



COURSE DESCRIPTION
Decision Support Systems
Academic year 2026-2027

1. Programme-related data

1.1. Higher Education Institution	Babeș-Bolyai University
1.2. Faculty	Business
1.3. Department	Hospitality Services
1.4. Field	Business Administration
1.5. Level of study	Master
1.6. Degree programme / Qualification	Administrarea Afacerilor Internaționale (cu predare în limba engleză) /International Business Administration //Master
1.7. Form of education	Full time

2. Information regarding the discipline

2.1. Name of the discipline	Sisteme informatice pentru asistarea deciziei/ Decision Support Systems			Discipline code	IME0074
2.2. Course coordinator	Assoc. Prof. Rozalia Veronica Rus				
2.3. Seminar coordinator	Assoc. Prof. Rozalia Veronica Rus				
2.4. Year of study	2	2.5. Semester	4	2.6. Type of assessment	Exam
2.7. Course status	Compulsory			2.8. Course type	Core subject

3. Total estimated time (hours per semester of teaching activities)

3.1. Number of hours per week	3	of which: 3.2. course	1	3.3. seminar/ laboratory/ project	2
3.4. Total of hours in the curriculum	36	of which: 3.5. course	12	3.6. seminar/ laboratory	24
Time allocation for individual study (IS) and self-taught activities (ST)					hours
Learning from textbooks, course materials, bibliography, and notes (IS)					20
Additional research in the library, on subject-specific electronic platforms, and on-site					20
Preparing seminars/ laboratories/ projects, assignments, reports, portfolios, and essays					50
Tutoring (professional guidance)					12
Examinations					2
Other activities					10
3.7. Total hours of individual study (IS) and self-taught activities (ST)				114	
3.8. Total hours per semester				150	
3.9. Number of credits				6	

4. Prerequisites (where applicable)

4.1. curriculum-related	
4.2. skills-related	

5. Specific conditions (where applicable)

5.1. course-related	Classroom with multimedia projector and computer connected to the Internet. Students need a Microsoft institutional account, Microsoft Teams application, Microsoft Office 365.
5.2. seminar/laboratory-related	Classroom with multimedia projector and computer connected to the Internet.

	Students need a Microsoft institutional account, Microsoft Teams application, Microsoft Office 365. Other tools: Power BI, Tableau	
--	---	--

6.1. Competencies resulting from the completion of the degree programme

Professional competencies	
Competency code	Competency
PC1	in-depth knowledge and systematic use of the set of information resulting from the theoretical, methodological, legislative, and practical developments specific to business administration at international level
PC4	higher ability to substantiate and assess strategies and decision alternatives, as well as their selection and implementation in business administration at international level/ within multinational corporations
Transversal competencies	
Competency code	Competency
TC2	Identification of roles and responsibilities in a team and their application within companies

6.2. Learning outcomes relevant to the degree programme

Learning outcomes targeted by the subject		
Competency code	Knowledge and comprehension	Specific academic skills
PC1 PC4 PC5	The graduate has in-depth knowledge of how to plan and manage human, material, and financial resources, how to motivate employees and monitor activities, as well as how to manage customer relationships with companies operating in various sectors.	The graduate has a high ability to use complex techniques and tools to analyse the organisational environment so that the business can adapt to the identified requirements and challenges identified; the graduate is able to analyse complex contexts and identify, recommend, and implement advanced strategies, techniques, and methods for solving business management related problems.

7. Subject-specific learning outcomes

Knowledge and understanding
1. The student explains the concepts, principles, and architecture of Decision Support Systems (DSS) and Business Intelligence (BI) solutions, highlighting their role in data analysis and organizational decision-making processes.
2. The student analyses the components and technologies behind modern decision support systems, including Data Warehousing, ETL processes, OLAP, Data Mining, Big Data, and Artificial Intelligence, understanding their contribution to the transformation of data into actionable insights.
3. The student explains the principles of data visualization and information presentation in Business Intelligence environments, understanding how dashboards and visual analytics support managerial decision-making and organizational performance monitoring.
4. The student critically evaluates the opportunities and limitations of Business Intelligence, Data Science, and Artificial Intelligence technologies, understanding their role in the evolution of modern decision support systems and digital business transformation.
Specific academic skills
1. The student uses Business Intelligence tools and data analytics applications to design and develop data models, create interactive reports and dashboards, and identify business problems and decision opportunities based on data-driven analysis.

