

Ljubljana Summer School *Take the Best from East and West*

8 – 24 July 2024

DATA ANALYTICS - TOOLS FOR BIG DATA

Master course (ECTS: 7)*

**also for Bachelor students in their final year*

Course leader:

MAMANI Hamed, University of Washington, Foster School of Business, United States

Hamed Mamani is the Premera Endowed Faculty Professor of operations management at the Foster School of Business in University of Washington. His research interests include: data and business analytics, supply chain management, coordination mechanisms in supply chains, and applications in healthcare and public health policy. He received his PhD in operations research from MIT in August 2008, under the supervision of Professor David Simchi-Levi. In June 2003, I received a BS in industrial engineering from Sharif University in Iran.

Aims of the course:

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.

Students should be well equipped to become data-savvy managers.

Prerequisites:

None.

Course content:

| DATE | DAILY TOPIC/SESSION |
|--------------------|--|
| Monday, 8 July | Course introduction (1h) |
| Tuesday, 9 July | Prediction Models: Linear Regression |
| Wednesday, 10 July | Classification Models: Logistic Regression |
| Thursday, 11 July | Supervised Learning Techniques |
| Friday, 12 July | Prediction and Classification Trees (CART) |
| Monday, 15 July | Unsupervised Learning and Cluster Analysis |
| Tuesday, 16 July | Story Telling Using Data: Tableau I |
| Wednesday, 17 July | Story Telling Using Data: Tableau II |
| Thursday, 18 July | Data Pre-processing and Clustering |

| | |
|--------------------|---|
| Friday, 19 July | No lectures (day off) |
| Monday, 22 July | Qualitative Models in Prediction |
| Tuesday, 23 July | Case Study + Preparation for final examination (3h) |
| Wednesday, 24 July | Final exam |

Course materials / List of readings:

All the course materials will be posted on the course platform (Canvas).

Teaching and examination methods:

The course is designed as an interactive blend of lectures, in-class activities, and quizzes. It introduces data analytic techniques through the use of quantitative tools and sophisticated software, including R and Tableau. While R will be utilized, the course is not centered on coding. Instead, the emphasis will be on the data analytics process. The techniques we explore originate from fields such as machine learning, statistics, and optimization.

It's important to note that this is neither a technical nor a theoretical course. The objective is not to produce experts in statistical analysis or data scientists. Rather, the course aims to equip students with the competency to interact with and make sense of data. Our focus will be on the practical application of analytics techniques in real business scenarios, striving to generate insightful and valuable outcomes.

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

| | |
|---------------------|-----|
| 1. Assignments | 50% |
| 2. Final Exam | 25% |
| 3. In-class Quizzes | 20% |
| 3. Participation | 5% |

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 | |