Université Catholique de Lille 1875

Faculty of Management, Economics and Science

# Data Analytics for Business

Detailed course syllabus, 2026–2027

| Level | Year in the level | Term | Teaching language |
|---|---|---|---|
| Master International Management | 2nd | Semester 3 | English |

| | |
|---|---|
| *Professor* | Sitraka FORLER, industry practitioner (Enterprise System Architect) |
| *Professor's email* | sitraka.forler@lacatholille.fr |
| *Number of ECTS credits* | 3 |
| *Programme coordinator* | Véronique Flambard-Vigeant |
| *Format* | Six sessions, 9 December 2026 to 8 January 2027: five on campus (Campus Vauban, Lille), one online |

Course page
sitraka.lu/teaching/data-analytics
*Slides (password given in class), quizzes, dates.*

*This syllabus details the course sheet (fiche de cours) of the faculty and follows its structure. It adds the session-by-session plan, the marking criteria and the policy on generative AI.*

## 1. Pre-requisites

Good comprehension of English. Good knowledge of general business and management concepts. No prior background in statistics, programming or databases is required: all technical content is built up from the beginning and every tool used in class runs in a web browser.

## 2. Course objectives

Every function an international manager will lead now runs on data: marketing, operations, finance, HR and strategy. In most organisations the bottleneck is no longer the technology. It is the ability of managers to ask a precise question, to judge whether the numbers in front of them can be trusted, and to turn evidence into a decision that others will follow. The aims of the course include:

- To develop the data literacy that an international manager needs in order to commission, challenge and act upon analytical work, rather than to produce it as a specialist.
- To take students through the full analytics value chain, from framing a business question to defending a recommendation, using a single real-world international dataset as a running case.
- To give students practical command of the core tools of business analytics: spreadsheets, dashboards, SQL queries and no-code predictive models.
- To develop the ability to communicate quantitative findings persuasively to non-technical decision-makers.

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- To examine the governance, ethical and regulatory issues raised by data and artificial intelligence in a European context, in particular the GDPR and the EU AI Act.
- To encourage a critical and reflexive approach to data and to the outputs of generative AI tools, including their limitations and failure modes.

**Why this course, now**

- **Data literacy has become a baseline expectation.** In DataCamp's 2026 survey of more than 500 enterprise leaders in the United States and the United Kingdom, 88% said basic data literacy is important for day-to-day work, yet 60% said they face a data skills gap.
- **Business schools increasingly treat AI literacy as a core skill.** A framework on AI in business education published in January 2026 by Inspire Higher Ed with AACSB, GMAC and the Graduate Business Curriculum Roundtable observes that AI literacy is increasingly seen as a core competency rather than a specialisation.
- **In Europe it is also a matter of law.** Since February 2025 the EU AI Act has required organisations that provide or use AI systems to take measures on their staff's AI literacy; an amendment in force since July 2026 frames this as supporting AI literacy rather than guaranteeing a given level. Most of the Act has applied since August 2026, and the obligations for high-risk uses such as AI-assisted recruitment will start to apply on 2 December 2027, when many of you will be in your first management roles.

## 3. Learning outcomes

At the end of the course, students will be able to:

**LO1** *Frame.* Translate a business problem into an analytical question, choose the type of analytics that fits it (descriptive, diagnostic, predictive or prescriptive) and define the indicators that will show progress.

**LO2** *Prepare and retrieve.* Clean real-world tabular data in a spreadsheet, and retrieve what you need from a multi-table dataset with core SQL (`SELECT`, `WHERE`, `GROUP BY`, `JOIN`).

**LO3** *Design and communicate.* Build honest, decision-oriented charts and dashboards, and structure a finding into a short, persuasive narrative.

**LO4** *Interpret models.* Read the output of common predictive techniques (regression, classification, clustering), evaluate it with metrics that reflect business costs, and spot traps such as overfitting, data leakage, biased samples and the confusion of correlation with causation.

**LO5** *Use AI responsibly.* Use a general-purpose AI assistant to speed up analytical work, prompting it effectively, checking its outputs and documenting how it was used.

**LO6** *Assess governance.* Identify the GDPR and EU AI Act questions raised by an analytics or AI project, and explain what a manager remains accountable for when a decision is supported by AI.

Each outcome is taught, then practised, then assessed (Table 1).

