University of
South Australia

INFS 5100 Predictive Analytics

SP5 2023

Srećko Joksimović & Mahmoud (Mat) Ghazi

Acknowledgement of country

We respectfully acknowledge the Kaurna, Boandik and Barngarla First Nations Peoples and their Elders past and present, who are the First Nations' Traditional Owners of the lands that are now home to the University of South Australia's campuses in Adelaide, Mount Gambier and Whyalla. We are honoured to recognise our connection to the Kaurna, the Boandik and the Barngarla lands, and their history, culture and spirituality through these locations, and we strive to ensure that we operate in a manner which respects their Elders and ancestors. We also acknowledge the other First Nations of lands across Australia with which we conduct business, their Elders, ancestors, cultures and heritage.

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Image courtesy of the artist and Mimili Maku Arts, University of South Australia Art Collection by the artist, Ngupulya PUMANI, b. 1948 Mimili, South Australia. Pitjantjatjara.

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How are you feeling today?

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Why this course?

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Overview

- Course overview
  - Introduction
  - Course aims and objectives
  - Learnonline
  - Course content
  - Assessment
- Introduction to Data Mining

Course instructors

- Srećko Joksimović
- Data Scientist (Senior Lecturer)
  - Education Futures, Centre for Change and Complexity in Learning
- Background
  - Computer science, education, learning analytics, data science
  - PhD in Learning analytics, University of Edinburgh (Scotland)
- Learning analytics
  - “…augmenting abilities of individuals to solve complex problems in collaborative settings”

Course instructors (Practical)

- Mat (Mahmoud) Ghazi
- Background
  - MSc: Data Science, UniSA
  - B.S: Software Engineering

Predictive analytics

- What is predictive analytics?
- Course aim:
  - Understand how to process data for the need of analytics, how to build different types of classification models (classifiers), how to compare and evaluate those models, and how to use models to classify new objects into different categories.

Prerequisites

- INFS 4018 Business Intelligence and Analytics
- INFS 4019 Relational Databases and Warehouses

Course objectives

CO1. Apply standard processes to prepare large data sets for data exploration.

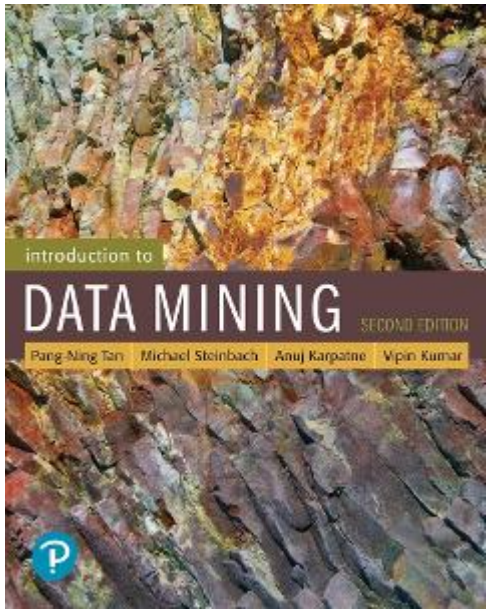
CO2. Perform data exploration on large data sets using visualisation, statistical techniques, and data mining techniques to identify relationships and opportunities.

CO3. Develop accurate descriptive and predictive models based on large data sets.

CO4. Perform predictive analytics on large data sets using an industry standard software tool-set.

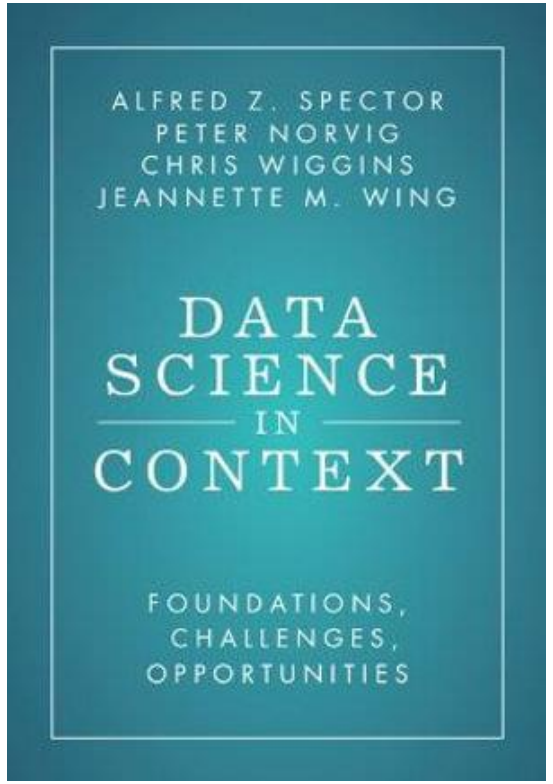
Textbook

Tan, P.-N., Steinbach, M., & Kumar, V. (2014). Introduction to Data Mining: *Pearson New International Edition*. Pearson



