

Data Sciences for Intrapreneurs

UGRA_016194

Departments	Dept. of Operations, Innovation & Data Sciences
Teaching Languages	English
ECTS	5
Teacher responsible	Yang Jiho - jiho.yang@esade.edu

Course Goals

By the end of this course, students will be able to:

1. Explain what AI is and how AI transforms work, business, and society.
2. Describe how different AI models operate, including supervised/unsupervised machine learning, deep learning, neural networks, and Transformers.
3. Understand challenges in transforming businesses around AI and learn frameworks that can aid managers to successfully implement AI into their organizations
4. Gain knowledge about how to effectively leverage different AI-based tools to improve efficiency and effectiveness in carrying out tasks and to identify new opportunities for firms
5. Generate insights into how to better achieve organizational goals by applying AI-based analytics tools to real-world data

Previous knowledge

Students are strongly advised to review basic programming with Python, including data types, data structure, file handling, and working with libraries. Students are also expected to have an understanding of basic concepts in statistics such as regressions and statistical inferences. Some knowledge on exploratory data analysis including data visualisation will be useful.

Prerequisites

Students are recommended to have taken the courses "Applied algorithmic thinking" and "Statistical intuitions and Applications".

Teaching methodology

1. Lectures: Conceptual frameworks to understand the implications of AI for work, business, and society
2. Hands-on Labs: Practical sessions to better understand machine learning tools using Python and to effectively leverage generative AI for various tasks
3. Case Studies: In-class discussion on real-world examples of businesses adopting AI to better understand how AI can boost efficiency and effectiveness of firms, which strategic challenges firms may face when transforming business around AI, and what risks are involved in using AI for businesses.
4. Group projects: Application of AI tools and techniques to real-world data to generate insights on profitable business opportunities
5. Individual assignment: Application of conceptual frameworks and knowledge on AI tools to propose strategies for how a real-world company can successfully adopt AI

Description

Course contribution to program

This course aims to prepare students to be (1) proficient users of AI-based tools to improve work performance, redesign their tasks, and generate insights on new opportunities for their organizations, and (2) managers who understand the transformative impacts of AI for employees, businesses, industries, and societies and help their organizations implement AI at different levels of operation.

Students will:

1. learn conceptual frameworks for systematically understanding the implications of AI for economic activities
2. discuss case studies that describe the implications of AI for individual tasks, business models, and competition, as well as strategic challenges and risks organizations face when implementing AI into their existing operational models
3. understand how AI operates under the hood through hands-on practices for using AI tools to analyse data
4. apply conceptual framework and knowledge learned in class to real-world organisations to propose strategies to successfully implement AI technology, and
5. work in groups to apply AI-based tools for data analytics to real-world data and generate insights for new economic opportunities or innovative solutions to societal challenges.

Bibliography

Agrawal, A., Gans, J., & Goldfarb, A., Prediction Machines: The Simple Economics of Artificial Intelligence, Harvard Business Review Press (Book)

Mollick, E., Co-Intelligence: Living and Working with AI, WH Allen (Book)

Iansiti, M., & Lakhani, K. R., Competing in the Age of AI: Strategy and Leadership When Algorithms and Networks Run the World, Harvard Business Review Press (Book)

Agrawal, A., Gans, J., & Goldfarb, A., Power and Prediction: The Disruptive Economics of Artificial Intelligence, Harvard Business Review Press (Book)

Daugherty, P. R., & Wilson, H. J., Human + Machine: Reimagining Work in the Age of AI, Harvard Business Review Press (Book)

Brynjolfsson, E., & McAfee, A., The Second Machine Age: Work, Progress, and Prosperity in a Time of Brilliant Technologies, W. W. Norton (Book)

Wooldridge, M., The Road to Conscious Machines: The Story of AI, Pelican (Book)

Activities

In-class discussions and debates

In-class discussion based on (but not limited to) case studies on real-world examples of businesses adopting AI to better understand strategic opportunities and challenges AI presents.

Written and/or oral exams

A final exam will take place at the end of the term where students will apply concepts and frameworks they learned during the sessions.

Group presentations

Students will work in groups where they will have the opportunity to apply AI-based tools to real-world data to generate insights on new opportunities or solutions to business/societal challenges

Readings

Students are required to come to class prepared, having read all the required readings including case studies and academic articles.

Essays

Students will individually choose a company of their interest and evaluate its AI strategy, focusing on which tasks AI can be best implemented for, how the company can build or transform into AI-based business models, implications for competition, etc

Case study analyses

Students will be required to read case studies on companies adopting AI and analyze how AI is used in these organizations, whether and how the deployment of AI can be improved, what kinds of challenges the organizations face, etc

Content

#	Topic
1	Introduction to AI & Implications for businesses
2	Working with AI
3	Transforming your company around AI (2 sessions)
4	Data analytics for generating business insights using Python (2 sessions)
5	Machine learning using Python (2 sessions)
6	Cloud computing tools for implementing AI-driven analytics
7	Generative AI for working effectively (2 sessions)
8	AI risks, ethics, and governance

Assessment

Tool	Assessment tool	Category	Weight %
In-class analysis and discussion of issues	Students are expected to actively participate in in-class activities including case discussions and hands-on practices. In order to do so, students must come to each session prepared, having read assigned readings and having followed instructions for pre-	Ordinary round	20.00%
Individual or team exercises	Each student will choose a real-world organization and submit a report on opportunities and challenges for the organization to adopt AI technologies and strategies to successfully implement AI.	Ordinary round	15.00%
Group project	Students will work in groups to apply AI tools to real-world data to generate insights on new opportunities or solutions to business/societal challenges. Presentation and report will each account for 15% of final marks.	Ordinary round	30.00%
Written and/or oral exams		Ordinary round	35.00%
Written and/or oral exams	Students who fail to pass the course will be required to sit a retake exam that accounts for the 50% of their final course grade.	Retake	50.00%

PROGRAMS

BITLASI22-Bachelor in Transformational Leadership and Social Impact (Undergraduates: Business)
BITLASI22 Year 4 (Optative)