



**M2/ MSc in DATA ANALYTICS &  
ARTIFICIAL INTELLIGENCE  
2022-2023**

*Make an impact*

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## 23\_M2\_LI\_DAAI\_S1\_CCO\_ETH\_7169: BUSINESS ETHICS & BIG DATA

DEGREE	Master BM (Msc Business Management)	LEVEL	Master 2 BM
PROGRAMME	MSc in Data Analytics & Artificial Intelligence	ACADEMIC YEAR	2022-2023
STUDENT HOURS	18	ECTS	3
SEMESTER	Semester 1	CAMPUS	Lille
COORDINATOR/EMAIL	Björn FASTERLING / bjorn.FASTERLING@edhec.edu		

### COURSE OBJECTIVES

The commercial exploitation of advanced data analytics and big data raises several concerns from an ethical viewpoint, ranging from privacy, discrimination, manipulative nudging all the way to risks of deepening social inequalities. At the same time big data holds the promise of improving our knowledge about human behaviour and society, which could, if well used, ease the mentioned problems.

### LEARNING OUTCOMES

The course aims at helping students analyse the negative and positive potential of big data from a normative standpoint. For example, more informed decision-making could eradicate bias and prejudice; better analytical techniques could make the exploitation of personal data less necessary.

After having taken this course, participants will be able to/are expected to know or understand (knowledge-based outcomes)

- LO1 Understand the main ethical issues regarding the commercial exploitation of big data, for instance, dealing with the risks of privacy erosion, discrimination, social inequalities, or manipulative nudging.
- LO2 Understand the complexity of dealing with ethical issues in the "big data supply chain".

More specifically, participants should be able to (skill- and competency-based outcomes)

- LO3 Be sensitive to the ethical dimension of big data exploitation during their careers and proactively address ethical issues.
- LO4 Use argumentation to make ethical decisions and developing ideas for mitigating or preventing negative effects of big data.

### PREREQUISITES

Maturity and constructive critical mind set in looking carefully at fundamental issues. Readiness to question situations that are taken for granted. Readiness to actively take part in class by expressing well-argued opinions. Some basic notions of data protection and privacy law are helpful but are not a prerequisite.

### COURSE CONTENT

There will be only two introductory lectures in the beginning of the course. This is followed case study sessions. Students will develop their awareness of the ethical dimension of the pervasive use of big data through adversary argumentation techniques, where students will be pitched against each other on controversial topics.

Session 1: Introduction to business ethics

Session 2: Business ethics and technology

Sessions 3-6: Case study workshops

### MAIN TEACHING & LEARNING METHODS

Lectures                                      Case studies                                      Class Discussions                                      Group Work

### ASSESSMENT METHODS

	Evaluation Type	% of Grade	Format - Invigilation	Duration	Main Learning Objective Evaluated
1	Continuous Assessment Individual	70	Assignment (Prof)	Over several days	<input type="checkbox"/> LO1 <input type="checkbox"/> LO2 <input type="checkbox"/> LO3 <input type="checkbox"/> LO4 <input checked="" type="checkbox"/> All LO
2	Continuous Assessment Group	30	Assignment (Prof)	Not apply	<input type="checkbox"/> LO1 <input type="checkbox"/> LO2 <input type="checkbox"/> LO3 <input type="checkbox"/> LO4 <input checked="" type="checkbox"/> All LO

### REQUIRED READING

- Crane, A., and D. Matten: 2016, Business ethics: Managing corporate citizenship and sustainability in the age of globalization. Oxford University Press.
- Fourcade, M. and K. Healy: 2017, 'Seeing Like a Market', Socio-Economic Review 15, pp. 9-29.
- Martin, K.E.: 2015, 'Ethical Issues in the Big Data Industry', MIS Quarterly Executive 14 (2), pp. 67-85.
- Mittelstadt, B.D., Allo, P., Taddeo, M., Wachter, S. and L. Floridi: 2016, 'The ethics of algorithms: Mapping the debate', Big Data & Society, July-December 2016, pp. 1-21.
- Further readings, in particular the course's cases, will be posted on Blackboard during the seminar.

## 23\_M2\_LI\_DAAI\_S1\_CCO\_DATA\_5242: DATAMINING

DEGREE	Master BM (Msc Business Management)
PROGRAMME	MSc in Data Analytics & Artificial Intelligence
STUDENT HOURS	18
SEMESTER	Semester 1
COORDINATOR/EMAIL	DUFAYS Arnaud / arnaud.dufays@edhec.edu

LEVEL	Master 2 BM
ACADEMIC YEAR	2022-2023
ECTS	3
CAMPUS	Lille

### COURSE OBJECTIVES

The process of retrieving useful information from large dataset is called data mining. In this course we present different data mining methods and show they can be useful for management purposes. We will perform analysis using the Python software. Focus is on understanding, intuition, limitations, and practical use of the methods.

### LEARNING OUTCOMES

After having taken this course, participants will be able to/are expected to know or understand (knowledge-based outcomes)

- LO1 Understand data mining methods, their use and their limitations.
- LO2 Know about different data types, and methods to extract information from it.

More specifically, participants should be able to (skill- and competency-based outcomes)

- LO3 Make predictions using data mining algorithms, evaluate them, and show their business value.
- LO4 Explore and discover patterns and associations in observations and variables of large data sets.

### PREREQUISITES

Basic mathematics, statistical theory, and some experience using statistical software and programming. In particular, we assume that the students learned about linear algebra, statistical estimation, testing and regression analysis in previous courses.

### COURSE CONTENT

Finding anomalies and patterns in multivariate and big data: Outlier detection and unsupervised clustering.

Dimension reduction with principal component analysis.

Supervised learning: predicting a continuous variable in a big data environment.

Supervised learning: Classifying an observation with Discriminant Analysis, k-nearest neighbors, and logistic regressions.

Association rules and mining relationships.

### MAIN TEACHING & LEARNING METHODS

Lectures

Case Studies

### ASSESSMENT METHODS

	Evaluation Type	% of Grade	Format - Invigilation	Duration	Main Learning Objective Evaluated
1	Continuous Assessment Group	35	Assignment (Prof)	Not apply	<input type="checkbox"/> LO1 <input type="checkbox"/> LO2 <input checked="" type="checkbox"/> LO3 <input checked="" type="checkbox"/> LO4 <input type="checkbox"/> All LO
2	Final Exam	65	Exam outside class (Hub + schedule)	90 minutes	<input checked="" type="checkbox"/> LO1 <input checked="" type="checkbox"/> LO2 <input type="checkbox"/> LO3 <input type="checkbox"/> LO4 <input type="checkbox"/> All LO

### REQUIRED READING

Course material and references will be provided.

## 23\_M2\_LI\_BM\_S1\_CCO\_TRANSV\_7370: DATA VISUALIZATION WITH TABLEAU

DEGREE	Master BM (Msc Business Management)	LEVEL	Master 2 BM
PROGRAMME	M2 Business Management Transversal	ACADEMIC YEAR	2022-2023
STUDENT HOURS	18	ECTS	3
SEMESTER	Semester 1	CAMPUS	Lille
COORDINATOR/EMAIL	FORNES Yvan		

### COURSE OBJECTIVES

Be able to create Data Visualizations that helps to answer business questions and take decisions.  
Be autonomous with Tableau Software, to create advanced, interactive dashboards.