Syllabus

Table 1. Learning outcomes across the course.

| Outcome | Taught in | Practised in | Assessed in |
|---|---|---|---|
| LO1 Frame | Session 1 | KPI-tree exercise in class | Milestone 1; group project; written exam, part A |
| LO2 Prepare and retrieve | Sessions 1, 3 | Data cleaning and SQL exercises in class | Milestone 1; group project; written exam, part A |
| LO3 Design and communicate | Session 2 | Chart clinic; peer critique | Milestone 2; group project; pitch; written exam, part B |
| LO4 Interpret models | Session 4 | Model comparison in class | Milestone 3; written exam, part C |
| LO5 Use AI responsibly | Sessions 3, 5 | Auditing AI-written SQL; AI workshop | Group project (AI-use appendix) |
| LO6 Assess governance | Session 5 | Risk classification cases | Written exam, part A; group project (governance criterion) |

## 4. Course content

- The analytics maturity ladder: descriptive, diagnostic, predictive and prescriptive analytics.
- Data literacy and data-driven decision-making: from strategic goals to KPI trees.
- Data types, data quality and the business cost of poor data.
- Data visualisation: perceptual principles, chart selection, dashboard design for executives.
- Data storytelling: structuring an analysis into a recommendation for a non-technical audience.
- The relational model and SQL essentials for managers.
- Predictive analytics: regression, classification and clustering, training and test data, model evaluation using business-relevant metrics, correlation and causation.
- Generative AI as an analytical assistant: prompting patterns, verification workflows, hallucination and other limitations.
- Data and AI governance in Europe: GDPR essentials for analytics, the risk-based architecture of the EU AI Act and its implementation timeline, obligations of deployers of AI systems.

## 5. Learning and teaching methods

The teaching methods used in this course include lectures, guided demonstrations, hands-on workshops and a group project. Students are required to participate constructively and actively in class and in group work.

The whole course is built around a single running case: the order history of Olist, a Brazilian e-commerce marketplace published as open data, with about 100,000 orders placed between 2016 and 2018 across nine related tables (customers, sellers, products, payments, deliveries, reviews). In the first session each group receives a management brief built on this dataset, for example deciding whether to expand in a region or how to reduce late deliveries. Each session adds one stage of the analytics value chain to the same brief, which mirrors the way analytical work unfolds in a company, and the course ends with each group defending its

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recommendation in a live pitch. The data are a few years old, and that is deliberate: they are real, rich, anonymised and published under an open, non-commercial licence (CC BY-NC-SA 4.0). Asking what may have changed since 2018 is part of the exercise.

Four principles shape the sessions.

- **One case, all the way through.** One analysis grows from session to session, instead of a new toy example every week.
- **See it, then do it.** Each new technique is first shown as a complete worked example, then practised with support, then applied by the group to its own brief.
- **Prepare, practise, apply.** A short preparation before each session (one to two hours of reading or a warm-up exercise) frees class time for practice rather than lecturing.
- **Feedback early, grades late.** The three milestones are small and come back with feedback, so that problems surface before the final submission rather than in it.

All practical work is carried out on free, browser-based tools that require no installation and no licence (Section 10). Students bring their own laptop to every session, including the online one. Groups of four or five are formed in Session 1, mixing backgrounds and nationalities on purpose. Generative AI is treated as a learning outcome rather than as a threat, and its use is governed by an explicit policy (Section 9).

Table 2. Student workload.

| Type | Hours |
|---|---|
| Lectures and guided demonstrations | 8 |
| Applied workshops and group project | 10 |
| Overall teaching | 18 |
| Preparation before the sessions (readings and warm-ups) | 7 |
| Milestone 1 | 4 |
| Winter-break project work, including Milestone 2 | 12 |
| Final brief, slides and AI-use appendix | 8 |
| Pitch rehearsal | 2 |
| Revision for the written exam | 3 |
| Personal work | 36 |
| Overall student workload | 54 |

### Tips for doing well

- Start from the decision, not from the data. A beautiful dashboard that answers no question earns little.
- Write down every cleaning choice as you make it. You will need it for the brief, and for the questions after your pitch.
- Check AI outputs against the data, every time. Errors that look plausible are the hardest to spot.
- Rehearse the pitch out loud, with a timer, at least twice.

