Business Analytics: Management and Technologies - ONLINE

Bachelor (final grade) & Master (ECTS: 7)
09.30 – 12.00

POPOVIČ Aleš

NEOMA Business School, France

Today, data is considered the new oil and the most valuable commodity of the digital age. Firms adopting data-driven decision-making have achieved significant productivity gains over competitors. Decision-makers are using more computerized tools to support their work. Even consumers are using analytics tools, either directly or indirectly, to make decisions on routine activities such as shopping, health/healthcare, travel, and entertainment. The field of business intelligence and business analytics has evolved rapidly to become more focused on innovative applications for extracting knowledge and insight from data streams. New applications turn up daily in healthcare, sports, travel, entertainment, supply-chain management, utilities, and virtually every industry imaginable. The term analytics has become mainstream.

In industry, the hottest job these days is the Data Scientist. Data scientists combine technical and statistical skills, analytical thinking, and business insight. One of the complaints about the data scientists trained in computer science departments is that they are "just technical"; understanding algorithms well but lacking essential skills in problem formulation, evaluation, and analysis. On the other hand, those trained in business schools tend to have underdeveloped technical skills. This course will cover aspects of both.

To help future managers use and understand analytics, this course provides students with a solid foundation of data analysis and business intelligence that is reinforced with hands-on practice. This course takes a managerial approach to business Intelligence, emphasizing the applications and implementations behind the concepts. This approach allows students to understand how DA and BI work to help them adopt these technologies in future managerial roles. Real-world cases will be covered that present a challenge, solution, and results. Each case is paired with questions for students to dig into the details and think critically about the case.

Course objectives and learning outcomes:
- Understand and need for computerized support of managerial decision making, recognize the evolution of such computerized support to the current state – analytics/data science, understand the different types of analytics and see selected application, understand the analytics ecosystem to identify various key players and career opportunities:

- Understand the nature of data as it relates to business intelligence (BI) and analytics, learn the methods used to make real.world data analytics-ready, describe statistical modeling and its relationship to business analytics, learn

about descriptive and inferential statistics, define business reporting, and understand its visualization, learn different types of visualization techniques, appreciate the value that visual analytics, brings to business analytics, know the capabilities and limitations of dashboards;

- Understand the basic definitions and concepts of data warehousing, understand data warehousing architectures, describe the processes used in developing and managing data warehouses, explain data warehousing operation, explain the role of data warehouses in decision support, explain data integration and the extraction, transformation, and load (ETL) processes, understand the essence of business performance management;

- Understand the application of perspective techniques in combination with reporting and predictive analytics, understand the basic concept of analytical decision modeling, understand the concept of analytics models for selected decision problems, including linear programming and simulation models for decision support, describe how spreadsheets can be used for analytical modeling and solutions, explain the basic concept of optimization and when to use them, describe how to structure a linear programing model, explain what is meant by sensitivity analysis, what-if analysis, and goal-seeking, understand the concepts and applications of different types of simulation;

- Define data mining as an enabling technology for business analytics, understand the objectives and benefits of data mining, become familiar with the wide range of applications of data mining, learn the standardized data mining processes, learn different methods and algorithms of data mining;

- Describe text analytics and understand the need for text mining, differentiate among text analytics, text mining, and data mining, understand the different application areas for text mining, know the process of carrying out a text mining project, appreciate the different methods to introduce structure to text-based data, describe sentiment analysis, develop familiarity with popular applications of sentiment analysis;

- Learn what Big Data is and how it is changing the world of analytics, understand the motivation for and business drivers of Big Data analytics, become familiar with the wide range of enabling technologies;

- Explore some of the emerging technologies that may impact analytics, BI, and decision support.

Prerequisites for attending the course:
Business or technical background, with basic skills of data analysis with Excel.