### LEARNING OUTCOMES

After having taken this course, participants will be able to/are expected to know or understand (knowledge-based outcomes)

- LO1 Develop and interpret a wide range of charts and graphs in Tableau
- LO2 Articulate best practices in data visualization

More specifically, participants should be able to (skill- and competency-based outcomes)

- LO3 Enhance and customize visualizations as needed for a specific business context
- LO4 Visualize and interpret spatial data and verbally communicate persuasive, data-driven business insights supported by Tableau visualizations

### PREREQUISITES

Tableau installed on each student's laptop. A free Tableau version is available for students

Deliver a visualisation before the class on Tableau Public that answer a business question (data set and instructions will be communicated few weeks before the class)

### COURSE CONTENT

- Discovery of the Tableau Ecosystem
- Connection to databases, Data preparation and enrichment, Management of the main issues
- The 4 core Tableau concepts:
  - The 4 pill types
  - Aggregation
  - The 4 levels of calculations
  - Filters & order of Operation
- Fundamental concepts of graphs, spreadsheets and visuals constitution (cross-tabulations, maps, scatter plots, bars, heatmaps, etc.)
- Main design rules: What are they and how to use them?
- Main concepts on dashboard creation and interactions with Tableau

### MAIN TEACHING & LEARNING METHODS

Lectures                      Distance Learning                      Blended Learning

### ASSESSMENT METHODS

	Evaluation Type	% of Grade	Format - Invigilation	Duration	Main Learning Objective Evaluated
1	Continuous Assessment Group	25	Assignment (Prof)	Not apply	<input type="checkbox"/> LO1 <input type="checkbox"/> LO2 <input type="checkbox"/> LO3 <input type="checkbox"/> LO4 <input checked="" type="checkbox"/> All LO
2	Continous Assessment Individual	75	Assignment (Prof)	Over several days	<input type="checkbox"/> LO1 <input type="checkbox"/> LO2 <input type="checkbox"/> LO3 <input type="checkbox"/> LO4 <input checked="" type="checkbox"/> All LO

### REQUIRED READING

Watch those videos:

<https://www.tableau.com/learn/training#getting-started>

<https://www.tableau.com/learn/tutorials/on-demand/getting-started-data>

<https://www.tableau.com/learn/tutorials/on-demand/getting-started-visual-analytics>

<https://www.tableau.com/learn/tutorials/on-demand/understanding-pill-types>

<https://www.tableau.com/learn/tutorials/on-demand/aggregation-granularity-and-ratio-calculations>

<https://www.tableau.com/learn/tutorials/on-demand/getting-started-dashboards-and-stories>

<https://www.tableau.com/learn/tutorials/on-demand/building-dashboard>

## 23\_M2\_LI\_DAAI\_S1\_CCO\_DATA\_5909: MACHINE LEARNING

DEGREE	Master BM (Msc Business Management)	LEVEL	Master 2 BM
PROGRAMME	MSc in Data Analytics & Artificial Intelligence	ACADEMIC YEAR	2022-2023
STUDENT HOURS	18	ECTS	3
SEMESTER	Semester 1	CAMPUS	Lille
COORDINATOR/EMAIL	Christophe CROUX / christophe.croux@edhec.edu		

### COURSE OBJECTIVES

This course introduces machine learning basic models, with a focus on supervised learning. We give an overview of many existing methods, discuss their use and properties. Students make a case where they compare the different methods.

### LEARNING OUTCOMES

After having taken this course, participants will be able to/are expected to know or understand (knowledge-based outcomes)

- LO1 An overall knowledge of classical machine learning algorithms
- LO2 Knowledge of optimization and limitations of such models

More specifically, participants should be able to (skill- and competency-based outcomes)

- LO3 Choose relevant models for a given real life problem
- LO4 Develop and use python codes for machine learning

### PREREQUISITES

Basic python programming, basic statistical knowledge, data mining

### COURSE CONTENT

Advanced prediction methods: SVM, decision trees, ridge/lasso regression, neural networks

Ensemble methods: combination of predictions, bagging, random forests, ...

Measuring prediction performance: training, test, validation sample

Machine learning in practice, variable importance

### MAIN TEACHING & LEARNING METHODS

Lectures Collaborative Learning Case Studies

### ASSESSMENT METHODS

	Evaluation Type	% of Grade	Format - Invigilation	Duration	Main Learning Objective Evaluated
1	Continuous Assessment Group	50	Assignment (Prof)	Over several days	<input type="checkbox"/> LO1 <input type="checkbox"/> LO2 <input type="checkbox"/> LO3 <input type="checkbox"/> LO4 <input checked="" type="checkbox"/> All LO
2	Final Exam	50	Exam outside class (Hub + schedule)	120 minutes	<input checked="" type="checkbox"/> LO1 <input checked="" type="checkbox"/> LO2 <input type="checkbox"/> LO3 <input type="checkbox"/> LO4 <input type="checkbox"/> All LO

### REQUIRED READING

course material and references will be provided

## 23\_M2\_LI\_DAAI\_S1\_CCO\_DATA\_6074: PYTHON PROGRAMMING

<b>DEGREE</b>	Master BM (Msc Business Management)	<b>LEVEL</b>	Master 2 BM
<b>PROGRAMME</b>	MSc in Data Analytics & Artificial Intelligence	<b>ACADEMIC YEAR</b>	2022-2023
<b>STUDENT HOURS</b>	18	<b>ECTS</b>	3
<b>SEMESTER</b>	Semester 1	<b>CAMPUS</b>	Lille
<b>COORDINATOR/EMAIL</b>	HERNANDEZ-TINOCO Mario / mario.hernandeztinoco@edhec.edu		

### COURSE OBJECTIVES

Python is a programming language that is widely used in business and finance to solve a broad range of problems, as its high-level nature and enormous set of libraries has made it extremely powerful. The course will enable the student to become familiar with the Python programming language and how it can be used to do complex data analysis and visualization, and professionally perform programming tasks applied to business and finance related topics

### LEARNING OUTCOMES

After having taken this course, participants will be able to/are expected to know or understand (knowledge-based outcomes)

- LO1 Understand and apply the Python programming language to intermediate and advanced problems in data analysis.
- LO2 Understand and apply Python programming strategies to data analysis problems using industry-level skills.

More specifically, participants should be able to (skill- and competency-based outcomes)

- LO3 Get familiar and use industry-level Python code for data analysis (e.g., statistics, machine learning), the environments that are used to run the code and the most performing and widely used modules in this area.
- LO4 Translate ideas to solve data analysis challenges into Python code and test their performance and applicability to real-world problems.

### PREREQUISITES

None.

### COURSE CONTENT

1. Introduction to the Python programming language & Importance in data analysis.
2. Python platforms.
3. Python syntax.
4. Manipulating, processing, cleaning, and crunching data.
5. Data sources.
6. Time series and visualization.
7. Statistics and Machine Learning methods & Python libraries.
8. Projects & Case Studies.

### MAIN TEACHING & LEARNING METHODS

Blended Learning

Distance Learning

### ASSESSMENT METHODS

	Evaluation Type	% of Grade	Format - Invigilation	Duration	Main Learning Objective Evaluated
1	Continuous Assessment Group	50	Assignment (Prof)	Not apply	<input type="checkbox"/> LO1 <input type="checkbox"/> LO2 <input type="checkbox"/> LO3 <input type="checkbox"/> LO4 <input checked="" type="checkbox"/> All LO
2	Continous Assessment Individual	50	Assignment (Prof)	Not apply	<input type="checkbox"/> LO1 <input type="checkbox"/> LO2 <input checked="" type="checkbox"/> LO3 <input checked="" type="checkbox"/> LO4 <input type="checkbox"/> All LO

### REQUIRED READING

Course material and references will be provided.

## 23\_M2\_LI\_DAAI\_S1\_CCO\_MASTERPROJ\_1220: RESEARCH METHODOLOGY

DEGREE	Master BM (Msc Business Management)	LEVEL	Master 2 BM
PROGRAMME	MSc in Data Analytics & Artificial Intelligence	ACADEMIC YEAR	2022-2023
STUDENT HOURS	18	ECTS	3
SEMESTER	Semester 1	CAMPUS	Lille
COORDINATOR/EMAIL	Cédric VERBEECK / cedric.verbeeck@edhec.edu		

### COURSE OBJECTIVES

Over the last two decades political, social, and technological developments have disrupted the strategic business landscape in almost every country around the world. There is an ongoing paradigm shift towards a more service-dominant, digital and global economy. As a result, future managers are confronted with an increased need to justify their trade-offs in the managerial decision-making process. Business research can be defined as the systematic inquiry which provides information for managerial decision-making. As a future manager you will need to understand how effective business research can provide high-quality information to improve managerial decision-making. The business research process is a sequential process based on scientific method and allows future managers to understand, evaluate as well as conduct research to improve managerial decision-making.

### LEARNING OUTCOMES

After having taken this course, participants will be able to/are expected to know or understand (knowledge-based outcomes)

- LO1 Understand the role and nature of the business research process.
- LO2 Understand the principles of the scientific methods underlying business research process

More specifically, participants should be able to (skill- and competency-based outcomes)

- LO3 Apply data collection and data analysis techniques to their Master project
- LO4 Apply the principles of scientific reporting to their Master project.

### PREREQUISITES

General English writing skills and advanced knowledge in management.

Python programming

Statistical models

### COURSE CONTENT

Research question, scientific literature review, data management, online data collection, examples of data analysis, scientific reporting.

