



18th LJUBLJANA SUMMER SCHOOL
Take the Best from East and West
3 - 21 July 2017

University of Ljubljana

FACULTY OF
ECONOMICS

LJUBLJANA SUMMER SCHOOL 2017

COURSE TITLE: BIG DATA ANALYTICS: THE BEST PRACTICES IN THE INDUSTRY

Type of course: Bachelor course (for students in the final year of study) & Master course

Lecturer: Dr. Nishtha Kesswani, Central University of Rajasthan, Ajmer, India

ECTS credits: 7

Aims of the course:

This course focuses on some of the important grand challenges in big data analytics. It is based on the core concepts, research, practice, and policy in the international context, and engages learners in exploring the application of these to the major big data issues being faced by the organizations across the world. It is consciously designed with a technological and global outlook since this orientation in many ways highlights the significant emerging trends in big data analytics. The course is intended to provide the students with a pragmatic approach that will guide the formulation and implementation of strategies for handling big data. This course seeks to enable students to develop, and/or fine tune issues related to big data analytics and data science.

The course is organized around application of the key concepts of big data analytics to various grand challenges associated with data science. The grand challenges are scanned from various industries across the world. Thus, this course will also help you develop a deeper understanding of the complex issues underlying these challenges, and help you become a vivid data analyst. The pedagogy deployed in this course is based on problem-based learning, which seeks to immerse learners in understanding complex issues and in designing rich ground data analytics practices. The purpose of this pedagogy is to make learning more meaningful and fun, and readily applicable to every day issues faced in the community context of the learner.

The aims of the course include:

- Gain knowledge of big data analytics and vocabulary that enable the framing of critical issues, opportunities, and priorities in real situations.
- Refine the ability to synthesize complex data, develop understanding of basic data science issues.
- Bridge the gap between theory and practice by developing an understanding of why, when, and how to apply relevant concepts and techniques.



I invite you to join me in exploring the field and learning about this fascinating, dynamic field!

Learning Objectives: At the end of this course, you will be able to gain knowledge about

- What is Big and what is not
- Big data analytics and churning of data
- Basic Machine Learning concepts
- Database management concepts
- Data mining techniques
- Real life examples of Big Data
- Problems of Big data
- Techniques for handling big data by companies across the globe
- Major players in Big data analytics
- How to refine and extract the useful information
- Using big data analytics and its practical applications from the Management perspective
- Software for Big data analytics

And, you will be able to demonstrate ability to apply your understanding about the above knowledge to the following big data grand challenges:

- Address different issues related to handling the big data
- Churning the data in an effective manner
- Using the big data for management
- Representation of big data
- Getting a better understanding of big data issues faced by companies across the globe
- Practical application of big data analytics to different industries like banking
- Managing the huge information available on the Internet
- Using data for decision making

Course syllabus:

Module	Title	Learning objectives
1	What is Big Data?	<ul style="list-style-type: none"> • Recognize what is big data • And what is not so big • Appreciate the basic understanding of big data concepts • Understand data science and why it is required • Know the limits of big data
2	The problem of data explosion	<ul style="list-style-type: none"> • Recognize the problem of explosion of data • Understand the issues related to data explosion • Appreciate the big data problem in different countries • Know that the data handling problem can be addressed using effective techniques
3	The big 'Big data' challenge	<ul style="list-style-type: none"> • Recognize the big data challenges • Understand how to strategically address the