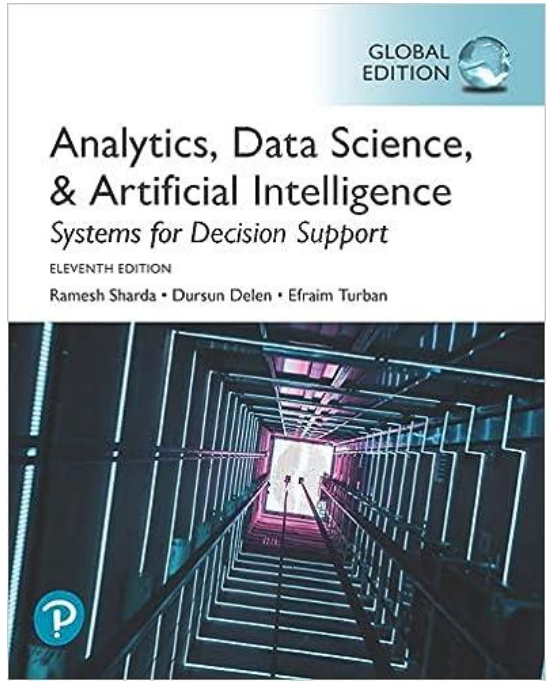
Another interesting book

Alfred Z. Spector, Peter Norvig, Chris Wiggins, & Jeannette M. Wing (2023). Data Science in Context: Foundations, Challenges, Opportunities: *Cambridge University Press*. GB



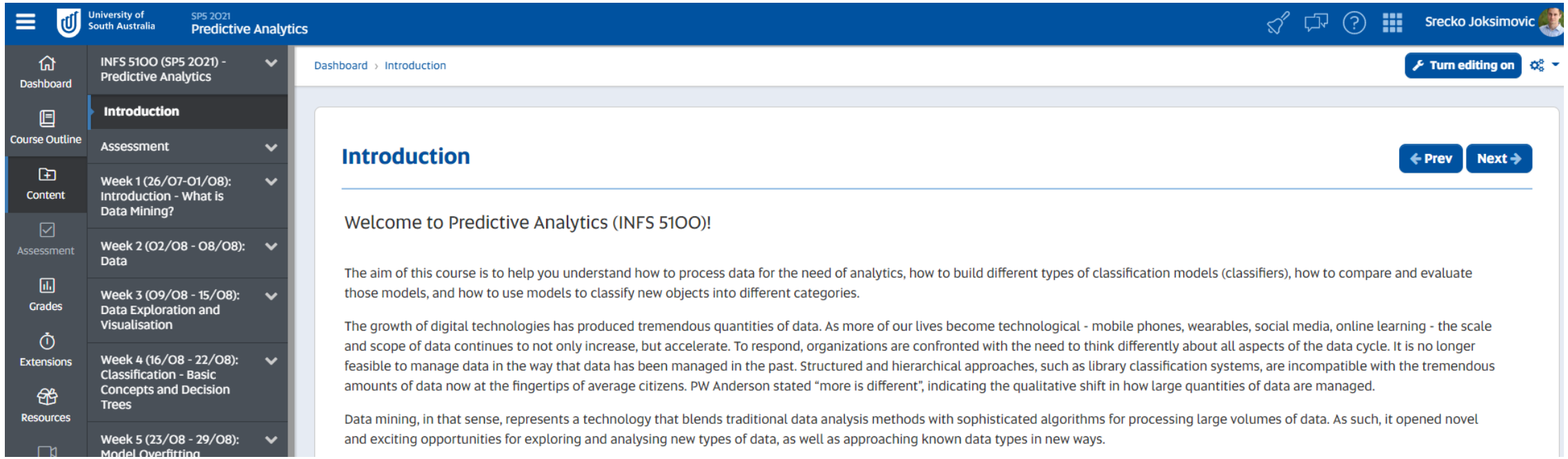
And one more…

Sharda, R., Delen, D., & Turban, E. (2020). Analytics, Data Science, & Artificial Intelligence: Systems for Decision Support