### MAIN TEACHING & LEARNING METHODS

Class Discussions

Report

Lectures

### ASSESSMENT METHODS

	Evaluation Type	% of Grade	Format - Invigilation	Duration	Main Learning Objective Evaluated
1	Continuous Assessment Individual	50	Assignment (Prof)	Not apply	<input checked="" type="checkbox"/> LO1 <input checked="" type="checkbox"/> LO2 <input type="checkbox"/> LO3 <input checked="" type="checkbox"/> LO4 <input type="checkbox"/> All LO
2	Continuous Assessment Individual	50	Assignment (Prof)	Not apply	<input checked="" type="checkbox"/> LO1 <input checked="" type="checkbox"/> LO2 <input checked="" type="checkbox"/> LO3 <input type="checkbox"/> LO4 <input checked="" type="checkbox"/> All LO

### REQUIRED READING

None.



## 23\_M2\_LI\_DAAI\_S1\_CCO\_DATA\_5891: STATISTICAL MODELS

DEGREE	Master BM (Msc Business Management)	LEVEL	Master 2 BM
PROGRAMME	MSc in Data Analytics & Artificial Intelligence	ACADEMIC YEAR	2022-2023
STUDENT HOURS	24	ECTS	4
SEMESTER	Semester 1	CAMPUS	Lille
COORDINATOR/EMAIL	CROUX Christophe / christophe.croux@edhec.edu		

### COURSE OBJECTIVES

Statistical models are powerful tools for data analysis. The most well-known statistical model is the linear regression model, where a variable of interest is explained and predicted by a collection of other variables. Focus is on understanding the methods, and applying them to data using software

### LEARNING OUTCOMES

After having taken this course, participants will be able to/are expected to know or understand (knowledge-based outcomes)

- LO1 The linear regression model, its use, its limitations, and the extensions.
- LO2 Principles of statistical inference

More specifically, participants should be able to (skill- and competency-based outcomes)

- LO3 Use the linear regression model in practice using the R software.
- LO4 Solve real problems by building and selecting a statistical model.

### PREREQUISITES

Students need to have a good understanding of basic concepts from statistics and probability. They should be familiar with mathematical notation, and they have some experience with software and programming. We use the R-language.

### COURSE CONTENT

- Matrices and statistics.
- Comparing averages
- The linear regression model
- Statistical inference: testing and estimation
- Working with dummy variables: comparing averages
- Modelling non-linearity and interactions
- Limitations of statistical models: validity, selection, causality
- Smoothing the scatterplot: nonparametric regression

### MAIN TEACHING & LEARNING METHODS

Lectures                      Case Studies                      Collaborative Learning

### ASSESSMENT METHODS

	Evaluation Type	% of Grade	Format - Invigilation	Duration	Main Learning Objective Evaluated
1	Continuous Assessment Individual	30	Assignment (Prof)	Not apply	<input type="checkbox"/> LO1 <input type="checkbox"/> LO2 <input checked="" type="checkbox"/> LO3 <input checked="" type="checkbox"/> LO4 <input type="checkbox"/> All LO
2	Final Exam	50	Written Work in class (Prof)	90 minutes	<input checked="" type="checkbox"/> LO1 <input checked="" type="checkbox"/> LO2 <input type="checkbox"/> LO3 <input type="checkbox"/> LO4 <input type="checkbox"/> All LO
3	Continuous Assessment Group	20	Assignment (Prof)	Not apply	<input type="checkbox"/> LO1 <input type="checkbox"/> LO2 <input checked="" type="checkbox"/> LO3 <input checked="" type="checkbox"/> LO4 <input type="checkbox"/> All LO

### REQUIRED READING

Course material will be provided during class

## 23\_M2\_LI\_DAAI\_S1\_CCO\_DATA\_5978: WEB ANALYTICS

DEGREE	Master BM (Msc Business Management)	LEVEL	Master 2 BM
PROGRAMME	MSc in Data Analytics & Artificial Intelligence	ACADEMIC YEAR	2022-2023
STUDENT HOURS	18	ECTS	3
SEMESTER	Semester 1	CAMPUS	Lille
COORDINATOR/EMAIL	Antoine CIVEL		

### COURSE OBJECTIVES

This course will emphasize principles, concepts and systems used in digital marketing, Data Analysis and Growth Hacking. **We will focus on Google Analytics, Google Data Studio, Google Tag Manager, Big Query & SQL.** This lecture is adapted to students who want to work in the digital sector and will give them skills and competences for operational decisions in the digital sector. A focus will be on tools used by start-ups, companies in the digital tech industry. This course objective is to give students tools of data analysis and dashboarding online and meaning on how to collect and use online data.

### LEARNING OUTCOMES

After having taken this course, participants will be able to/are expected to know or understand (knowledge-based outcomes)

- LO1 Understand Digital Analytics and web marketing
- LO2 Measure and analyze online company traffic and performance

More specifically, participants should be able to (skill- and competency-based outcomes)

- LO3 Create dashboards from online data
- LO4 Build scrapping programs and analyze website traffic

### PREREQUISITES

Before the course, students need to:

1. Have a good understanding of digital tools
2. Check the Analytics glossary (on Blackboard)
3. Go on <https://analytics.google.com/analytics/academy/course/6> → Take the Analytics IQ Certification

### COURSE CONTENT

GOOGLE ADS - Subjects: Digital Marketing / Keywords / Ads / Datas Ads - (Certification Mandatory) - Registration Only with Google Partners

GOOGLE ANALYTICS + GOOGLE DATA STUDIO + GOOGLE TAG MANAGER - Subjects: Data Management / HTML Tags / Data Analysis / Dashboard Data / Data Website / Heat Maps / KPI - (Certification Mandatory) - Registration Only with Google Partners

GROWTH HACKING - Subjects: Data Mining / Hack Data Marketing / Growth Data / Mix Panel - Framework AARRR with Partners Deux.io + Pierre Guilbaud Google France

### MAIN TEACHING & LEARNING METHODS

Case Studies

Blended Learning

### ASSESSMENT METHODS

	Evaluation Type	% of Grade	Format - Invigilation	Duration	Main Learning Objective Evaluated
1	Continuous Assessment Individual	50	Assignment (Prof) - Quiz - Google Form - Kahoot	Not apply	<input type="checkbox"/> LO1 <input checked="" type="checkbox"/> LO2 <input checked="" type="checkbox"/> LO3 <input checked="" type="checkbox"/> LO4 <input type="checkbox"/> All LO
2	Continuous Assessment Group	50	Assignment (Prof) - Case Studies	Not apply	<input type="checkbox"/> LO1 <input type="checkbox"/> LO2 <input checked="" type="checkbox"/> LO3 <input checked="" type="checkbox"/> LO4 <input type="checkbox"/> All LO

### REQUIRED READING

No additional software is required for this course.

All readings will be provided via print or email. Participants need to bring their own laptops. Tablets are accepted. Students will find additional resources on [google.com/partners](https://google.com/partners) or <https://analytics.google.com/analytics/academy>

## 23\_M2\_LI\_BM\_S1\_PDC\_TRANSV\_1347: FRENCH LANGUAGE COURSE (ONLY FOR IC)

### BEGINNERS

DEGREE	Master BM	LEVEL	Master 2 BM
PROGRAMME	M2 Business Management Transversal	ACADEMIC YEAR	2022-2023
STUDENT HOURS	15	ECTS	0 - Pass/Fail
SEMESTER	Semester 1	CAMPUS	Lille
COORDINATOR / EMAIL	Lucie BENAGROUBA / lucie.benagrouba@edhec.edu		

### COURSE OBJECTIVES

Acquire a level in French from total beginner (A0) to beginner first step (A1) according to CEFRL

- Improve grammatical and lexical knowledge in order to practice French in everyday life and business situations.
- Be able to communicate in speaking and in writing, adapting the language to the situation.

### LEARNING OUTCOMES

After having taken this course, participants will be able to/are expected to know or understand (knowledge-based outcomes)

- LO1 Basic information (in writing or orally) concerning the close environment of the student
- LO2 Various types of inputs (advertisements, articles, interviews, videos, administrative documents, e-mails, ...)

More specifically, participants should be able to (skill- and competency-based outcomes)

- LO3 Introduce themselves, and their family, talk about their physical state, introduce their country
- LO4 Interact in basic everyday life situations (order in a restaurant, make an appointment, ask or give directions, ...)

### PREREQUISITES

Total beginner in French (A0); each level will fit Students' starting point levels within the group according to their needs and expectations. Students are positioned in the different groups after a placement process at the beginning of Semester 1.

