University of Gdańsk

Subject card

Subject name and code	Business Analytics, PG_00204855						
Field of study	Economics						
Date of commencement of studies	October 2026		Academic year of realisation of subject		2028/2029		
Education level	Bachelor's studies		Subject group		Obligatory subject group in the field of study Optional subject group Subject group related to scientific research in the field of study		
Mode of study	full-time studies		Mode of delivery		at the university		
Year of study	3		Language of instruction		Polish		
Semester of study	6		ECTS credits		3.0		
Learning profile	academic		Assessment form		credit		
Conducting unit							
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. Michał Suchanek, prof. UG				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	0.0	30.0	0.0	15.0	0.0	45
	E-learning hours included: 0.0						
Learning activity and number of study hours	Learning activity	Participation in didactic classes included in study plan		Participation in consultation hours		Self-study	SUM
	Number of study hours	45		0.0		30.0	75
Subject objectives	The aim of the course is to familiarize the student with the problems of business analytics and applied business intelligence systems						

Learning outcomes

Course outcome	Subject outcome	Method of verification
[EKONL3_K04] is willing to think and act in an entrepreneurial manner; adapts to new situations and conditions, takes on the challenges of creative thinking, is resilient in the face of failure, is able to identify risks and assess the risks of failure	is ready to think and act in an entrepreneurial manner; adapts to new situations and conditions, takes on the challenges of creative thinking, is resistant to failure, is able to identify threats and assess the risk of their occurrence using analytical methods, especially those derived from statistics and econometrics	[SK1] oral statement/conversation/ discussion [SK2] presentation/project/paper/ report [SK4] test/exam - oral or written
[EKONL3_W06] has an advanced knowledge of selected methods and tools, including statistical and econometric techniques, for describing economic agents and structures as well as social institutions and the processes taking place in them	knows to an advanced degree selected methods and tools, including statistical and econometric techniques to analyze the activities of economic and business entities	[SW4] test/exam - oral or written [SW1] oral statement/ conversation/discussion [SW2] presentation/project/paper/ report
[EKONL3_W02] has an advanced knowledge of the different types of existing business entities and organisations and public institutions	has advanced knowledge of various types of economic entities and organizations and public institutions, especially the analytical processes in them	[SW4] test/exam - oral or written [SW1] oral statement/ conversation/discussion [SW2] presentation/project/paper/ report
[EKONL3_W08] has an advanced knowledge of the processes of changing elements, enterprises and whole structures of economic organisations, as well as the processes of changing social institutions, knows what their causes, course, scale, consequences are and what the influence of external stakeholders is on them	has knowledge of the processes of change of enterprises and the entire structures of economic organizations, as well as the processes of change of public institutions, knows what are their causes, course, scale, consequences and what is the impact on them of external stakeholders, especially contractors and customers	[SW4] test/exam - oral or written [SW1] oral statement/ conversation/discussion [SW2] presentation/project/paper/ report
[EKONL3_U08] has the ability to observe, understand and analyse economic and social phenomena and processes using appropriate scientific methods	Has the ability to observe, understand and analyze economic and social phenomena and processes occurring in business entities and their environment using recognized analytical methods	[SU1] oral statement/conversation/ discussion [SU2] presentation/project/paper/ report [SU4] test/exam - oral or written
[EKONL3_U02] is able to use the knowledge of theory and data to analyse concrete economic and social processes and phenomena and to analyse these phenomena using methods developed in economics, finance and management sciences	is able to use his/her theoretical knowledge and acquire data to analyze specific economic and social processes and phenomena in the business environment and select analytical methods to evaluate them	[SU1] oral statement/conversation/ discussion [SU2] presentation/project/paper/ report [SU4] test/exam - oral or written
[EKONL3_U07] is able to participate in analyses and evaluations of alternative solutions to economic and social problems and to choose the methods and instruments to resolve them rationally	is able to participate in the analysis and evaluation of alternative solutions to economic and social problems, and select methods and instruments to choose the optimal solutions under given business conditions	[SU1] oral statement/conversation/ discussion [SU2] presentation/project/paper/ report [SU4] test/exam - oral or written
[EKONL3_K03] participates in the preparation of economic and social projects, being able to reconcile legal, economic, ecological, political and social requirements	Participates in the preparation of economic and social projects in enterprises and organizations, being able to reconcile legal, economic, ecological, political and social requirements	[SK1] oral statement/conversation/ discussion [SK2] presentation/project/paper/ report [SK4] test/exam - oral or written