2.	The student designs and implements decision support solutions by integrating data extraction, modeling, visualization, optimization, simulation, and emerging AI-based technologies, formulating strategic recommendations for complex organizational decision-making situations.
3.	The student applies data extraction, validation, cleansing, and integration techniques to prepare data for analysis and decision support, using specialized Business Intelligence tools and data modeling approaches
4.	The student evaluates alternative decision scenarios using analytical, optimization, and simulation techniques and communicates data-driven recommendations to support strategic and operational decision-making processes

8. Contents

8.1. Course	Teaching and learning methods	Remarks
Introduction to Business Intelligence (BI concept, Decision Support Systems, the role of BI in data analysis and in decision making, Evolution and trends in BI), Analytics, Data Science and Artificial Intelligence.	Interactive lecture, discussions, explanation	2 courses
Data Warehousing and ETL Processes (Data Warehouse – concept, architecture, multidimensional model, case studies on successful Data Warehousing, Extract, Transform, Load (ETL) Processes, Data Integration and Cleansing). Creating effective data models for BI.	Interactive lecture, discussions, explanation	1 course
OLAP (Online Analytical Processing): multidimensional data analysis, OLAP tools. Data Modeling and Dimensional Design	Interactive lecture, discussions, explanation	1 course
Data Mining Process, data mining applications in business	Interactive lecture, discussions, explanation	1 course
Data Visualization and Dashboards: Building interactive dashboards using BI tools.	Interactive lecture, discussions, explanation	1 course
Cloud-Based BI Solutions	Interactive lecture, discussions, explanation	2 courses
Business Intelligence for Decision Support	Interactive lecture, discussions, explanation	2 courses
Integration of Big Data with BI. Optimization and simulation	Interactive lecture, discussions, explanation	1 course
AI-based trends in BI	Interactive lecture, discussions, explanation	1 course
Bibliography		
1. Baltzan, Paige (2021). Business driven information systems. Seventh Edition. McGraw-Hill. 2. Bulusu, L., & Abellera, R. (2020). AI meets BI: artificial intelligence and business intelligence. CRC Press 3. K. R., & Becker, D. S. (2021). Automated machine learning for business. Oxford University Press. 4. Sharda, R., Delen, D., & Turban, E. (2021). Analytics, data science, & artificial intelligence: Systems for decision support. Harlow: Pearson. 5. Turban, E., Pollard, C., & Wood, G. (2021). Information Technology for Management: Driving Digital Transformation to Increase Local and Global Performance, Growth and Sustainability. John Wiley & Sons. 6. Few, S. (2006). Information dashboard design: The effective visual communication of data. O'Reilly Media, Inc.		
8.2. Seminar/ laboratory	Teaching and learning methods	Remarks
Introduction – presentation of the main objectives of the laboratory, presentation of the evaluation method for the laboratory. Data analysis in the context of business – use cases and impact.	case study, discussions, explanation, applications	1 laboratory

Reporting software introduction – Power BI. Basic and advanced visualizations based on a ready-to-use dataset.	applications, step-by-step training	1 laboratory
Reporting software introduction – Tableau. Basic and advanced visualizations based on a ready-to-use dataset.	applications, step-by-step training	1 laboratory
Data extraction (databases, webscraper.io, main input file types).	case studies, applications	1 laboratory
Consultancy for the use case (asking the right questions to determine what KPIs we'll do the analysis on). Data validation and cleaning (anomaly identification, handling anomalies).	case studies, applications	1 laboratory
Data modeling, conditional columns, formulas. Table relationships (OTM, MTM, OTO). Star schema.	applications, step-by-step training	1 laboratory
Reporting UI/UX, filters, buttons, shortcuts for users. Basic data governance conventions.	applications, step-by-step training	1 laboratory
Visualizations	applications, step-by-step training	1 laboratory
Storytelling with data	applications, case studies	1 laboratory
BI architecture	applications, case studies	1 laboratory
Basics of data engineering Building Power Apps & Power Automate applications	applications, case studies	1 laboratory
Projects presentation		1 laboratory