Software and technologies

learnonline



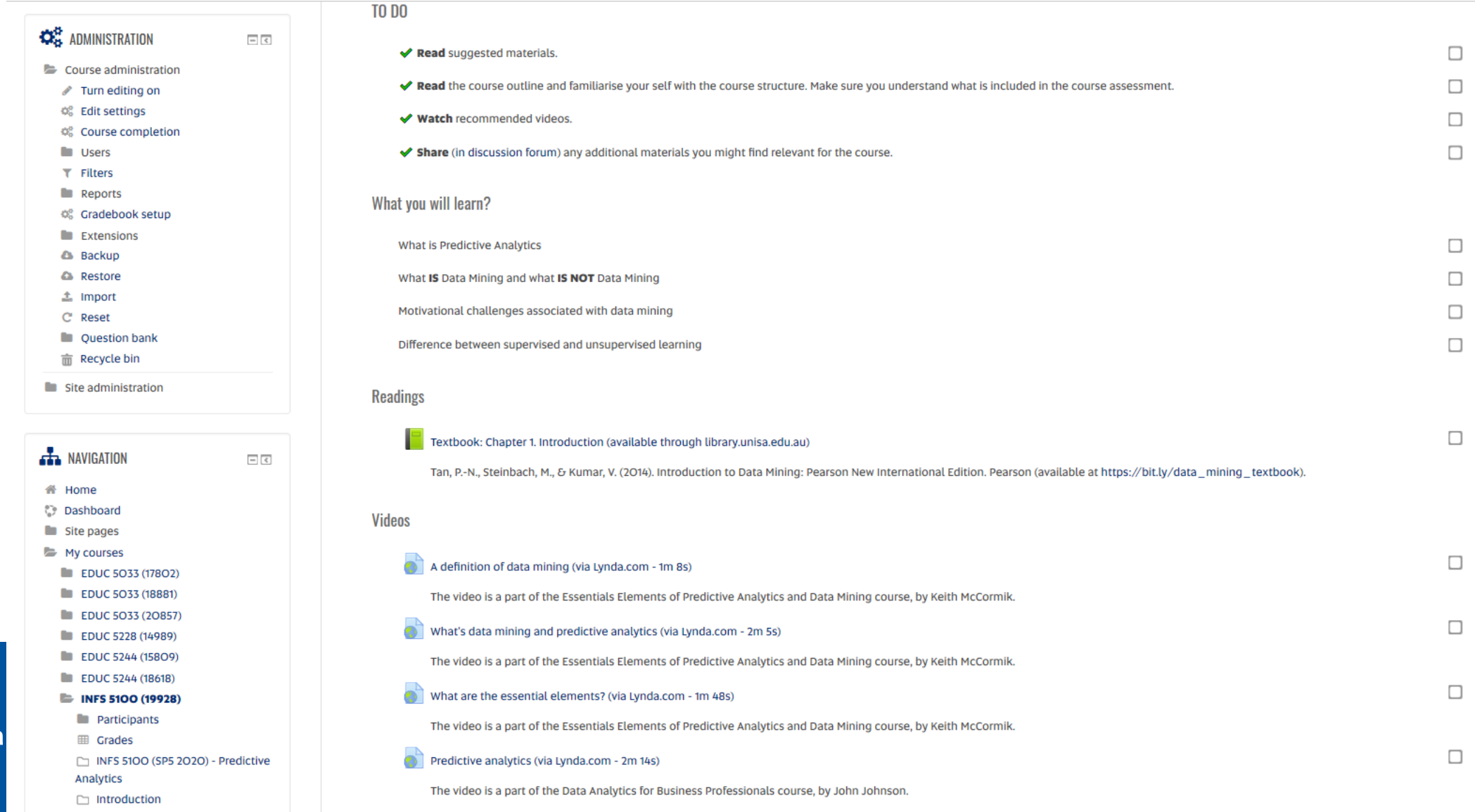
Lectures

- Tuesday 9.10am-11am (online – Zoom link on learnonline)
  - Internal students, **attendance expected**
  - External students, **welcome to join**
- The Flipped Classroom Model
  - Videos for each topic/week are already uploaded
  - Please watch the video for the current week **BEFORE** coming to the classroom.
- Review activities
  - Before most of the classes, we will revisit some of the concepts introduced
  - Practical work, elaborate further on the most challenging concepts
- Visiting lecturers – TBC