Ljubljana Summer School
"Take the Best from East & West"
4 – 22 July 2022

Course syllabus/Daily topics:

PROGRAMME DAY	ACTIVITY/TOPIC/SESSION
Monday, 4 July	**LSS Welcome session (no lectures)**
Tuesday, 5 July	An Overview of Business Intelligence, Analytics, and Data Science
Wednesday, 6 July	Descriptive Analytics: Nature of Data, Visualizations, Business Performance Management
Thursday, 7 July	Descriptive Analytics: Business Intelligence and Data Warehousing
Friday, 8 July	Data Analysis Tutorial (1)
Monday, 11 July	Predictive Analytics: Data Mining Process, Methods, and Algorithms; Text and Social Media Analytics
Tuesday, 12 July	Data Analysis Tutorial (2)
Wednesday, 13 July	Prescriptive Analytics: Model-Based Decision Making, Optimization, and Simulation
Thursday, 14 July	Data Analysis Tutorial (3)
Monday, 18 July	Big Data Concepts and Tools
Tuesday, 19 July	Future Trends, Privacy and Managerial Considerations in Analytics
Wednesday, 20 July	No lectures (preparation for final examination)
Thursday, 21 July	Final examination
Friday, 22 July	**Meeting hours with students & LSS Farewell session**

Online Teaching Methods and tools/software used:
Students will be exposed to face-to-face online lectures and discussion, and individual offline work.
The following tools will be used in the course: Microsoft power BI Desktop, RapidMiner Studio, and Microsoft Excel (with plugins).

Course materials/List of readings:
- Sharda, Ramesh; Delen, Dursun; Turban, Efraim: Business Intelligence, Analytics, and Data Science: A Managerial Perspective, 4th Ed., 2018, Boston, MA : Pearson Education, Inc.
- Davenport T. H.: Big Data@Work: Dispelling the Myths, Uncovering the Opportunities. Harvard Business Review Press, 2014.
- Provost F. & Fawcett T.: Data Science for Business: What You Need to Know About Data Mining and Data-Analytic Thinking. O'Reilly, 2013.
- Business Intelligence & Analytics Cases

Examination methods and evaluation criteria (weighted categories):
   Each student will be individually assessed through the following:
-   Data Analysis Assignments – 30% (2 assignments)
-   Final Exam – 70% (the student need a min 50% on the final exam to pass the course)

Grading scale:

DEFINITION	%	LOCAL SCALE	ECTS SCALE	Grade (USA)
exceptional knowledge without or with negligible faults	92-100	10	A	A+, A, A-
very good knowledge with some minor faults	85-91	9	B	B+, B
good knowledge with certain faults	77-84	8	C	B
solid knowledge but with several faults	68-76	7	D	C+, C, C-
knowledge only meets minimal criteria	60-67	6	E	D+, D
knowledge does not meet minimal criteria	<60	5	F	

Short course leader(s) biography:

Aleš Popovič is a Professor of Information Systems at NEOMA Business School, France. He holds visiting positions at the School of Economics and Business at the University of Ljubljana, Slovenia, and NOVA IMS – Universidade Nova de Lisboa, Portugal.

His pedagogical work includes lectures and organization at all levels of programs at the home institution and abroad. He teaches graduate courses in the area of business analytics and information management. He is regularly contracted to give professional workshops for Business Excellence Center of School of Economics and Business at the University of Ljubljana, and Career Centers of the University of Ljubljana. He served as the head of the double degree master program in Information Management between Faculty of Economics and Nova Information Management School. Currently, he is the head of the Master's in Business Analytics at NEOMA Business School.

Aleš is currently the principal investigator for Slovenian Research Agency research program "P5-0410 – Digitalization as Driving Force for Sustainability of Individuals, Organizations, and Society".

Dr. Popovič served as the Vice – Dean for Research and Doctoral Studies at the School of Economics and Business at the University of Ljubljana, Slovenia (2017 – 2019). He was responsible for research strategy and policy for a group of 170+ researchers (from early-stage researchers to full professors). Beforehand, he served on the Governance Board and the Research and Doctoral Program Committee (2015 – 2017).