COURSE DESCRIPTION CARD - SYLLABUS

Course name
Social Media Analytics [S1DSwB1>SMA]

Course

Field of study
Data Science in Business

Year/Semester
3/6

Area of study (specialization)
–

Profile of study
general academic

Level of study
first-cycle

Course offered in
Polish

Form of study
full-time

Requirements
elective

Number of hours

Lecture
15

Laboratory classes
0

Other
0

Tutorials
15

Projects/seminars
0

Number of credit points

2,00

Coordinators

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Lecturers

Prerequisites

Knowledge and skills acquired in the subjects marketing research, introduction to machine learning, project management.

Course objective

Students will master the knowledge and skills to use data to meet corporate objectives, including making more informed and effective decisions in the areas of communication and customer relationship building on social media, branding and measuring the effectiveness of ongoing social media activities.

Course-related learning outcomes

Knowledge:
Characterizes analytical methods used in social media analytics, including content analysis, social network analysis, and predictive models [DSB1_W01].
Describes techniques for acquiring, processing, and analyzing social media data, including API usage, web scraping, and analytical tools [DSB1_W03].
Explains ethical and social challenges related to social media analysis, including privacy, data quality, and solution scalability [DSB1_W06].

Presents business models based on social media analytics, including offer personalization, real-time marketing, and the impact of AI on marketing strategies [DSB1_W08].

Skills:
Designs and conducts social media data analyses using classification, clustering, and prediction methods [DSB1_U03].
Formulates social media data analysis strategies by developing data acquisition and processing plans and identifying key network nodes [DSB1_U05].
Applies machine learning algorithms to analyze trends, predict user behavior, and optimize marketing campaigns [DSB1_U09].
Effectively collaborates in interdisciplinary teams, integrating knowledge from data analytics, marketing, and artificial intelligence [DSB1_U14].

Social competences:
Critically analyzes their own knowledge and skills in social media data analysis, striving for continuous updates and improvement [DSB1_K01].
Engages in initiatives related to the development of data-driven and AI-based marketing strategies [DSB1_K03].

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Lecture: formative assessment:
- Colloquium in the form of a test between the 3rd and 4th lecture containing a minimum of 5 questions; maximum number of points 20;
- group assignment (up to 5 persons) on issues discussed up to the 5th lecture; maximum number of points 20,
- during the lectures, short discussions are held to check the effectiveness of the learning process, to adapt the teaching to the level of the students, and to show the students the extent of the material covered in the course - maximum number of additional points for activity 10.
Summative assessment: the level of acquisition of relevant knowledge is summed up in the form of a final test. The final test contains 15 questions; the maximum number of points is 60. The final mark is the sum of the formative and summative marks. The pass mark is a minimum of 51 points, i.e. 51%.
Exercises: formative assessment: skills acquired during the exercise classes are verified on the basis of partial assignments completed by students in groups of 2 - 3 during each exercise class. The formative assessment is carried out on the basis of 1) 6 tasks, where each task is a maximum of 15 points (90 points in total) 2) A summary of the tasks in the form of conclusions and proposed changes and recommendations concerning the subject of the project - 5 points, 3) The final presentation as a summary of the substantive part of the work - 5 points. Summative assessment: is made on the basis of the sum of points obtained from the formative assessment. The maximum number of points is 100; the pass mark is a minimum of 51 points, i.e. 51%.

Programme content

The programme covers social media and data analytics, marketing management including, in particular, communication and relationship building issues.

Course topics

Lecture: 1) Introduction to social media analytics in the context of management including: basic concepts, impact of social media on communication, marketing and strategic decisions, classic approaches and new trends in the literature 2) social media as a source of analytical data for analysis including: data sources based on selected social media and methods of data acquisition (e.g. API, web scraping); techniques and methods of preparing data for analysis, introduction to analytical tools 3) Content analysis and content marketing - from content creation to effect evaluation including: content creation strategies, differences between organic and sponsored content, methods of analysing the quality and effectiveness of content, case studies 4) Social network analysis - theoretical foundations of social network analysis, methods of cluster detection and identification of opinion leaders 5) Predictive models and machine learning in social media analytics including e.g. algorithms used in trend forecasting, content classification and anomaly detection, examples of application of logistic regression,

decision trees or neural networks in social media data analysis 6) Business models based on social media analytics including e.g. models based on customer engagement, personalisation of offers, real-time marketing, case studies 7) Ethical issues, challenges and developments in social media analytics including data quality and scalability of solutions.
Exercises:
Include tasks from the scope of the lectures. Students will complete at least 5 assignments focusing on social media data. Tasks will include identifying strengths and weaknesses in the use of social media in the strategy of the selected company, a plan for data acquisition from the selected social media platform and preparation of data for analysis, a strategy for social media content analysis, identification of key nodes in the network and influencers, design of a predictive model based on social media data (e.g. trends or user behaviour), development of a business model based on social media data analysis for the selected organisation.

