



Ljubljana Summer School

6 – 24 July 2020

Data Analytics: Tools for Big Data

Master course (ECTS: 7)

14.00 – 16.30

Course leader:

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University of Washington, United States

Aims and objectives of the course:

Data analytics is a set of techniques that enterprises use to gain insight from their data and make better decisions. Many firms in a variety of industries use these techniques: Google, Amazon, Target, Coca-Cola, WalMart, Capital One. These techniques are also applicable to the many functional areas of business, such as operations, marketing, accounting, finance, etc. Furthermore, the modern abundance of data, so-called “Big Data,” underscores the value that analytics can provide a firm, be it non-profit, for-profit, or government.

This course introduces data analytic techniques via quantitative tools and sophisticated software (R, Rattle and Tableau). These techniques are drawn from machine learning, data mining, and optimization. Note that this is not a technical or theoretical course. This course does not aim to produce experts in statistical analysis; rather, the aim is to provide students competency to interact with and manage a team of analytics professionals. Furthermore, this is not a technical or theoretical course; we will instead focus on the application of analytics techniques to real business situations, with the aim of creating insight and value.

Our course goals are the following:

1. Students should be able to think critically about data analysis, which includes selecting the right type of analysis for a given task.
2. Students should be able to identify opportunities of applying data analytics, in real business settings.
3. Students should be well equipped to become data-savvy managers.

To achieve the above goals, lectures will cover the major concepts and analytical tools. Cases and practice problems will allow you to analyze different industry settings, analyze different company strategic problems, and identify key issues related to data and modeling.

Course syllabus:

The course is divided into the following modules under three topic areas of Descriptive Analytics, Predictive Analytics, and Prescriptive Analytics:

- Introduction and Visualization (Descriptive and Inferential Analytics)
- Supervised Learning: Prediction (Predictive Analytics)
- Supervised Learning: Classification (Predictive Analytics)



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- Unsupervised Learning: Clustering (Descriptive and Predictive Analytics)
- Projects

Course materials/List of readings:

The Analytics Edge, Bertsimas, O'Hair, Pulleyblank. Dynamic Ideas. 1st Edition; 2016.

All course materials will be distributed electronically through a website. Assignments and Team Projects are submitted electronically through this website (by their due dates!).

Teaching methods:

We will be using Tableau, R, and Rattle in this class. These software packages are both available in the computer labs. Student licenses to Tableau will be provided; R and Rattle are free.

- Tableau can be downloaded at <http://www.tableau.com/products/trial>
- R can be downloaded at <https://cran.fhcrc.org>

Most days a case will be assigned. Students are expected to work either individually or in groups on the cases. However, each student must submit his/her own solution. These assignments are due at the beginning of class on their posted due date and are electronically submitted through the class website.

The final module of this course will consist of a group project where teams will apply the techniques of the course to real data. Further details will be released later in the course.

Evaluation method and grading scale:

Student grades will be calculated applying the following allocation in a simple weighted average:

1. Assignments	50%
2. Final Exam	25%
3. In Class Assignments	20%
4. Participation	5%

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	

Prerequisites for attending the course:

No prerequisites.

Note: If approved by the home institution, Bachelor students in their final year of study can register for this Master course.