		<p>challenges</p> <ul style="list-style-type: none"> • Appreciate the most challenging tasks in big data analytics • Know that effective use of techniques can be used to address the challenges
4	Database management systems	<ul style="list-style-type: none"> • Recognize the basic concepts of database management systems • Understand how to use databases for information retrieval and processing; different types of databases • Appreciate the techniques of database management system • Know how to do effective database management
5	Data mining techniques	<ul style="list-style-type: none"> • Recognize how data mining can be used for knowledge discovery • Understand the basic techniques of data mining used by the industry • Appreciate different approaches to handle the challenge of noisy data • Know the recent trends in data mining
6	Machine learning for data analysts	<ul style="list-style-type: none"> • Recognize how machine learning can be used by data analysts • Understand that machine learning techniques can help the industry and the managers • Appreciate the performance evaluation tools and deep learning • Know the potential of various machine learning techniques
7	Software for handling big data	<ul style="list-style-type: none"> • Learn different software for handling big data • Understand the syntax and basic coding required to work on the software • Appreciate the capability of software to handle big data • Know the building blocks of database management software
8	Software for handling big data revisited	<ul style="list-style-type: none"> • Learn data mining techniques and software • Understand the syntax and basic commands • Appreciate the use of data mining software for decision making and knowledge discovery • Know that if tactfully designed, data mining algorithms can be used for varied purposes
9	Managing the data using cloud	<ul style="list-style-type: none"> • Basic understanding of cloud service models: SaaS, PaaS, IaaS and beyond • Understand how to use the cloud and cloud security issues • Appreciate the use of cloud for handling big data • Know how to use the cloud for analytics
v10	Handling Big data on the web	<ul style="list-style-type: none"> • Recognize the big data on the web • Understand the role of social media in affecting the business

		<ul style="list-style-type: none"> • Appreciate strategic planning for web marketing • Know how big data on the web can be exploited
11	Big data challenges for the industry	<ul style="list-style-type: none"> • Recognize how approaches to handle big data can provide a cutting edge • Understand key issues and different challenges for the industry; infrastructure; technical support and other issues • Appreciate the challenges and diverse international models for managing the data • Know the issues in making the data scalable
12	Extracting business and socially relevant information	<ul style="list-style-type: none"> • Recognize the techniques of extracting the useful information in emerging and industrial markets • Understand the dimensions of data • Appreciate that effective extraction of data can produce relevant information • Know that the blending of business and socially relevant information can be useful
13	Competing on business analytics: Making wise decisions	<ul style="list-style-type: none"> • Understand the concepts of business analytics • Understand that business analytics can be used for effective decision making • Appreciate the different dimensions of diversity in businesses, and complex set of tools available • Know the different techniques used for decision making
14	Major players in handling big data	<ul style="list-style-type: none"> • Recognize the major players in the big data industry • Understand what makes them successful. • Appreciate the opportunities from, challenges of, and best practices for handling big data • Know the diverse practices
15	Emerging trends and issues in big data	<ul style="list-style-type: none"> • Recognize the emerging trends and issues
16	What next?	<ul style="list-style-type: none"> • Recognize the future prospects of big data

Bibliography:

- Davenport, T. (2014). *Big data at work: dispelling the myths, uncovering the opportunities*. Harvard Business Review Press.
- Dean, J. (2014). *Big data, data mining, and machine learning: value creation for business leaders and practitioners*. John Wiley & Sons.
- Han, J., Pei, J., & Kamber, M. (2011). *Data mining: concepts and techniques*. Elsevier.
- Siegel, E. (2013). *Predictive analytics: The power to predict who will click, buy, lie, or die*. John Wiley & Sons.
- Silberschatz, A., Korth, H. F., & Sudarshan, S. (1997). *Database system concepts* (Vol. 4). New York: McGraw-Hill.



- Sosinsky, B. (2010). *Cloud computing bible* (Vol. 762). John Wiley & Sons.

A comprehensive list of articles and power point presentations shall be provided to the participants at the start of the seminar.

Teaching methods:

The sessions will be highly interactive and student participation will be encouraged. Apart from lecture sessions, students will be encouraged to submit assignments and participate in Group Projects focussing on real-life Big Data problems and challenges.

Prerequisites:

Nil. Just zeal and enthusiasm to learn!

Examination methods:

Continuous assessment through written test and presentations will be done throughout the Course.

Note: This course is comparable to the officially accredited course Big Data Management and Technologies (ECTS: 7) at the Faculty of Economics, University of Ljubljana.