Sample

## 6. Indicative schedule

The January block is intensive: four sessions in two days. Most of the project work happens over the winter break, and the January sessions add to an analysis that already exists. Plan your exam revision and the Session 5 reading before 7 January, so that the evening of 7 January is free for rehearsing your pitch. The written brief is due three days after the pitch, so that you can take the questions you received into account.

Table 3. Sessions.

| | Date | Time | Format | Theme |
|---|---|---|---|---|
| 1 | Wed 9 Dec 2026 | 13:00–17:00 | On campus | From data to decisions |
| 2 | Thu 17 Dec 2026 | 13:00–16:00 | Online | Data visualisation and storytelling |
| 3 | Thu 7 Jan 2027 | 10:00–12:00 | On campus | SQL essentials for managers |
| 4 | Thu 7 Jan 2027 | 13:00–16:00 | On campus | Predictive analytics for decision-makers |
| 5 | Fri 8 Jan 2027 | 09:00–12:00 | On campus | Generative AI, governance and the EU AI Act |
| 6 | Fri 8 Jan 2027 | 13:00–16:00 | On campus | Capstone: pitch your insights |

Table 4. Deadlines.

| What | Due | Where |
|---|---|---|
| Milestone 1: cleaned dataset and KPI tree | Tue 15 Dec 2026, 23:59 | Learning platform |
| Milestone 2: draft dashboard and three-sentence narrative | Mon 4 Jan 2027, 23:59 | Learning platform |
| Milestone 3: model evaluation memo, one per group | Thu 7 Jan 2027, end of Session 4 | Written in class |
| Pitch slides and dashboard link | Fri 8 Jan 2027, 12:45 | Learning platform |
| Final brief, AI-use appendix and peer-contribution form | Mon 11 Jan 2027, 23:59 | Learning platform |
| End-of-session quizzes (Table 10) | In class; late windows | Course page |

## 7. Session by session

### Session 1. From data to decisions

*Wednesday 9 December 2026, 13:00–17:00, on campus, 4 hours*

By the end of this session you can:

- tell descriptive, diagnostic, predictive and prescriptive analytics apart, and match each to a business question (LO1);
- break a strategic goal down into a tree of measurable indicators (LO1);
- find and fix the most common data-quality problems in a spreadsheet: duplicates, missing values, outliers and inconsistent formats (LO2).

*Before the session.* About 1.5 hours. Read Provost and Fawcett, chapters 1 and 2. Bring a laptop; you will receive the case files in class.

*In class.* The course contract: how you are assessed, the AI policy, how groups work. The analytics ladder, and why so many data initiatives fail. KPI trees, diagrams that break a goal

down into the indicators that drive it: a worked example, then your turn. Hands-on cleaning of the case data and first pivot tables (revenue by region and category, delivery delays, review scores). Group formation and distribution of the management briefs. The session closes with a one-minute exit ticket and the first end-of-session quiz.

*After the session.* Milestone 1, due Tuesday 15 December at 23:59: your cleaned working dataset and a one-page KPI tree for your brief.

*Key concepts.* Analytics maturity, KPI, leading and lagging indicators, data quality, granularity, pivot table.

### Session 2. Data visualisation and storytelling

*Thursday 17 December 2026, 13:00–16:00, online, 3 hours*

By the end of this session you can:

- choose a chart that fits the question: comparison, trend, distribution, relationship or composition (LO3);
- spot a misleading chart and correct it (LO3);
- turn a finding into three sentences: what happened, why it matters, what to do next (LO3).

*Before the session.* About 2 hours. Read Knaflic, chapters 1 to 3. Follow the short setup guide, posted on the course page after Session 1, to connect the case data to Data Studio, so that class time goes to design rather than to logins.

*In class.* Collective feedback on Milestone 1. How the eye reads a chart, and what that means for choosing one. A chart clinic: we critique published charts together, including some that mislead. In breakout rooms (small video groups), each group builds a first dashboard for its brief. Structured peer critique against a shared checklist, ending with the five-second test: can a busy manager tell what the dashboard says in five seconds? End-of-session quiz in the last ten minutes.

*After the session.* Milestone 2, due Monday 4 January at 23:59: your draft dashboard and a three-sentence narrative of your main finding. Written feedback by Wednesday 6 January.

*Key concepts.* Chart choice, pre-attentive attributes (colour, size, position), clutter, honest axes, dashboard hierarchy, narrative arc.