### COURSE CONTENT

- Introducing myself/Everyday life situations: asking and answering basic questions
- Buying: Food, clothes, bank, ...
- Housing: describe my living space
- Use basic tenses: Present, close Future
- Locating myself in time and space / Describing a place.

### MAIN TEACHING & LEARNING METHODS

Lectures                      Group Work                      Collaborative Learning                      Presentations (oral or group)

### ASSESSMENT METHODS

	Evaluation Type	% of Grade	Duration (if invigilated exam) and format	Main Learning Objective Evaluated
1	Continuous Assessment Individual	100%	Written and oral evaluation in class	<input checked="" type="checkbox"/> LO1 <input checked="" type="checkbox"/> LO2 <input checked="" type="checkbox"/> LO3 <input checked="" type="checkbox"/> LO4

### REQUIRED READING

<https://pro2fle.wordpress.com/>

<https://www.lepointdufle.net/>

# 23\_M2\_LI\_BM\_S1\_PDC\_TRANSV\_7153: FRENCH LANGUAGE COURSE (ONLY FOR IC) INTERMEDIATE

<b>DEGREE</b>	Master BM	<b>LEVEL</b>	Master 2 BM
<b>PROGRAMME</b>	M2 Business Management Transversal	<b>ACADEMIC YEAR</b>	2022-2023
<b>STUDENT HOURS</b>	15	<b>ECTS</b>	0 - Pass/Fail
<b>SEMESTER</b>	Semester 1	<b>CAMPUS</b>	Lille
<b>COORDINATOR / EMAIL</b>	Lucie BENAGROUBA / lucie.benagrouba@edhec.edu		

## COURSE OBJECTIVES

Acquire a level in French from elementary (A2/ A2-) to intermediate first step according to CEFRL.

- Improve grammatical and lexical knowledge in order to practice French in everyday life and business situations.
- Be able to communicate in speaking and in writing, adapting the language to the situation.

## LEARNING OUTCOMES

After having taken this course, participants will be able to/are expected to know or understand (knowledge-based outcomes)

- LO1 French typical business and society elements, basic French recruitment process
- LO2 Various types of inputs (advertisements, articles, interviews, videos, administrative documents, e-mails, ...)

More specifically, participants should be able to (skill- and competency-based outcomes)

- LO3 Describe a fact, an event, analyze it and give their opinion
- LO4 Talk about their experiences and projects in writing or in speaking

## PREREQUISITES

A2 or A2- . Each level will fit Students' starting point levels within the group according to their needs and expectations. Students are positioned in the different groups after a placement process at the beginning of Semester 1.

## COURSE CONTENT

- Advertisement and business strategy
- Urban development issues
- Culture and Arts.

## MAIN TEACHING & LEARNING METHODS

Lectures                                      Group Work                                      Collaborative Learning                                      Presentations (oral or group)

## ASSESSMENT METHODS

	Evaluation Type	% of Grade	Duration (if invigilated exam) and format	Main Learning Objective Evaluated
1	Continuous Assessment Individual	100%	Written and oral evaluation in class	<input checked="" type="checkbox"/> LO1 <input checked="" type="checkbox"/> LO2 <input checked="" type="checkbox"/> LO3 <input checked="" type="checkbox"/> LO4

## REQUIRED READING

<https://pro2fle.wordpress.com/>

<https://www.lepointdufle.net/>

## 23\_M2\_LI\_BM\_S1\_PDC\_TRANSV\_7154: FRENCH LANGUAGE COURSE (ONLY FOR IC)

### ADVANCED

DEGREE	Master BM	LEVEL	Master 2 BM
PROGRAMME	M2 Business Management Transversal	ACADEMIC YEAR	2022-2023
STUDENT HOURS	15	ECTS	0 - Pass/Fail
SEMESTER	Semester 1	CAMPUS	Lille
COORDINATOR / EMAIL	Lucie BENAGROUBA / lucie.benagrouba@edhec.edu		

### COURSE OBJECTIVES

Acquire a level in French from intermediate (B1/B1+) to first step advanced (B2/C1) according to the ECFRL.

- Improve grammatical and lexical knowledge in order to practice French in everyday life and business situations.
- Be able to communicate in speaking and in writing, adapting the language to the situation.

### LEARNING OUTCOMES

After having taken this course, participants will be able to/are expected to know or understand (knowledge-based outcomes)

- LO1 French typical business and society elements
- LO2 Various types of inputs (advertisements, articles, interviews, videos, administrative documents, e-mails, ...)

More specifically, participants should be able to (skill- and competency-based outcomes)

- LO3 Attend a job interview in French, describe an event, a social phenomenon, analyze it and give their opinion
- LO4 Describe experiences and projects in writing or in speaking, use several rhetorical tones to convince

### PREREQUISITES

B1 or B1+ level. Each level will fit Students' starting point levels within the group according to their needs and expectations. Students are positioned in the different groups after a placement process at the beginning of Semester 1.

### COURSE CONTENT

- Brands and marketing
- Understand and interact in the working world
- Cultural implicit.

### MAIN TEACHING & LEARNING METHODS

Lectures                      Group Work                      Collaborative Learning                      Presentations (oral or group)

### ASSESSMENT METHODS

	Evaluation Type	% of Grade	Duration (if invigilated exam) and format	Main Learning Objective Evaluated
1	Continuous Assessment Individual	100%	Written and oral evaluation in class	<input checked="" type="checkbox"/> LO1 <input checked="" type="checkbox"/> LO2 <input checked="" type="checkbox"/> LO3 <input checked="" type="checkbox"/> LO4

### REQUIRED READING

<https://pro2fle.wordpress.com/>

<https://www.lepointdufle.net/>

# 23\_M2\_LI\_BM\_S1\_PDC\_TRANSV\_7193: FRENCH LANGUAGE COURSE (ONLY FOR IC)

## ELEMENTARY

DEGREE	Master BM	LEVEL	Master 2 BM
PROGRAMME	M2 Business Management Transversal	ACADEMIC YEAR	2022-2023
STUDENT HOURS	15	ECTS	0 - Pass/Fail
SEMESTER	Semester 1	CAMPUS	Lille
COORDINATOR / EMAIL	Lucie BENAGROUBA / lucie.benagrouba@edhec.edu		

## COURSE OBJECTIVES

Acquire a level in French from elementary A1 to elementary first step (A2 –) according to CEFRL.

- Improve grammatical and lexical knowledge in order to practice French in everyday life and business situations.
- Be able to communicate in speaking and in writing, adapting the language to the situation.

## LEARNING OUTCOMES

After having taken this course, participants will be able to/are expected to know or understand (knowledge-based outcomes)

- LO1 Basic information (in writing or orally) concerning the academic, social and professional environment of the student
- LO2 Various types of inputs (advertisements, articles, interviews, videos, administrative documents, e-mails, ...)

More specifically, participants should be able to (skill- and competency-based outcomes)

- LO3 Describe a fact, talk about their academic experience, introduce a cultural element, talk about their habits and tastes
- LO4 Talk about their experiences and projects in writing or in speaking

## PREREQUISITES

A1 or A1-. Each level will fit Students' starting point levels within the group according to their needs and expectations. Students are positioned in the different groups after a placement process at the beginning of Semester 1.

## COURSE CONTENT

- Understanding and interacting in the work place: vocabulary and syntax.
- Improving my oral and written Communication
- Discovering France.
- Present tense complex forms, past and future tenses, personal and relative pronouns, complex basic sentences, ...

## MAIN TEACHING & LEARNING METHODS

Lectures                      Group Work                      Collaborative Learning                      Presentations (oral or group)

## ASSESSMENT METHODS

	Evaluation Type	% of Grade	Duration (if invigilated exam) and format	Main Learning Objective Evaluated
1	Continuous Assessment Individual	100%	Written and oral evaluation in class	☒LO1    ☒LO2 ☒LO3    ☒LO4

## REQUIRED READING

<https://pro2fle.wordpress.com/>

<https://www.lepointdufle.net/>

## 23\_M2\_LI\_DAAI\_S2\_BIBA\_7422: DATA-DRIVEN INSIGHTS

DEGREE	Master BM (Msc Business Management)	LEVEL	Master 2 BM
PROGRAMME	MSc in Data Analytics & Artificial Intelligence	ACADEMIC YEAR	2022-2023
STUDENT HOURS	24	ECTS	4
SEMESTER	Semester 2	CAMPUS	Lille
COORDINATOR/EMAIL	VERBEECK Cedric / cedric.verbeeck@edhec.edu		

### COURSE OBJECTIVES

In this course students will gain a solid understanding of customer relationship management, including both strategic and analytic approaches. Much attention will be paid to learning a high-level data manipulation and modeling language as well as techniques of model construction. The course will provide students with tools that are critical in today's business environment, as leading firms focus their marketing efforts on understanding the value of their customers and developing and growing profitable customer relationships.

