RĪGAS TEHNISKĀ UNIVERSITĀTE

RTU Course "Business Analytics"

33000 Datorzinātnes, informācijas tehnoloģijas un enerģētikas fakultāte

General data

Code	DE0750
Course title	Business Analytics
Course status in the programme	Compulsory/Courses of Limited Choice
Responsible instructor	Ilze Birzniece
Volume of the course: parts and credits points	1 part6.0 ECTS credits
Language of instruction	LV, EN
Abstract	The volume of data worldwide is growing daily, and potential business value hides in data. Looking for new business opportunities in data today is an essential part of the growth of business in any sector. Business intelligence, dashboarding and data visualization is the starting point for business analytics. Knowledge discovery from data is a process that includes data retrieval, data pre-processing, selection and application of appropriate analytical methods, and interpretation of results. Data mining is the use of statistical and machine-learning techniques on historical data aiming to obtain an explanation or prediction. The course deals with key data mining approaches in supervised and unsupervised learning – regression, classification, clustering and association rules mining ? by introducing the most popular methods in each of them. Text mining and dealing with unstructured and semi-structured data is one of the topical classification targets. The course focuses on building analytical comprehension and practice, using the no-code tool Weka (additionally ? Python programming language for experienced users) to analyse real data sets and interpret the insights. Big data analytics is related to the capabilities of high performance computing. Students work in teams and apply their knowledge and skills in data analytics to develop a capstone project. The study course is adapted to a blended learning methodology and includes asynchronous and synchronous study activities, as well as the necessary support materials for asynchronous study activities. In this course, students acquire advanced digital skills in accordance with the European Digital Competence Framework for Citizens (DigComp). The course does not require previous experience in data mining or programming.
Goals and objectives of the course in terms of competences and skills	The goal of the course is to develop a comprehension of data analytics capabilities and skills to select and apply appropriate approaches to particular business data needs. The objectives of the course: 1. Introduce the needs and opportunities of business analytics. 2. Raise awareness of data extraction and processing to acquire data-driven knowledge. 3. Develop skills to work with data mining techniques and tools for decision support. 4. Promote analytical capabilities, critical thinking and academic writing skills.
Structure and tasks of independent studies	Through independent studies, students perform both individual and group works to learn the main course subjects, drill the practical skills and explore in depth individual subjects. These activities are done in accordance with the principles of academic integrity. Independent studies include homework – analysis of the relevant literature, capstone project development, as well as preparing to demonstrate achieved results in presentations and examination.
Recommended literature	Obligātā / Mandatory: 1.Data Mining, 4th Ed., Ian H. Witten, Eibe Frank, Mark A. Hall, Christopher Pal, 2016 2.Fundamentals of Business Intelligence, Wilfried Grossmann, Stefanie Rinderle-Ma, 2015 Papildu / Additional: 1.Data Mining and Machine Learning: Fundamental Concepts and Algorithms, 2nd Ed., Mohammed J. Zaki and Wagner Meira, Jr, 2020 (online book: https://dataminingbook.info/book_html/ 2.Data Mining for Business Analytics: Concepts, Techniques and Applications in Python, Galit Shmueli, Peter C. Bruce, Peter Gedeck, Nitin R. Patel, 2019 3.Business Analytics: Data Analysis and Decision Making, 7th Ed., S. Christian Albright, Wayne L. Winston, 2020 4. Business analytics: combining data, analysis & judgement to inform decisions, Mary Ellen Gordon. London: SAGE Publications Ltd, 2023.
Course prerequisites	Basic knowledge about data storage and processing with application software.

Course contents

Content	Full- and part-time intramural studies		Part time extramural studies	
	Contact Hours	Indep. work	Contact Hours	Indep. work
Business intellingece, metrics, key performance indicators, dashboards for managerial decision making	12	14	0	0
Data analytics: business needs analysis, data exploratory analysis, preprocessing, statistics, data representation	16	20	0	0
Data mining: regression, classification, clustering, association rules. Credibiltiy. State-of-the-art data mining applications	14	18	0	0
Data mining tools, their practical application in data analysis	14	28	0	0
Demonstration of learning outcomes through presentations and examination	8	16	0	0

Total:	64	96	0	0

Learning outcomes and assessment

Learning outcomes	Learning outcomes assessment methods and assessment criteria
Characterize data pre-processing tasks and conduct data transformations	Project, examination
Discriminate data mining approaches, select and apply appropriate methods for particular data	Practical works, project, examination
Analyze business needs and link them to capabilities data analytics	Home works, project, examination
Derive data-driven business decisions	Home work, project, examination, practical works
Using data mining tools create solutions for discovering knowledge from data and representing it (DigComp Level 7)	Practical works, project
Perform different tasks according the principles of academic integrity	Home works, group work, project, examination, practical works

Course tests

Tests	% of final assessment
Home works	20
Practical woks (labs)	15
Group project	35
Examination	30
Total:	100

Course planning

Part	Semester			CP	Academic hours			Tests		
	Autumn	Spring	Summer		Lectures	Practical	Lab.	Test	Exam	Work
1.	*			6.0	32.0	32.0	0.0		*	