Teaching methods

Lecture: informative lecture - multimedia presentation illustrated by examples given on the blackboard supplemented by case studies. The lectures will also include moderated discussions on selected issues supplemented by results of research projects related to the subject of the course.
Exercises: tasks performed in teams using case studies supported by discussions with the instructor.

Bibliography

Basic:
Graczyk-Kucharska, M. (2015). Big Data koniecznością współczesnego marketingu. Marketing i Zarządzanie, (41 (2)), 265-277.
Jelonek, D., Graczyk-Kucharska, M., Olszewski, R., Szafrański, M., & Rzemieniak, M. (2024, October). Competencies of the Future as a Criterion for Segmentation of Generation Z Candidates: Machine Learning and the CART Model. In European Conference on Artificial Intelligence (pp. 118-130). Cham: Springer Nature Switzerland.
Wang, Z., & Ye, X. (2018). Social media analytics for natural disaster management. International Journal of Geographical Information Science, 32(1), 49-72.
Batrinca, B., & Treleaven, P. C. (2015). Social media analytics: a survey of techniques, tools and platforms. Ai & Society, 30, 89-116.
Rodríguez-Ibánez, M., Casánez-Ventura, A., Castejón-Mateos, F., & Cuenca-Jiménez, P. M. (2023). A review on sentiment analysis from social media platforms. Expert Systems with Applications, 223, 119862.
Ismail, A., Sazali, F. H., Jawaddi, S. N. A., & Mutalib, S. (2025). Stream ETL framework for twitter-based sentiment analysis: Leveraging big data technologies. Expert Systems with Applications, 261, 125523.
Morrow, G., Swire-Thompson, B., Polny, J. M., Kopec, M., & Wihbey, J. P. (2022). The emerging science of content labeling: Contextualizing social media content moderation. Journal of the Association for Information Science and Technology, 73(10), 1365-1386.
Singh, S. S., Muhuri, S., Mishra, S., Srivastava, D., Shakya, H. K., & Kumar, N. (2024). Social network analysis: A survey on process, tools, and application. ACM Computing Surveys, 56(8), 1-39.
Chaudhary, K., Alam, M., Al-Rakhami, M. S., & Gumaei, A. (2021). Machine learning-based mathematical modelling for prediction of social media consumer behavior using big data analytics. Journal of Big data, 8(1), 73.
Yang, J., Xiu, P., Sun, L., Ying, L., & Muthu, B. (2022). Social media data analytics for business decision making system to competitive analysis. Information Processing & Management, 59(1), 102751.

Additional:
Graczyk-Kucharska, M., Olszewski, R., & Weber, G. W. (2023). The use of spatial data mining methods for modeling HR challenges of generation Z in greater Poland Region. Central European Journal of Operations Research, 31(1), 205-237.
Hoffmann M., Marchewka W., Piotrowski B., Ratushniak M., Ziółkowska A., Graczyk-Kucharska, M. (2024). Recent Trends of Customer Relationship Management in AI: A Scientometric Analysis. Annales Universitatis Mariae Curie-Skłodowska, Sectio H Oeconomia, 58(3), 181-202.
Aboualola, M., Abualsaud, K., Khattab, T., Zorba, N., & Hassanein, H. S. (2023). Edge technologies for disaster management: A survey of social media and artificial intelligence integration. IEEE access, 11, 73782-73802.
Zhang, H., Zang, Z., Zhu, H., Uddin, M. I., & Amin, M. A. (2022). Big data-assisted social media analytics

for business model for business decision making system competitive analysis. Information Processing & br/ >Management, 59(1), 102762.

Breakdown of average student's workload

	Hours	ECTS
Total workload	50	2,00
Classes requiring direct contact with the teacher	30	1,00
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	20	1,00