### LEARNING OUTCOMES

After having taken this course, participants will be able to/are expected to know or understand (knowledge-based outcomes)

- LO1 Understand the fundamentals of customer management strategies.
- LO2 Awareness of the most important quantitative CRM models in marketing and their assumptions

More specifically, participants should be able to (skill- and competency-based outcomes)

- LO3 Analyze and develop customer management strategies
- LO4 Assess the worth of customers

### PREREQUISITES

Python Programming  
Statistical models  
Data mining

### COURSE CONTENT

Customer Centricity  
RFM (Recency-Frequency-Monetary Value)  
Customer Lifetime Value  
Customer Engagement Value  
Customer Acquisition Strategies  
Customer Retention Strategies (loyalty programs, ...)  
Dealing with Defected Customers  
Dealing with Unprofitable Customers  
Customer Experience Management

### MAIN TEACHING & LEARNING METHODS

Case Studies                      Lectures                      Blended Learning                      Group Work

### ASSESSMENT METHODS

	Evaluation Type	% of Grade	Format - Invigilation	Duration	Main Learning Objective Evaluated
1	Continous Assessment Individual	50	Assignment (Prof)	Choose an item.	<input type="checkbox"/> LO1 <input type="checkbox"/> LO2 <input type="checkbox"/> LO3 <input type="checkbox"/> LO4 <input checked="" type="checkbox"/> All LO
2	Continuous Assessment Group	50	Assignment (Prof)	Choose an item.	<input type="checkbox"/> LO1 <input type="checkbox"/> LO2 <input type="checkbox"/> LO3 <input type="checkbox"/> LO4 <input checked="" type="checkbox"/> All LO

### REQUIRED READING

A detailed list of readings will be provided on BlackBoard prior to every session. There is no required textbook.

## 23\_M2\_LI\_DAAI\_S2\_BIBA\_7056: NATURAL LANGUAGE PROCESSING FOR BUSINESS

DEGREE	Master BM (Msc Business Management)	LEVEL	Master 2 BM
PROGRAMME	MSc in Data Analytics & Artificial Intelligence	ACADEMIC YEAR	2022-2023
STUDENT HOURS	18	ECTS	3
SEMESTER	Semester 2	CAMPUS	Lille
COORDINATOR/EMAIL	GORDELIY Ivan / ivan.gordeliy@edhec.edu		

### COURSE OBJECTIVES

Contemporary approaches to business emphasize the importance of adopting a customer focus and quantitative methodologies. Marketing begins and ends with the customer. An essential component to success is the ability to gather, interpret and use customer/consumer insights in strategic ways. An emerging technique is Natural Language Processing which can be used to convert textual data into actionable business insights. The objective of this course is to acquire knowledge on how such textual customer intelligence can be gathered. In this course, students will learn how to collect and interpret textual data.

### LEARNING OUTCOMES

After having taken this course, participants will be able to/are expected to know or understand (knowledge-based outcomes)

- LO1 Know how NLP can be applied to business cases
- LO2 Understand the foundations of text analysis, the core concepts, and methods

More specifically, participants should be able to (skill- and competency-based outcomes)

- LO3 Collect textual data from social media
- LO4 Perform basic analysis on text: building corpus matrix, pre-processing textual data, performing frequency analysis, creating word clouds, topic modeling, sentiment analysis

### PREREQUISITES

Basic analytical skills.  
Basic programming skills in Python.

### COURSE CONTENT

Using textual data for consumer insights.  
Text mining. Collecting textual data from social media.  
Text pre-processing. Building a corpus.  
Frequency analysis.  
Topic Modeling.  
Sentiment analysis.

### MAIN TEACHING & LEARNING METHODS

Lectures                      Group Work                      Blended Learning                      Case Studies

### ASSESSMENT METHODS

	Evaluation Type	% of Grade	Format - Invigilation	Duration	Main Learning Objective Evaluated
1	Continuous Assessment Group	50	Assignment (Prof)	Not apply	<input type="checkbox"/> LO1 <input type="checkbox"/> LO2 <input type="checkbox"/> LO3 <input type="checkbox"/> LO4 <input checked="" type="checkbox"/> All LO
2	Continuous Assessment Individual	50	Assignment (Prof)	Not apply	<input type="checkbox"/> LO1 <input type="checkbox"/> LO2 <input type="checkbox"/> LO3 <input type="checkbox"/> LO4 <input checked="" type="checkbox"/> All LO

### REQUIRED READING

None.



## 23\_M2\_LI\_DAAI\_S2\_BIBA\_7423: PEOPLE AND OPERATIONS ANALYTICS

DEGREE	Master BM (MSc Business Management)	LEVEL	Master 2 BM
PROGRAMME	MSc in Data Analytics & Artificial Intelligence	ACADEMIC YEAR	2022-2023
STUDENT HOURS	36	ECTS	6
SEMESTER	Semester 2	CAMPUS	Lille
COORDINATOR/EMAIL	JUNGST Martijn / Martijn.JUNGST@edhec.edu		

### COURSE OBJECTIVES

This course consists of two parts. The first part provides students with an introduction to and the practical application of HR analytics, also known as human capital analytics or people analytics. This part will educate on emerging practices and techniques used to acquire data, analyze, predict, and solve HR-related questions and challenges. In the second part we are going employ techniques such as mathematical modeling, statistical analysis, and mathematical optimization to provide an optimal or near-optimal solution to complex operations management problems. On top of this we will also focus on the human-technology interaction and the practical relevance of the proposed solution

### LEARNING OUTCOMES

After having taken this course, participants will be able to/are expected to know or understand (knowledge-based outcomes)

- LO1 Analyze the outcomes of HR practices and identify their effects on both the employees and the organization.
- LO2 Understand the analytical models within the different areas of operations management

More specifically, participants should be able to (skill- and competency-based outcomes)

- LO3 Use HR knowledge to analyze and visualize employee data to generate insights and inform HR decisions.
- LO4 Applying mathematical methods to waiting and capacity problems in an operations management context

### PREREQUISITES

Advanced understanding of management.

Python programming

Statistical models

Data mining

### COURSE CONTENT

Multi-level analysis, HR dashboard, performance management, queue management, inventory management, process mining

### MAIN TEACHING & LEARNING METHODS

Group Work

Case Studies

Lectures

Class Discussions

### ASSESSMENT METHODS

	Evaluation Type	% of Grade	Format - Invigilation	Duration	Main Learning Objective Evaluated
1	Continuous Assessment Individual	30 %	Assignment (Prof)	Not apply	<input checked="" type="checkbox"/> LO1 <input type="checkbox"/> LO2 <input checked="" type="checkbox"/> LO3 <input type="checkbox"/> LO4 <input type="checkbox"/> All LO
2	Continuous Assessment Individual	20%	Assignment (Prof)	Not apply	<input type="checkbox"/> LO1 <input type="checkbox"/> LO2 <input type="checkbox"/> LO3 <input type="checkbox"/> LO4 <input checked="" type="checkbox"/> All LO
3	Continuous Assessment Group	50%	Assignment (Prof)	Not apply	<input type="checkbox"/> LO1 <input type="checkbox"/> LO2 <input type="checkbox"/> LO3 <input type="checkbox"/> LO4 <input checked="" type="checkbox"/> All LO

### REQUIRED READING

Edwards, Martin, and Kirsten Edwards. 2019. Predictive HR Analytics: Mastering the HR Metric. Publisher: Kogan Page. ISBN: 9780749484446.

Operations Management Reading: Managing Inventory, Janice H. Hammond, Harvard Core Curriculum 2013

Operations Management Reading: Managing Queues, Elliott N. Weiss, Harvard Core Curriculum 2014

Operations Management Reading: Process Analysis, Roy D. Shapiro, Harvard Core Curriculum Reading 2013

Customer-Introduced Variability in Service Operations, Frances X. Frei 2006

## 23\_M2\_LI\_DAAI\_S2\_BIBA\_6147: SOCIAL NETWORK ANALYSIS

DEGREE	Master BM (Msc Business Management)	LEVEL	Master 2 BM
PROGRAMME	MSc in Data Analytics & Artificial Intelligence	ACADEMIC YEAR	2022-2023
STUDENT HOURS	12	ECTS	2
SEMESTER	Semester 2	CAMPUS	Lille
COORDINATOR/EMAIL	CHARKI Mohamed Hedi / mhc@edhec.edu		

### COURSE OBJECTIVES

From individuals to atoms and from proteins to cities, everything is connected. These connections form our social networks that influence behaviors, outcomes of evolutions of virtually everything. Still, such influence is hidden. The Social Network Analytics (SNA) course aims to change the way you make sense of your world by moving you from an atomistic approach to a connected approach. The goal of the SNA course is to equip you with the knowledge, techniques and tools that enable you to analyze and make sense of the power of social networks and their associated impacts.