### Winter break

*From 18 December 2026 to 6 January 2027, about 12 hours per student*

Your group carries out the core of its analysis and drafts its dashboard and brief. The workload is designed to fit around the holidays: a sensible plan is three sessions of about four hours, two before 24 December and one after 1 January. I answer emails until 22 December and again from 4 January, so send any questions about Milestone 2 before the 22nd.

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### Session 3. SQL essentials for managers

*Thursday 7 January 2027, 10:00–12:00, on campus, 2 hours*

By the end of this session you can:

- read and write queries with `SELECT`, `WHERE`, `GROUP BY` and `JOIN` across several tables (LO2);
- explain how a join can silently duplicate or drop rows, and check for it (LO2);
- audit a query written by an AI assistant before trusting its result (LO5).

*Before the session.* About 1 hour. Complete the 30-minute SQL warm-up sheet, and read the feedback on Milestone 2.

*In class.* How the case tables fit together: orders, customers, sellers, reviews. A live demonstration in DuckDB, running in the browser. Exercises of increasing difficulty: first complete a query that is half written, then write one from a business question, for example the average review score of late versus on-time deliveries by product category. Spot the bug: AI-generated queries that look right and are not. End-of-session quiz.

*After the session.* Add one SQL-based finding to your brief.

*Key concepts.* Table, primary and foreign key, join, aggregation, row duplication.

### Session 4. Predictive analytics for decision-makers

*Thursday 7 January 2027, 13:00–16:00, on campus, 3 hours*

By the end of this session you can:

- distinguish regression, classification and clustering, and say which business question each one answers (LO4);
- read a confusion matrix and translate its errors into business costs (LO4);
- recognise overfitting, data leakage, biased samples and the confusion of correlation with causation (LO4).

*Before the session.* About 1.5 hours. Read Provost and Fawcett, chapters 5 and 7 (overfitting; what makes a model good).

*In class.* Intuition first, without formulas: what a model learns and what it cannot know. A prepared notebook in Google Colab: you predict which orders will be delivered late or receive a negative review by running it, changing a few settings and reading the results; you do not write code. Groups compare two models and decide which one, if any, they would deploy, using a simple cost table. You then write Milestone 3 in class, and the session ends with the quiz.

*After the session.* Milestone 3 is handed in at the end of the session: a one-page memo per group stating what your model predicts, how well, its limits, and the decision you would or would not base on it.

*Key concepts.* Training and test data, overfitting, leakage, precision and recall, expected value, segmentation.

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### Session 5. Generative AI, governance and the EU AI Act

*Friday 8 January 2027, 09:00–12:00, on campus, 3 hours*

By the end of this session you can:

- use a general-purpose AI assistant to speed up an analysis while verifying what it produces (LO5);
- explain the risk-based structure of the EU AI Act, what changed in 2026, and what a manager using an AI system remains accountable for (LO6);
- identify the GDPR questions an analytics project raises (LO6).

*Before the session.* About 1 hour, best done during the winter break. Read the European Commission's summary page on the AI Act (digital-strategy.ec.europa.eu), and bring your capstone draft.

*In class. Part 1, about 70 minutes: AI workshop on your own project.* Each group uses an AI assistant to push its analysis further, then reports one output the AI got right, one it got wrong, and how the group found out. *Part 2, after a ten-minute break, about 70 minutes: data and AI governance.* GDPR essentials for analytics: lawful basis, purpose limitation, data minimisation, and the difference between pseudonymised and anonymised data. The AI Act's risk tiers and its 2026 amendment, Regulation (EU) 2026/1744: obligations for high-risk systems will apply from 2 December 2027 for uses such as recruitment and credit scoring, and from 2 August 2028 for AI built into regulated products, while transparency duties have applied since August 2026. Case exercise: is it high-risk? A churn model for marketing, a CV-screening tool, a customer-service chatbot. A short discussion on European AI sovereignty closes the part. *Part 3, about 30 minutes: capstone studio,* then the last end-of-session quiz.

*A note on currency.* The GDPR itself may change: amendments proposed by the European Commission in November 2025 had not been adopted as of September 2026. We will check where they stand on the day.

*After the session.* Pitch slides and dashboard link are due on Friday 8 January at 12:45.

*Key concepts.* Verification, prompt patterns, hallucination, lawful basis, data minimisation, pseudonymisation, risk tiers, deployer (the organisation that uses an AI system, as opposed to the provider that builds it), transparency obligation.

