INTERACTIVE DASHBOARDS AND ADVANCED ANALYSIS WITH POWER BI

Course code	*IT108*
Compulsory in the programmes	*-*
Level of studies	*Undergraduate*
Number of credits	*6 ECTS (48 in-class hours, 2 examination hours, 112 individual work hours)*
Course coordinator (title and name)	*Kristina Aldošina*
Prerequisites	*Computer Programming*
Language of instruction	*English*

THE AIM OF THE COURSE:

This course aims to provide a strong foundation for working with Microsoft Power BI Desktop tool, and to partially prepare students to pass "PL-300: Microsoft Power BI Data Analyst" certification (the course covers about 80% of required skills).

MAPPING OF COURSE LEVEL LEARNING OUTCOMES (OBJECTIVES) WITH DEGREE LEVEL LEARNING OBJECTIVES (See Annex), ASSESMENT AND TEACHING METHODS

Course level learning outcomes (objectives)	Learning objectives for BSc in Business Management	Learning objectives for BSc in Social Science	Assessment methods	Teaching methods
CLO1. Ability to load, transform, model, and visualize data using Power BI Desktop	BLO3.1., BLO3.2.	ELO3.1., ELO3.2.	Personal project	Lectures, tutorials, practical sessions in small groups, individual work
CLO2. Ability to create custom measures, calculated columns and tables using Data Analysis Expressions (DAX)	BLO3.1., BLO3.2.	ELO3.1., ELO3.2.	Personal project	Lectures, tutorials, practical sessions in small groups, individual work
CLO3. Ability to prepare meaningful and interactive report using Power BI Desktop	BLO1.2., BLO3.2., BLO4.2.	ELO3.1., ELO3.2., ELO4.2.	Presentation and defense of group project	Lectures, practical sessions in small groups, individual work

ACADEMIC HONESTY AND INTEGRITY

The ISM University of Management and Economics Code of Ethics, including cheating and plagiarism are fully applicable and will be strictly enforced in the course. Academic dishonesty, and cheating can and will lead to a report to the ISM Committee of Ethics. With regard to remote learning, ISM remind students that they are expected to adhere and maintain the same academic honesty and integrity that they would in a classroom setting.

COURSE OUTLINE

This is totally hands-on course with no strict separation of contact hours between lectures and seminars.

This course is suitable for students with no coding experience, although students with basic knowledge of SQL and Python will get added value from the course content.

Topic	In-class hours	Readings
Part I. Learning-by-doing	30	
1) **Introduction**: Power Platform, types of data tables, Power BI Desktop, Power BI Service, Power BI Gateway, licenses, pricing, data sources, data processing languages, modern data processing tools, report/dashboard examples;		https://learn.microsoft.com/en-us/power-bi/fundamentals/power-bi-overview
2) **Power BI interface**: main menu, regional settings, report preparation steps;		https://learn.microsoft.com/en-us/power-bi/fundamentals/service-service-vs-desktop
3) **Get data**: from .csv file, from .xlsx file, from .json file, from .pdf file, from a folder, from web, from MySQL server (with and without SQL query), using Python code, save progress;		https://learn.microsoft.com/en-us/power-bi/connect-data/desktop-data-sources
4) **Transform data**: Power Query Editor, applied steps, change data formats (datetime to date, text to number), create new columns (custom, from example, conditional), create table of dates (remove other columns, duplicate column, split column by delimiter, rename column), transform data (rename, delete, steps, replace symbol, change type), using Python code, open and edit report created by other person, save progress;		https://learn.microsoft.com/en-us/power-bi/connect-data/desktop-data-view https://learn.microsoft.com/en-us/power-bi/transform-model/desktop-query-overview
5) **Model data**: table view, model view, tables and relationships, create a relationship, type of relationships;		
6) **Create sample report**: report view, visualizations (stacked bar chart, table, matrix, slicer, filled map, card, Python visuals), drill through, export data, visuals' functions and analytics, forecast, tooltip, AI visuals (Q&A, Key Influencers, Decomposition Tree), report versions, buttons, shapes, images, new parameter (what if), manage roles, view as, themes, color palettes and color pickers, mobile layout, bookmarks, selection, performance analyzer, sync slicers, table of measures, Java Script in Power BI;		https://learn.microsoft.com/en-us/power-bi/visuals/power-bi-report-visualizations https://learn.microsoft.com/en-us/power-bi/visuals/power-bi-visualization-types-for-reports-and-q-and-a https://learn.microsoft.com/en-us/power-bi/visuals/power-bi-map-tips-and-tricks https://learn.microsoft.com/en-us/power-bi/visuals/power-bi-visualization-export-data?tabs=powerbi-desktop https://learn.microsoft.com/en-us/power-bi/consumer/mobile/mobile-apps-home-page
7) **DAX**: measures, nested measures, add KPIs to the sample report, sum, count, distictcount, countrows, average, divide, filter, sumx, averagex, min / max, calculate, selectedvalue, date, search, and, or, all, countx, if, blank, switch, true, userelationship, summarize, addcolumns, var, return, universal table of dates.		https://learn.microsoft.com/en-us/dax/dax-overview https://learn.microsoft.com/en-us/dax/statements-dax https://learn.microsoft.com/en-us/dax/dax-function-reference
Part II. Working on Individual Project	8	
Part III. Working on Group Project	10	