### LEARNING OUTCOMES

After having taken this course, participants will be able to/are expected to know or understand (knowledge-based outcomes)

- LO1 Understand the hidden power of social networks
- LO2 Understand social networks as a behavior

More specifically, participants should be able to (skill- and competency-based outcomes)

- LO3 Analyze networks at the individual level
- LO4 Visualize social networks

### PREREQUISITES

None

### COURSE CONTENT

Why shall I care about social networks?  
Social Networks – The individual perspective  
Social Networks – The whole perspective  
Social network visualization  
Social network behavior  
Communities

### MAIN TEACHING & LEARNING METHODS

Lectures                                      Presentations (oral or group)                                      Report                                      Class Discussions

### ASSESSMENT METHODS

	Evaluation Type	% of Grade	Format - Invigilation	Duration	Main Learning Objective Evaluated
1	Continuous Assessment Group	50%	Assignment (Prof)	Over several days	<input checked="" type="checkbox"/> LO1 <input checked="" type="checkbox"/> LO2 <input checked="" type="checkbox"/> LO3 <input checked="" type="checkbox"/> LO4 <input type="checkbox"/> All LO
2	Final Exam	50%	Exam outside class (Hub + schedule)	60 minutes	<input checked="" type="checkbox"/> LO1 <input checked="" type="checkbox"/> LO2 <input checked="" type="checkbox"/> LO3 <input type="checkbox"/> LO4 <input type="checkbox"/> All LO

### REQUIRED READING

Rizova, Polly S. "Are you networked for successful innovation?" MIT Sloan Management Review 47.3 (2006): 49-55.  
Whelan, Eoin, et al. "Creating employee networks that deliver open innovation." MIT Sloan Management Review 53.1 (2011): 37.

## 23\_M2\_LI\_DAAI\_S2\_DTS\_6407: BUSINESS DATA MANAGEMENT

DEGREE	Master BM (Msc Business Management)	LEVEL	Master 2 BM
PROGRAMME	MSc in Data Analytics & Artificial Intelligence	ACADEMIC YEAR	2022-2023
STUDENT HOURS	18	ECTS	3
SEMESTER	Semester 2	CAMPUS	Lille
COORDINATOR/EMAIL	LIRSAC Ulysse		

### COURSE OBJECTIVES

The objective of the course is to showcase the importance of understanding the data and the business context in order to deliver on Data Science / Data Engineering projects. As data is the fuel for companies to better understand their consumers and to better analyses their business activities, understanding data management in a business setting is critical.

### LEARNING OUTCOMES

After having taken this course, participants will be able to/are expected to know or understand (knowledge-based outcomes)

- LO1 Data Architecture & data modeling for business – Goal and challenges
- LO2 Data project end to end methodology - warehousing, meta data management, usage & activation

More specifically, participants should be able to (skill- and competency-based outcomes)

- LO3 set up a data project (Identifying relevant data, QA, data preparation for Data science) on major Cloud solutions
- LO4 Use SQL and Python to Create value out of Data

### PREREQUISITES

Students will need to know:

Python: Working with multiple Data Set | Use ML to run algorithm | evaluate algorithm

SQL: basics | Granularity Identification | Joins | Aggregates | Cleaning

Cloud Computing General Knowledge

### COURSE CONTENT

Cloud Data project fundamentals: Terminology (Data Lake, Data Warehouse, ETL / ELT, Cloud); Position of a Data Scientist in the value chain ; Bricks Of Data Management ; Data Stakeholder Organization ; Cloud Basics

Successful data project initialization: Data Loading ; Data Integration ; Understanding / Analyzing Data unsupervised; Data Exploration ; Understanding a Data Model

Architecting the Data to ease data analysis: Data Preparation ; Data Cleaning and Data Transformation ; Creating A Data Model

Understanding and creating value from Data: Data Visualization and Data Analysis

Making Data meaningful: Predictive analysis/advanced data analytics

### MAIN TEACHING & LEARNING METHODS

Lectures                      Group Work                      Distance Learning                      Report

### ASSESSMENT METHODS

	Evaluation Type	% of Grade	Format - Invigilation	Duration	Main Learning Objective Evaluated
1	Continuous Assessment Group	50	Assignment (Prof)	Over several days	<input type="checkbox"/> LO1 <input type="checkbox"/> LO2 <input type="checkbox"/> LO3 <input type="checkbox"/> LO4 <input checked="" type="checkbox"/> All LO
2	Final Exam	50	Exam outside class (Hub + schedule)	90 minutes	<input type="checkbox"/> LO1 <input type="checkbox"/> LO2 <input type="checkbox"/> LO3 <input type="checkbox"/> LO4 <input checked="" type="checkbox"/> All LO

### REQUIRED READING

Course material and references will be provided

## 23\_M2\_LI\_DAAI\_S2\_DTS\_7059: DATA SCIENCE PROJECTS FOR BUSINESS

<b>DEGREE</b>	Master BM (Msc Business Management)	<b>LEVEL</b>	Master 2 BM
<b>PROGRAMME</b>	MSc in Data Analytics & Artificial Intelligence	<b>ACADEMIC YEAR</b>	2022-2023
<b>STUDENT HOURS</b>	18	<b>ECTS</b>	3
<b>SEMESTER</b>	Semester 2	<b>CAMPUS</b>	Lille
<b>COORDINATOR/EMAIL</b>	LEYMARIE J�r�my / jeremy.leymarie@edhec.edu		

### COURSE OBJECTIVES

- Getting an overview of the existing statistical modelling methods used in business and economics.
- Applying advanced modeling methods on real-life examples in bank, insurance, industry, marketing, advertisement, risk management, etc.
- Selecting the right modeling method according to the nature of the data and the business or economics objective.
- Evaluating and comparing forecasting models.
- Interpreting the outcomes of a business project using appropriate statistical measures and formal testing procedures.

### LEARNING OUTCOMES

After having taken this course, participants will be able to/are expected to know or understand (knowledge-based outcomes)

- LO1 Discrete choice models.
- LO2 Advanced econometrics.

More specifically, participants should be able to (skill- and competency-based outcomes)

- LO3 Advanced Data analytics.
- LO4 Advanced Data modelling.

### PREREQUISITES

Introduction to econometrics (ordinary least square regression, hypothesis testing, ...).  
 Mathematical statistics (maximum likelihood, confidence interval, probability distribution, ...).  
 Linear algebra, calculus, derivatives.  
 Python programming.

### COURSE CONTENT

Chapter I : Binary regression.  
 Chapter II : Variable selection.  
 Chapter III : Model performance and evaluation.  
 Chapter IV: Multinomial regression.

### MAIN TEACHING & LEARNING METHODS

Lectures Case Studies

### ASSESSMENT METHODS

	Evaluation Type	% of Grade	Format - Invigilation	Duration	Main Learning Objective Evaluated
1	Continuous Assessment Group	50	Assignment (Prof)	Not apply	<input type="checkbox"/> LO1 <input type="checkbox"/> LO2 <input type="checkbox"/> LO3 <input type="checkbox"/> LO4 <input checked="" type="checkbox"/> All LO
2	Final Exam	50	Exam outside class (Hub + schedule)	90 minutes	<input type="checkbox"/> LO1 <input type="checkbox"/> LO2 <input type="checkbox"/> LO3 <input type="checkbox"/> LO4 <input checked="" type="checkbox"/> All LO

### REQUIRED READING

Course material and references will be provided.

## 23\_M2\_LI\_DAAI\_S2\_DTS\_5983: DEEP LEARNING

DEGREE	Master BM (Msc Business Management)	LEVEL	Master 2 BM
PROGRAMME	MSc in Data Analytics & Artificial Intelligence	ACADEMIC YEAR	2022-2023
STUDENT HOURS	18	ECTS	3
SEMESTER	Semester 2	CAMPUS	Lille
COORDINATOR/EMAIL	TAVENARD Romain		

### COURSE OBJECTIVES

This course introduces deep learning, with both theoretical and practical insights into the methods. Several standard deep learning model architectures are introduced (fully connected, convolutional and recurrent models) as well as more advanced ones such as Generative Adversarial Networks. For these models, estimation procedures and model selection strategies are covered. Applications of the proposed models to real and simulated data are presented.