Practical

- Week 2 – Week 12
  - Internal students –
    - » Tuesday 2.10pm-3pm, MLK/P1-13;
    - » Tuesday 3.10pm-4pm, MLK/P1-13
  - External students – online (self-paced)
- Not graded
- Extremely important for your assignments!
- Step-by-step instructions
- Google Colab – share with your course instructor

learnonline



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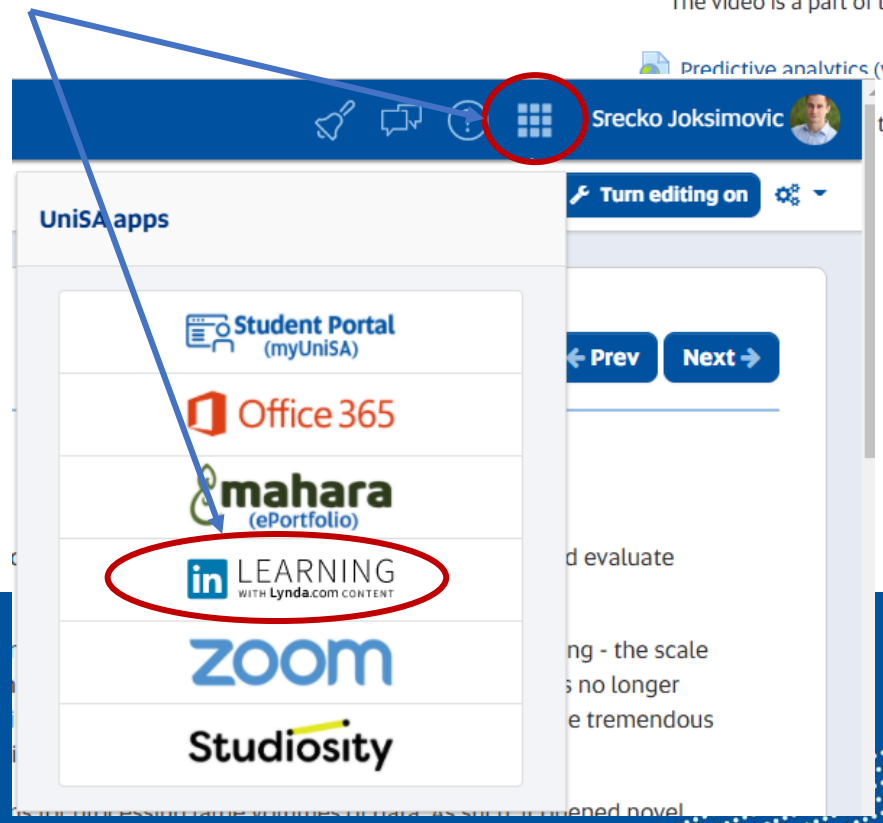
Assessment (INFS 5100)

- Continuous assessment (20%) - Week 3, 5, 8, and 11
- Assignment 1 (25%) – Week 7, data exploration
- Assignment 2 (25%) – Week 10, decision trees
- Assignment 3 (30%) – Week 13, different classification methods

Additional Resources

- Not mandatory, but highly recommended
- Short LinkedIn Learning videos



Videos

A definition of data mining (via Lynda.com - 1m 8s)

The video is a part of the Essentials Elements of Predictive Analytics and Data Mining course, by Keith McCormik.

What's data mining and predictive analytics (via Lynda.com - 2m 5s)

The video is a part of the Essentials Elements of Predictive Analytics and Data Mining course, by Keith McCormik.

What are the essential elements? (via Lynda.com - 1m 48s)

The video is a part of the Essentials Elements of Predictive Analytics and Data Mining course, by Keith McCormik.