UNIVERSITY OF MANAGEMENT
AND ECONOMICS

APPROVED BY
THE STUDY COMMISSION
Minutes No. 02-12-2024-02
as of 31st January 2024

	Total: 48 hours	
Defenses of group projects	2	

FINAL GRADE COMPOSITION

Type of assignment	%
Individual Components 50%	
Individual project	50
Group Components 50%	
Group project	50
Total:	**100**

DESCRIPTION AND GRADING CRITERIA OF EACH ASSIGNMENT
(Provide short descriptions and grading criteria of each assignment)

The overall assessment of the course (total maximum of 100% is possible) will be composed from evaluations of 2 assignments which are described as follows:

1. **Individual project** a technical task and will count for the **50%** of the final evaluation. For this project, each student will be provided with a data set and will have to create a report corresponding to the given requirements. Exact requirements for this assignment will be announced on e-learning.

2. **Group project** is both technical and creative task and will count for the **50%** of the final evaluation. For this project, a group of students will have to create a report from scratch: to decide on topic, to find data, to prepare report corresponding to the given requirements, to present report to the lecturer and groupmates, and to defend it (answer questions). Exact requirements for this assignment will be announced on e-learning.

RETAKE POLICY
(Provide short description and percentage of the final grade)

In case of the negative final evaluation, retake is possible. It will cover material of the whole course and will comprise **100%** of the final mark. A student will have to prepare and defend individual report corresponding to the given requirements. Exact requirements for this assignment will be announced on e-learning.

ADDITIONAL REMARKS

1. Students are recommended to use their personal computers for this course, thus they need to install Power BI Desktop on their computers before the course starts.

2. In-class meetings in the Learning-by-doing part will be recorded and uploaded to e-learning as learning material.

3. Precision of composite evaluations is left intact (up to 2 decimal places) until the end of semester and only the final evaluation will be subject to rounding.

REQUIRED READINGS

https://learn.microsoft.com/en-us/power-bi/

ADDITIONAL READINGS

1. https://learn.microsoft.com/en-us/power-bi/fundamentals/videos

2. https://learn.microsoft.com/en-us/power-bi/fundamentals/webinars
3. https://docs.data.world/documentation/sql/concepts/basic/intro.html
4. https://www.w3schools.com/sql/default.asp
5. https://www.python.org/doc/
6. https://www.w3schools.com/python/default.asp

ANNEX

DEGREE LEVEL LEARNING OBJECTIVES

Learning objectives for the Bachelor of Business Management
Programmes:
International Business and Communication,
Business Management and Marketing, Finance,
Industrial Technology Management

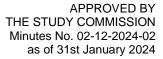| Learning Goals	Learning Objectives
Students will be critical thinkers	BLO1.1. Students will be able to understand core concepts and methods in the business disciplines
	BLO1.2. Students will be able to conduct a contextual analysis to identify a problem associated with their discipline, to generate managerial options and propose viable solutions
Students will be socially responsible in their related discipline	BLO2.1. Students will be knowledgeable about ethics and social responsibility
Students will be technology agile	BLO3.1. Students will demonstrate proficiency in common business software packages
	BLO3.2. Students will be able to make decisions using appropriate IT tools
Students will be effective communicators	BLO4.1. Students will be able to communicate reasonably in different settings according to target audience tasks and situations
	BLO4.2. Students will be able to convey their ideas effectively through an oral presentation
	BLO4.3. Students will be able to convey their ideas effectively in a written paper

Learning objectives for the Bachelor of Social Science
Programmes:
Economics and Data Analytics,
Economics and Politics

Learning Goals	Learning Objectives
Students will be critical thinkers	ELO1.1. Students will be able to understand core concepts and methods in the key economics disciplines
	ELO1.2. Students will be able to identify underlying assumptions and logical consistency of causal statements
Students will have skills to employ economic thought for the common good	ELO2.1. Students will have a keen sense of ethical criteria for practical problem-solving
Students will be technology agile	ELO3.1. Students will demonstrate proficiency in common business software packages
	ELO3.2. Students will be able to make decisions using appropriate IT tools
Students will be effective communicators	ELO4.1. Students will be able to communicate reasonably in different settings according to target audience tasks and situations
	ELO4.2. Students will be able to convey their ideas effectively through an oral presentation

	ELO4.3. Students will be able to convey their ideas effectively in a written paper