### LEARNING OUTCOMES

After having taken this course, participants will be able to/are expected to know or understand (knowledge-based outcomes)

- LO1 When deep models can be used for learning and when they should not
- LO2 What basic building blocks are used in deep models (fully connected, convolutional, recurrent layers) and how the parameters of a deep model are estimated.

More specifically, participants should be able to (skill- and competency-based outcomes)

- LO3 Choose an adequate deep learning model for a given task
  - LO4 Implement the model in Python (using keras) and evaluate the performance of the model
- After having taken this course, participants will be able to/are expected to know or understand (knowledge-based outcomes)

### PREREQUISITES

Basics of machine learning and basic coding skills in Python.

### COURSE CONTENT

Basics of Neural nets, Parameter estimation, The need for deep models.  
Logistic Regression models, Layers, Activation functions, Losses.  
Optimizers, model selection  
2d – Convolutional models  
End-to-end learning, Fine-tuning, Recurrent models, 1d convolutional models  
Basics of GANs, Estimation, Exploration  
Non-sequential models

### MAIN TEACHING & LEARNING METHODS

Lectures                                      Class Discussions                                      Case Studies

### ASSESSMENT METHODS

	Evaluation Type	% of Grade	Format - Invigilation	Duration	Main Learning Objective Evaluated
1	Continuous Assessment Group	50	Assignment (Prof)	Not apply	<input type="checkbox"/> LO1 <input type="checkbox"/> LO2 <input checked="" type="checkbox"/> LO3 <input checked="" type="checkbox"/> LO4 <input type="checkbox"/> All LO
2	Final Exam	50	Exam outside class (Hub + schedule)	90 minutes	<input type="checkbox"/> LO1 <input type="checkbox"/> LO2 <input type="checkbox"/> LO3 <input type="checkbox"/> LO4 <input checked="" type="checkbox"/> All LO

### REQUIRED READING

Recommended: Deep Learning, Ian Goodfellow, Yoshua Bengio and Aaron Courville. MIT Press. 2016.  
<https://www.deeplearningbook.org>

## 23\_M2\_LI\_DAAI\_S2\_DTS\_7060: NATURAL LANGUAGE PROCESSING

DEGREE	Master BM (Msc Business Management)	LEVEL	Master 2 BM
PROGRAMME	MSc in Data Analytics & Artificial Intelligence	ACADEMIC YEAR	2022-2023
STUDENT HOURS	18	ECTS	3
SEMESTER	Semester 2	CAMPUS	Lille
COORDINATOR/EMAIL	GORDELIY Ivan / ivan.gordeliy@edhec.edu		

### COURSE OBJECTIVES

Contemporary approaches to business emphasize the importance of adopting a customer focus and quantitative methodologies. Marketing begins and ends with the customer. An essential component to success is the ability to gather, interpret and use customer/consumer insights in strategic ways. An emerging technique is Natural Language Processing which can be used to convert textual data into actionable business insights. The objective of this course is to acquire knowledge on how such textual customer intelligence can be gathered and analyzed. In this course, students will learn how to collect, analyze and interpret textual data.

### LEARNING OUTCOMES

After having taken this course, participants will be able to/are expected to know or understand (knowledge-based outcomes)

- LO1 Know how NLP can be applied to business cases
- LO2 Understand the foundations of NLP, the core concepts and methods

More specifically, participants should be able to (skill- and competency-based outcomes)

- LO3 Collect textual data from social media
- LO4 Implement the following NLP methods: building corpus matrix, pre-processing textual data, frequency analysis, topic modeling, sentiment analysis, word embeddings

### PREREQUISITES

Advanced analytical skills.  
Good programming skills in Python.

### COURSE CONTENT

Using textual data for consumer insights.  
Text mining. Collecting textual data from social media.  
Text pre-processing. Building a corpus. Frequency analysis.  
Topic Modeling.  
Sentiment analysis.  
Word embeddings.

### MAIN TEACHING & LEARNING METHODS

Lectures                      Group Work                      Blended Learning                      Case Studies

### ASSESSMENT METHODS

	Evaluation Type	% of Grade	Format - Invigilation	Duration	Main Learning Objective Evaluated
1	Continuous Assessment Group	50	Assignment (Prof)	Not apply	<input type="checkbox"/> LO1 <input type="checkbox"/> LO2 <input type="checkbox"/> LO3 <input type="checkbox"/> LO4 <input checked="" type="checkbox"/> All LO
2	Continous Assessment Individual	50	Assignment (Prof)	Not apply	<input type="checkbox"/> LO1 <input type="checkbox"/> LO2 <input type="checkbox"/> LO3 <input type="checkbox"/> LO4 <input checked="" type="checkbox"/> All LO

### REQUIRED READING

None.

## 23\_M2\_LI\_DAAI\_S2\_DTS\_7061: TIME SERIES

DEGREE	Master BM (Msc Business Management)
PROGRAMME	MSc in Data Analytics & Artificial Intelligence
STUDENT HOURS	18
SEMESTER	Semester 2
COORDINATOR/EMAIL	DUFAYS Arnaud / arnaud.dufays@edhec.edu

LEVEL	Master 2 BM
ACADEMIC YEAR	2022-2023
ECTS	3
CAMPUS	Lille

### COURSE OBJECTIVES

In business practice it is important to forecast future values of economics series like sales, profit, inflation, and many other performance indicators. Time series modelling allows to make such forecasts. The course focuses on methods and insights. We shall build on the regression framework to introduce stationary time-series processes then extend the analysis to volatility models. With these statistical tools at your disposal, you will be able to predict macroeconomic and financial series.

### LEARNING OUTCOMES

After having taken this course, participants will be able to/are expected to know or understand (knowledge-based outcomes)

- LO1 Students understand the principles of time series prediction
- LO2 Students are familiar with some of the popular time series models.

More specifically, participants should be able to (skill- and competency-based outcomes)

- LO3 Make forecasts using the Python software and compare different forecast methods
- LO4 Students can report the results of their forecast study

### PREREQUISITES

Students need to have a good understanding of the basic statistical theory and be familiar with linear algebra. They should also have some experience with statistical software and programming. In particular, we assume that the students learned about regression analysis and data mining in previous courses.

### COURSE CONTENT

- 1 Visualization of time series and linear regression in time series context.
- 2 Forecasting with ARIMA models.
- 3 Automatic forecasting and evaluating forecast quality.
- 4 SARIMA models.
- 5 Volatility models.

### MAIN TEACHING & LEARNING METHODS

Lectures Case Studies

### ASSESSMENT METHODS

	Evaluation Type	% of Grade	Format - Invigilation	Duration	Main Learning Objective Evaluated
1	Continuous Assessment Group	35	Assignment (Prof)	Not apply	<input type="checkbox"/> LO1 <input type="checkbox"/> LO2 <input checked="" type="checkbox"/> LO3 <input checked="" type="checkbox"/> LO4 <input type="checkbox"/> All LO
2	Final Exam	65	Exam outside class (Hub + schedule)	90 minutes	<input checked="" type="checkbox"/> LO1 <input checked="" type="checkbox"/> LO2 <input type="checkbox"/> LO3 <input type="checkbox"/> LO4 <input type="checkbox"/> All LO

### REQUIRED READING

Course material and references will be provided

# 23\_M2\_LI\_BM\_S2\_PDC\_TRANSV\_1347: FRENCH LANGUAGE COURSE (ONLY FOR IC)

## BEGINNERS

DEGREE	Master BM	LEVEL	Master 2 BM
PROGRAMME	M2 Business Management Transversal	ACADEMIC YEAR	2022-2023
STUDENT HOURS	15	ECTS	0 - Pass/Fail
SEMESTER	Semester 2	CAMPUS	Lille
COORDINATOR / EMAIL	Lucie Benagrouba / lucie.benagrouba@edhec.edu		

## COURSE OBJECTIVES

Acquire a level in French from total beginner (A0) or false beginner (A1-) to elementary level (A1) according to CEFRL

- Improve grammatical and lexical knowledge in order to practice French in everyday life and business situations.
- Be able to communicate in speaking and in writing, adapting the language to the situation.