Subject contents	**1 Introduction to modern business analytics systems** **Course topics:** • Definition and classification of business analytics • The role of analytics in decision-making • Evolution of analytics - from reporting to AI **Content:** • Discussion of types of analytics (descriptive, diagnostic, predictive, prescriptive) • Overview of tools used in business analytics (e.g., Power BI, Tableau, SAS) • Differences between analytics and traditional reporting • Examples of application in companies (case studies) **2. data-driven analytics** **Course topics:** • The role of data in an organization • The life cycle of data in an organization • Data infrastructure **Content:** • Collection, storage and processing of data • Relational and non-relational databases (SQL, NoSQL) • Data quality and ETL processes (Extract, Transform, Load) • Data lakes vs data warehouses • Big Data and its importance for analytics **3. documentation-oriented analytics** **Course topics:** • Document processing in organizations • Document workflow automation • Text mining and information extraction **Content:** • Working with unstructured data (e.g. PDF, emails, reports) • OCR, NLP and document classification • Use of tools like Document Management Systems (DMS) • Content analysis of contracts, invoices, requests for proposals **4 Communication-oriented analytics** **Course topics:** • Content analysis of internal and external communications • Social media as a source of data • Visualization and presentation of analytics results **Content:** • Sentiment analysis, analysis of brand opinion and reputation • Analysis of communication networks in the organization (e.g., email mining) • Dashboards, data storytelling • Communication tools to support analytics (Slack, Teams, BI dashboards) **5 MRP II (Manufacturing Resource Planning) systems.** **Course topics:** • Production and resource planning • Integration of manufacturing systems with other company functions • Analysis of planning efficiency **Content:** • MRP II modules: material requirements planning, scheduling, inventory management • Linkage to ERP and SCM • Examples of industrial applications

	• Cost analysis and production efficiency **6 SCM (Supply Chain Management) systems.** **Course topics:** • Digital supply chain • Demand forecasting and inventory management • Collaboration with suppliers and customers **Content:** • SCM systems functions: planning, logistics, sourcing • Integration of SCM systems with ERP/BI • The role of analytics in supply chain optimization • Examples: Just-in-Time, lean supply chain, supply risk analysis **7 CRM (Customer Relationship Management) systems.** **Course topics:** • Customer segmentation • Personalization of communications and offers • Customer loyalty management **Content:** • Functions of CRM systems: sales, marketing, customer service • Collection and analysis of customer data • CRM tools (e.g. Salesforce, HubSpot) • Customer analytics: churn prediction, LTV (lifetime value), RFM analysis **8 ERP (Enterprise Resource Planning) systems** **Course topics:** • Integrated management of the organization • Modularity of ERP systems • ERP implementation and adaptation **Content:** • ERP modules: financial, human resources, logistics, manufacturing • Implementation process: requirements analysis, data migration, training • ERP vs. specialized systems • Example systems: SAP, Oracle, Microsoft Dynamics **9 BI (Business Intelligence) systems** **Course topics:** • Data warehouses and management analytics • Designing dashboards and reports • BI as strategic decision support **Content:** • BI architecture: data sources, integration, presentation • OLAP vs. OLTP, data modeling (e.g., star schema) • The role of BI in monitoring KPIs and strategy execution • BI tools: Power BI, Tableau, QlikView
Prerequisites and co-requisites	The student should know the principles of financial accounting, understand the business approach, as well as corporate finance

Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Assessment is based on attendance and participation in classes, the results of tests and assessments, and the completion of the project. Students work in teams of 3–4 to prepare a project in the field of business analytics techniques, which is discussed and approved during consultations with the course tutor and then presented in class. The grading scale is in accordance with the Study Regulations.	51.0%	100.0%
Recommended reading	Basic literature	1. J. Surma, *Business Intelligence. Systemy wspomagania decyzji biznesowych*. Wydawnictwo Naukowe PWN, Warszawa 2021. 2. J. Żeliński, *Analiza biznesowa. Praktyczne modelowanie organizacji*. Helion, Warszawa 2016. 3. A. Letkiewicz, M. Suchanek, *Modelling the relations between the primary resources and the financial result: Trans Polonia Group case study*. in *Transport development challenges in the 21st century: proceedings of the 2019 TranSopot Conference*, red. Suchanek M., Springer Proceedings in Business and Economics, Cham, Springer, 2021	
	Supplementary literature	1. J. Surma, *Systemy wspomagania decyzji biznesowych w kreowaniu wartości firmy*. "Zeszyty Naukowe. Prace Instytutu Ekonomiki i Organizacji Przedsiębiorstw" Uniwersytet Szczeciński, nr 48, t. 2/2006, 2. M. Wawer, & P. Muryjas, *Analityka biznesowa w zarządzaniu finansami w przedsiębiorstwie*. "Research Papers of the Wroclaw University of Economics/Prace Naukowe Uniwersytetu Ekonomicznego we Wroclawiu", nr 429/2016. 3. S. Negash & P. Gray, *Business intelligence. In Handbook on decision support systems 2*. Springer, Berlin, Heidelberg 2008 4. M. Anandarajan, *Business intelligence techniques*. Springer-Verlag Berlin Heidelberg GmbH. 2004	
	eResources addresses		
Example issues/ example questions/ tasks being completed	1. **What is the difference between descriptive and predictive analytics? Give examples of their application.** 2. **What are the main functions of an ERP system and how does it support decision-making processes in an organization?** 3. **List the basic components of business intelligence systems architecture.** 4. **How does a CRM system differ from an SCM system in terms of purpose and function?** 5. **What is the working principle of production resource planning in MRP II systems?** 6. **What are the benefits and challenges of implementing integrated information systems in a company?** 7. **What are data warehouses and what is their importance for business analytics?**		
Work placement	Not applicable		

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