### Session 6. Capstone: pitch your insights

*Friday 8 January 2027, 13:00–16:00, on campus, 3 hours*

Table 5. Session 6.

| | |
|---|---|
| 13:00–13:30 | Individual written exam: 30 minutes, closed book, on paper. **Be seated by 12:55**: the exam starts at 13:00 sharp; bring a pen and your student ID. |
| 13:35–15:35 | Group pitches in an order drawn at random. Each group has a 15-minute slot: 10 minutes of pitch, 4 minutes of questions and 1 minute to change over. Every member of the group answers at least one question. Classmates fill in a short feedback form for each pitch. |
| 15:35–16:00 | Debrief and next steps: certifications, self-study paths and analytics roles open to international managers. |

If there are more than eight groups, pitch time will be shortened and the final timings an-

nounced in Session 5.

## 8. Assessment

The different learning outcomes described above are all evaluated (Table 1). Grades are given on the French scale from 0 to 20.

Table 6. Assessment.

| Assessment type | Duration or deadline | Number | Weighting |
|---|---|---|---|
| *Continuous assessment* | | | |
| Milestones (group) | 15 Dec; 4 Jan; 7 Jan | 3 | 15% |
| Participation, including the end-of-session quizzes | Sessions 1 to 6 | 5 quizzes | 5% |
| Group project: dashboard and analytical brief | Dashboard 8 Jan, 12:45; brief 11 Jan, 23:59 | 1 | 30% |
| Group pitch | 15 minutes, Session 6 | 1 | 20% |
| *Final exam* | | | |
| Individual written exam, closed book | 30 minutes, Session 6 | 1 | 30% |
| Total | | | 100% |

Table 7. Format, deadlines and permitted AI use.

| Component | Weight | Format and deadline | AI use (AIAS level) |
|---|---|---|---|
| Group project: dashboard and analytical brief | 30% | Dashboard link (Fri 8 Jan, 12:45) and a brief of at most 4 pages (Mon 11 Jan, 23:59) | Level 3, with disclosure |
| Group pitch | 20% | 15-minute slot: 10 minutes of pitch, 4 of questions; Session 6 | Preparation: Level 3. Delivery and questions: Level 1 |
| Milestones and participation | 20% | Milestones 1, 2 and 3 (5% each); participation (5%), including the end-of-session quizzes | Milestone 1: Level 2. Milestones 2 and 3: Level 3. Quizzes: Level 1, open notes |
| Individual written exam | 30% | 30 minutes, closed book, on paper; Session 6 | Level 1 |
| Total | 100% | | |

The design follows the two-lane approach developed at the University of Sydney. Open assessments, such as the project and the milestones, let you work the way you will at work, including with AI. Secure assessments, such as the written exam and the live questions after your pitch, check what you can do on your own. Both matter: the written exam alone accounts for 30% of the grade.

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Table 8. Group project (30%): criteria.

| Criterion | Weight | What strong work looks like |
|---|---|---|
| Framing and indicators | 20% | The question is precise and tied to a decision; the indicators are measurable and clearly linked to the goal. |
| Analytical rigour | 30% | Cleaning choices are documented; figures can be reproduced; queries and models are used correctly; limits are stated. |
| Visualisation | 20% | Each chart fits its question; axes and scales are honest; the dashboard passes the five-second test. |
| Recommendation and business value | 20% | One clear recommendation, with its expected impact estimated and realistic next steps. |
| Transparency and governance | 10% | Sources and assumptions are listed; data-protection and AI-governance issues raised by the recommendation are identified; the AI-use appendix says which tools were used, for what, and how their outputs were checked. |

Table 9. Group pitch (20%): criteria.

| Criterion | Weight | What strong work looks like |
|---|---|---|
| One clear message | 25% | The audience can repeat the recommendation in a single sentence. |
| Evidence and storyline | 30% | Every slide supports the recommendation, and the evidence leads to it without detours. |
| Handling of questions | 30% | Answers are direct, honest about uncertainty, and come from every member of the group. |
| Delivery and timing | 15% | Clear, confident, and within the time allowed. |

Individual marks for group work may be adjusted where the confidential peer-contribution forms show a clear imbalance, always after a conversation with the group.

### Individual written exam (30%)

Thirty minutes, closed book, on paper, at the start of Session 6. Part A (10 points) covers concepts from the whole course in short questions, including reading a simple SQL query and classifying an AI use case under the AI Act. Part B (5 points) asks you to critique a chart. Part C (5 points) asks you to read a model's output and make a business decision. Here is an example of a part C question.