## LEARNING OUTCOMES

After having taken this course, participants will be able to/are expected to know or understand (knowledge-based outcomes)

- LO1 Basic information (in writing or orally) concerning the close environment of the student
- LO2 Various types of inputs (advertisements, articles, interviews, videos, administrative documents, e-mails, ...)

More specifically, participants should be able to (skill- and competency-based outcomes)

- LO3 Introduce themselves, and their family, talk about their physical state, introduce their country
- LO4 Interact in basic everyday life situations (order in a restaurant, make an appointment, ask or give directions, ...)

## PREREQUISITES

A1- level (first semester). Each level will fit Students starting point level within the group according to their needs and expectations. Students are positioned in the different groups after a placement process at the beginning of Semester 1.

## COURSE CONTENT

- Explain or understand a lived experience
- Ask questions
- Compare
- Describe a job
- Talk about personal projects
- Improve my communication.

## MAIN TEACHING & LEARNING METHODS

Lectures                                      Group Work                                      Collaborative Learning                                      Presentations (oral or group)

## ASSESSMENT METHODS

	Evaluation Type	% of Grade	Duration (if invigilated exam) and format	Main Learning Objective Evaluated
1	Continuous Assessment Individual	100%	Written and oral evaluation in class	<input checked="" type="checkbox"/> LO1 <input checked="" type="checkbox"/> LO2 <input checked="" type="checkbox"/> LO3 <input checked="" type="checkbox"/> LO4

## REQUIRED READING

<https://pro2fle.wordpress.com/>

<https://www.lepointdufle.net/>



# 23\_M2\_LI\_BM\_S2\_PDC\_TRANSV\_7153: FRENCH LANGUAGE COURSE (ONLY FOR IC) INTERMEDIATE

DEGREE	Master BM	LEVEL	Master 2 BM
PROGRAMME	M2 Business Management Transversal	ACADEMIC YEAR	2022-2023
STUDENT HOURS	15	ECTS	0 - Pass/Fail
SEMESTER	Semester 2	CAMPUS	Lille
COORDINATOR / EMAIL	Lucie Benagrouba / lucie.benagrouba@edhec.edu		

## COURSE OBJECTIVES

Acquire a level in French from elementary (A2/A2+) to intermediate (B1) according to the CEFRL

- Improve grammatical and lexical knowledge in order to practice French in everyday life and business situations.
- Be able to communicate in speaking and in writing, adapting the language to the situation.

## LEARNING OUTCOMES

After having taken this course, participants will be able to/are expected to know or understand (knowledge-based outcomes)

- LO1 French typical business and society elements
- LO2 Various types of inputs (advertisements, articles, interviews, videos, administrative documents, e-mails, ...)

More specifically, participants should be able to (skill- and competency-based outcomes)

- LO3 Describe a fact, an event, an innovation predict some evolutions
- LO4 To talk about their experiences and projects by writing or speaking

## PREREQUISITES

A2+ level. Each level will fit Students starting point level within the group according to their needs and expectations. Students are positioned in the different groups after a placement process at the beginning of Semester 1.

## COURSE CONTENT

- Environment issues
- Tech Innovations
- Cultures and Arts.
- Complex syntax, past and future tenses, express aim, cause, opinion.

## MAIN TEACHING & LEARNING METHODS

Lectures                      Group Work                      Collaborative Learning                      Presentations (oral or group)

## ASSESSMENT METHODS

	Evaluation Type	% of Grade	Duration (if invigilated exam) and format	Main Learning Objective Evaluated
1	Continuous Assessment Individual	100%	Written and oral evaluation in class	<input checked="" type="checkbox"/> LO1 <input checked="" type="checkbox"/> LO2 <input checked="" type="checkbox"/> LO3 <input checked="" type="checkbox"/> LO4

## REQUIRED READING

<https://pro2fle.wordpress.com/>

<https://www.lepointdufle.net/>

## 23\_M2\_LI\_BM\_S2\_PDC\_TRANSV\_7154: FRENCH LANGUAGE COURSE (ONLY FOR IC)

### ADVANCED

DEGREE	Master BM	LEVEL	Master 2 BM
PROGRAMME	M2 Business Management Transversal	ACADEMIC YEAR	2022-2023
STUDENT HOURS	15	ECTS	0 - Pass/Fail
SEMESTER	Semester 2	CAMPUS	Lille
COORDINATOR / EMAIL	Lucie Benagrouba / lucie.benagrouba@edhec.edu		

### COURSE OBJECTIVES

Acquire a level in French from intermediate (B1/ B1+) to advanced (B2/C1) according to CEFRL.

- Improve grammatical and lexical knowledge in order to practice French in everyday life and business situations.
- Be able to communicate in speaking and in writing, adapting the language to the situation.

### LEARNING OUTCOMES

After having taken this course, participants will be able to/are expected to know or understand (knowledge-based outcomes)

- LO1 French typical business and society elements
- LO2 Various types of inputs (advertisements, articles, interviews, videos, administrative documents, e-mails, ...)

More specifically, participants should be able to (skill- and competency-based outcomes)

- LO3 Describe a fact, an event, analyze it and give their opinion in a structured and organized way.
- LO4 Talk about their experiences and projects by writing or speaking

### PREREQUISITES

B1= Level. Each level will fit Students starting point level within the group according to their needs and expectations. Students are positioned in the different groups after a placement process at the beginning of Semester 1.

### COURSE CONTENT

- Social inequalities
- International news
- Professional communication.
- French rhetorical tools

### MAIN TEACHING & LEARNING METHODS

Lectures                      Group Work                      Collaborative Learning                      Presentations (oral or group)

### ASSESSMENT METHODS

	Evaluation Type	% of Grade	Duration (if invigilated exam) and format	Main Learning Objective Evaluated
1	Continuous Assessment Individual	100%	Written and oral evaluation in class	<input checked="" type="checkbox"/> LO1 <input checked="" type="checkbox"/> LO2 <input checked="" type="checkbox"/> LO3 <input checked="" type="checkbox"/> LO4

### REQUIRED READING

<https://pro2fle.wordpress.com/>

<https://www.lepointdufle.net/>

## 23\_M2\_LI\_BM\_S2\_PDC\_TRANSV\_7193: FRENCH LANGUAGE COURSE (ONLY FOR IC)

### ELEMENTARY

DEGREE	Master BM	LEVEL	Master 2 BM
PROGRAMME	M2 Business Management Transversal	ACADEMIC YEAR	2022-2023
STUDENT HOURS	15	ECTS	0 - Pass/Fail
SEMESTER	Semester 2	CAMPUS	Lille
COORDINATOR / EMAIL	Lucie Benagrouba / lucie.benagrouba@edhec.edu		

### COURSE OBJECTIVES

Acquire a level in French from elementary first step to intermediate (A2+) according to CEFRL.

- Improve grammatical and lexical knowledge in order to practice French in everyday life and business situations.
- Be able to communicate in speaking and in writing, adapting the language to the situation.

### LEARNING OUTCOMES

After having taken this course, participants will be able to/are expected to know or understand (knowledge-based outcomes)

- LO1 French typical business and society elements
- LO2 Various types of inputs (advertisements, articles, interviews, videos, administrative documents, e-mails, ...)

More specifically, participants should be able to (skill- and competency-based outcomes)

- LO3 Describe a fact, an event, talk about their academic experience, introduce a cultural element, talk about their habits and tastes
- LO4 Talk about their projects, write notes and simple short messages, make comments about a fact, compare, give suggestions, ...

### PREREQUISITES

A1+ or A2. Each level will fit Students starting point level within the group according to their needs and expectations. Students are positioned in the different groups after a placement process at the beginning of Semester 1.

### COURSE CONTENT

- Health and Environment Issues
- Appearance, dress codes and fashion
- Keys to understand France and French people.
- Lexical abilities, syntax complex forms, questions, opinions, and emotions.

### MAIN TEACHING & LEARNING METHODS

Lectures                      Group Work                      Collaborative Learning                      Presentations (oral or group)

### ASSESSMENT METHODS

	Evaluation Type	% of Grade	Duration (if invigilated exam) and format	Main Learning Objective Evaluated
1	Continuous Assessment Individual	100%	Written and oral evaluation in class	<input checked="" type="checkbox"/> LO1 <input checked="" type="checkbox"/> LO2 <input checked="" type="checkbox"/> LO3 <input checked="" type="checkbox"/> LO4

### REQUIRED READING

<https://pro2fle.wordpress.com/>

<https://www.lepointdufle.net/>