive a smaller group assisngment. However, the content and structure of the course remains the same which resolves in a higher impact of the class participation and the written exam on the final grade.
Written exam (50%) + group project with presentation and written report adjusted by peer assessment (40%) + 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).