





SYLLABUS

Decision Support Systems

Academic year 2025-2026

1. Information regarding the program

1.1. Higher education institution	Universitatea Babeș Bolyai
1.2. Faculty	Business
1.3. Department	Hospitality Services
1.4. Field of study	Business Administration
1.5. Study cycle	Master
1.6. Study programme/Qualification	International Business Administration /Master
1.7. Form of education	Full time

2. Information regarding the discipline

2.1. Name of the dise	cipline	Decision Support Systems			Discipline code	IME0074			
2.2. Course coordina	e coordinator Assoc. Prof. Rozalia Veronica Rus								
2.3. Seminar coordinator			Seb	astian P	opescu				
2.4. Year of study 2 2.5. Seme		ster	4	2.6. Type of evaluation	E	2.7. Discipline regim	e	compulso ry	

3. Total estimated time (hours/semester of didactic activities)

3.1. Hours per week	3	of which: 3.2 course	1	3.3 seminar/laboratory	2
3.4. Total hours in the curriculum	36	of which: 3.5 course	12	3.6 seminar/laboratory	24
Time allotment for individual study (ID)	and self-s	study activities (SA)			hours
Learning using manual, course support,	bibliograp	hy, course notes (SA)			20
Additional documentation (in libraries, o	on electro	nic platforms, field docu	mentation)		20
Preparation for seminars/labs, homework	rk, papers	, portfolios and essays			50
Tutorship					
Evaluations					
Other activities:					
3.7. Total individual study hours					114
3.8. Total hours per semester					
3.9. Number of ECTS credits					

4. Prerequisites (if necessary)

4.1. curriculum	
4.2. competencies	

5. Conditions (if necessary)

5.1. for the course	Classroom with multimedia projector and computer connected to the Internet. Students need a Microsoft institutional account, Microsoft Teams application, Microsoft Office 365.		
5.2. for the seminar /lab activities	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. Specific competencies acquired

Professional/essential competencies	•	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 (C2). 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 (C1)
Transversal competencies	•	Identification of roles and responsibilities in a team and their application within companies (CT2)

6.2. Learning outcomes

Knowledge	 The student: describes the basic concepts and principles of decision support systems. identifies the components and architecture of decision support systems. explains the role and importance of decision support systems in organizations. uses the data visualization and analysis tools available in Business Intelligence solutions.
Skills	 The student: effectively uses Business Intelligence applications to create reports and dashboards. applies data analysis methods to identify decision problems and opportunities. designs and develops decision models using software tools. implements optimization and simulation algorithms to solve complex problems. uses emerging technologies to optimize decision processes.
Responsibility and autonomy:	 the student independently uses Business Intelligence solutions to solve various problems. the student is able to perform complex professional tasks under conditions of autonomy and professional independence.

7. Objectives of the discipline (outcome of the acquired competencies)

7.1 General objective of the discipline	• Lear	n concepts and practices currently used in Decision Support Systems.
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	 Understand the development of systems for providing decision-making support.
	 Understand the importance of data/information visualization
	• Understand the need for computerized support in managerial decision making.
	 Define the phases of decision-making process
	 Understand the nature and purpose of data driven Decision Support Systems (DSS);
	 Understand the role of DSS in decision making process;
7.2 Specific objective of the	• Describe the business intelligence (B I) methodology and concepts.
discipline	• Identify and use different ICT solutions for data analysis and decision making.
	 learn how to extract actionable insights from data and enhance decision- making processes.
	• Explain the difference between business intelligence and data science
	Know the capabilities and limitations of dashboards
	• Describe how spreadsheets can be used for analytical modelling and solutions
	 Understand the basic concepts of artificial intelligence (AI)
	 Recognize the evolution of decision support systems to the current state of analytics/data science and AI

8. Content

8.1 Course	Teaching 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 PressLarsen,
- 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 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
Dibliggraphy		

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 PressLarsen,
- 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. Knaflic, 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. Corroborating the content of the discipline with the expectations of the epistemic community, professional associations and representative employers within the field of the program

The content of the course is correlated with the content of similar courses offered by universities from our country and from abroad. To adapt the content of this course to the labor market needs we had discussions with students, alumni and companies.

10. 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).

Activity type	10.1 Evaluation criteria	10.2 Evaluation methods	10.3 Percentage of final grade
10.4 Course	Understanding the terminology	Final evaluation: multiple choice test (20 questions) from theory in the examination session	40 %
10.5 Seminar/laboratory	 Ability to use specific software solutions; Practical utilization of learnt notions; Applying the learnt methods and tools; Practical skills in the field; Interest and interactive participation. 	 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 %

10.6 Minimum standard of performance

- 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);
- o Students will be able to participate in the final exam only if they have sent the assignments on deadline;
- \circ To complete this discipline, it is necessary to obtain a grade of at least 5 (five) at the theoretical test;
- The evaluation is the same for all the examination sessions.





11. Labels ODD (Sustainable Development Goals)¹

General label for Sustainable Development							
							9 NOUSTRE NOVATE SI NIFASTRUCTURA

Date: 03.04.2025 **Signature of course coordinator** Assoc. Prof. Rozalia Veronica Rus Signature of seminar coordinator

Sebastian Popescu

Date of approval: 10.04.2025

Signature of the head of department Assoc. Prof. Marius Bota

¹ Keep only the labels that, according to the *Procedure for applying ODD labels in the academic process*, suit the discipline and delete the others, including the general one for *Sustainable Development* – if not applicable. If no label describes the discipline, delete them all and write *"Not applicable."*.