Predictive analytics (via Lynda.com - 2m 14s)

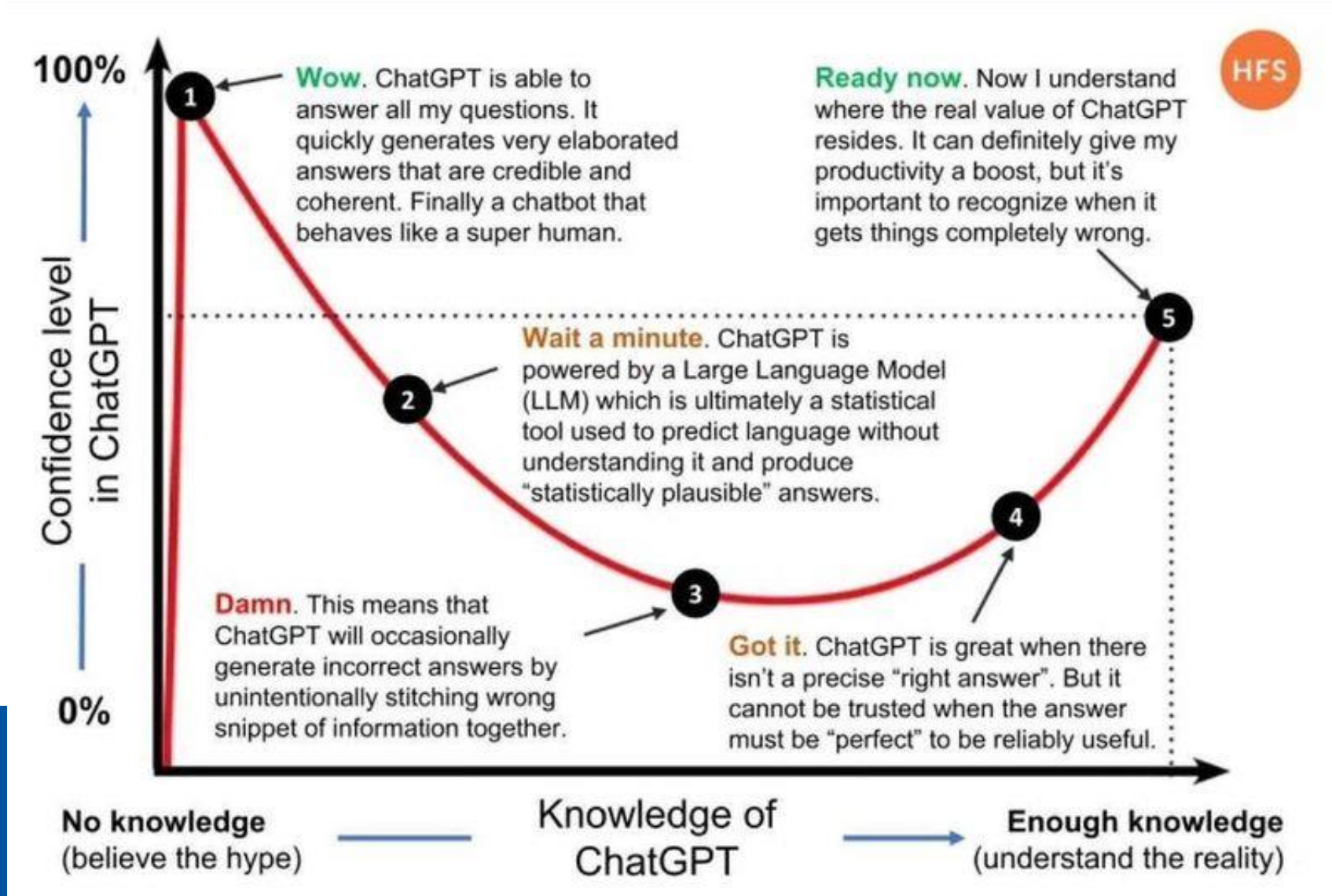
the Data Analytics for Business Professionals course, by John Johnson.

Office Hours and Communication

- Available upon request
  - We will not have a predefined time for office hours
  - Feel free to reach out whenever you have a question or problem you are trying to solve
- External students
  - We will meet every two weeks (TBC)
- Message learnonline
- Email
- Discussion forum
  - Course related, assignments, resources

Source: https://www.linkedin.com/posts/activity-7026842066110279681-BJFu

ChatGPT – Yes, you MUST use it



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Q&A

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Any questions?

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