Bibliography

1. Baltzan, Paige (2021). Business driven information systems. Seventh Edition. McGraw-Hill.
2. Bulusu, L., & Abellera, R. (2020). AI meets BI: artificial intelligence and business intelligence. CRC Press/Larsen,
3. K. R., & Becker, D. S. (2021). Automated machine learning for business. Oxford University Press.
4. Kimball, R., & Ross, M. (2013). *The data warehouse toolkit: The definitive guide to dimensional modeling*. John Wiley & Sons.
5. Knaflitz, C. N. (2015). *Storytelling with data: A data visualization guide for business professionals*. John Wiley & Sons.
6. Sharda, R., Delen, D., & Turban, E. (2021). Analytics, data science, & artificial intelligence: Systems for decision support. Harlow: Pearson.
7. Turban, E., Pollard, C., & Wood, G. (2021). Information Technology for Management: Driving Digital Transformation to Increase Local and Global Performance, Growth and Sustainability. John Wiley & Sons.
8. Few, S. (2006). Information dashboard design: The effective visual communication of data. O'Reilly Media, Inc.
9. Winston, W. (2019), Microsoft Excel 2019 Data Analysis and Business Modeling, Ed. Microsoft Press.

9. Evaluation

- The same evaluation criteria are maintained for all exams sessions. The components of the evaluation process carried out during the semester cannot be recovered/redone in the examination sessions.
- To be able to accumulate the points obtained during the semester, it is mandatory to obtain a minimum of 5 (five) in the final exam (written/oral).

Type of activity	9.1 Evaluation criteria	9.2 Evaluation methods	9.3 Percentage in the final grade
9.4. Course	Explains the concepts, principles and architecture of Decision Support Systems (DSS) and Business Intelligence (BI)	Final evaluation: multiple choice test (20 questions) from theory in the examination session	40 %

	solutions and their role in organizational decision-making. - Analyses the components and technologies behind modern decision support systems, including Data Warehousing, ETL, OLAP, Data Mining, Big Data and AI. - Explains the principles of data visualization and information presentation in BI environments - Critically evaluates the opportunities and limitations of BI, Data Science and AI technologies in organizational decision-making and digital transformation.		
9.5. Seminar/ laboratory	- Uses Business Intelligence tools (Power BI, Tableau) to create reports, dashboards and visual analytics solutions for business decision-making. - Applies data extraction, validation, cleansing, integration and modeling techniques to prepare data for decision support analysis. - Designs and implements decision support solutions using data modeling, visualization, optimization and simulation techniques. - Evaluates alternative decision scenarios and formulates data-driven recommendations	- In-class exercises and group assignments - Project presentation The assignments and the project will be sent at deadlines during the semester. 1 project team should not have more than 3 members.	60 %
9.6 Minimum standard for passing			
- Knowledge of fundamental specific concepts of data driven Decision Support Systems; - Ability to create dashboards in Microsoft Power BI or in similar software. Observations - The project can be presented only during the semester (in week 12); - The project will be carried out in a team (maximus 3 students/project); - Students will be able to participate in the final exam only if they have sent the assignments on deadline;			

10. SDG labels (Sustainable Development Goals)¹

		Sustainable Development Generic Label
---	---	---------------------------------------

¹ Select a single label which, according to the [Implementation of SDG labels in the academic process](#), best matches the subject. If the subject addresses sustainable development in a generic manner (i.e. by presenting/introducing the general framework of sustainable development, etc.), then the Sustainable Development generic label may be applied. If none of the labels describe the subject, select the last option: "No label applies."

1 FĂRĂ SĂRĂCIE 	2 FOAMETE „ZERO” 	3 SĂNĂTATE ȘI BUNĂSTĂRE 	4 EDUCATIE DE CALITATE 	5 EGALITATE DE GEN 	6 APĂ CURATĂ ȘI SANITATE 	7 ENERGIE CURATĂ ȘI LA PREȚURI ACESIBILE 	8 MUNCĂ DECENTĂ ȘI CREȘTERE ECONOMICĂ 	9 INDUSTRIE, INOVATIE ȘI INFRASTRUCTURĂ 
								
10 INEGALITĂȚI REDUSE 	11 ORASE ȘI COMUNITĂȚI DURABILE 	12 CONSUM ȘI PRODUCȚIE RESPONSABILĂ 	13 ACȚIUNE CLIMATICĂ 	14 VIAȚĂ ACVATICĂ 	15 VIAȚĂ TERESTRĂ 	16 PACE, JUSTIȚIE ȘI INSTITUȚII EFICIENTE 	17 PARTENERIATE PENTRU REALIZAREA OBIECTIVELOR 	Nu se aplică nici o etichetă
								

Date of entry:

22.05.26

Signature of course coordinator

Assoc. Prof. Rozalia Veronica Rus

Signature of seminar coordinator

Assoc. Prof. Rozalia Veronica Rus

Date of approval in the department:

27.05.26

Signature of the head of department

Assoc. Prof. Marius BOTA, PhD