> *Question.* A model flags 200 orders as likely to receive a negative review. 120 of them actually do, and the model misses 80 other orders that also do. Contacting a customer in advance costs €2 and prevents the negative review; each negative review avoided is worth €10. What is the model's precision, and should the company use it?
>
> *Answer.* Precision is $120 \div 200 = 60\%$. Contacting the 200 flagged customers costs €400 and avoids 120 negative reviews worth €1,200, a net gain of €800, so under these assumptions the answer is yes. The 80 missed orders give a recall of 60%, which is the next thing to discuss with the team that built the model.

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### Milestones, feedback and deadlines

- Each milestone comes back with feedback: collectively in Session 2 and in writing by 22 December for Milestone 1, in writing by 6 January for Milestone 2, and in the final debrief for Milestone 3.
- Participation (5%) rewards contributions in class, the end-of-session quizzes, and the quality of the feedback you give to other groups. Exit tickets stay anonymous and are not graded: they shape the start of the next session.
- A late deliverable loses 1 point out of 20 on its own mark per started day, unless there is a documented reason. Talk to me before a deadline rather than after it.

### End-of-session quizzes

After Sessions 1 to 5, a quiz of 10 questions in 10 minutes checks the key ideas. It is taken in the last minutes of the session, open notes, on your own and without AI. Participation credits taking each quiz within its window, not the score, and your best four of five count, so one missed quiz costs nothing. You sign in on the course page with a Google account; without one, you take the same quiz on paper, with the same weight. The full corrections open when each quiz closes.

Table 10. Quiz windows.

| Quiz | Opens | Closes |
|---|---|---|
| Session 1 | Wed 9 Dec, 16:40 | Wed 16 Dec, 23:59 |
| Session 2 | Thu 17 Dec, 15:50 | Wed 6 Jan, 23:59 |
| Session 3 | Thu 7 Jan, 11:50 | Fri 8 Jan, 08:00 |
| Session 4 | Thu 7 Jan, 15:55 | Fri 8 Jan, 08:00 |
| Session 5 | Fri 8 Jan, 11:50 | Mon 11 Jan, 23:59 |

Sessions 3 and 4 close on the morning of the exam, so that their corrections can be used for revision.

## 9. Generative AI policy

Using AI well is one of the outcomes of this course, so AI is allowed, within limits that vary from task to task. Every task carries a level from the AI Assessment Scale (Perkins, Roe and Furze, 2025), a framework adopted by hundreds of schools and universities. The levels describe what each task is designed for; no level is better than another, and they are not a detection tool. That is why the parts of the course that must show your individual work, the written exam and the questions after your pitch, take place under supervision. The use of AI you are allowed widens as the course progresses, from Level 2 in December to Level 4 in the Session 5 workshop.

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Table 11. AI Assessment Scale levels in this course.

| Level | What it means (adapted from the AIAS) | Where it applies |
|---|---|---|
| 1. No AI | Knowledge and skills are demonstrated without AI, here in a supervised setting. | Written exam; end-of-session quizzes; pitch delivery and questions |
| 2. AI Planning | AI may support planning and the development of ideas; what you submit is your own work. | Milestone 1 |
| 3. AI Collaboration | AI may help complete the task, including idea generation, drafting, feedback and refinement. You check every output and take responsibility for it. | Milestones 2 and 3; group project; pitch preparation |
| 4. Full AI | AI involvement is expected: the goal cannot be reached by AI, or by a person working alone, in the time available. | Session 5 workshop |
| 5. AI Exploration | AI is used creatively to solve problems or develop new solutions. | Not used in this course |

- **Disclosure.** The group project includes a half-page appendix stating which AI tools you used, for which tasks, and how you checked their outputs. Honest disclosure is never penalised. Under university rules, undisclosed AI use, AI use in a supervised assessment, and invented data, sources or results are breaches of academic integrity, whoever or whatever produced them.
- **Responsibility.** You are accountable for everything you submit. "The AI said so" is not an acceptable justification, in this course or at work.
- **Data protection.** Never paste personal, confidential or proprietary data into a public AI tool. The course dataset is anonymised open data precisely so that you can practise without that risk.

## 10. Tools and data

Everything you need runs in a web browser and is free. You will need a laptop in every session; for the online session, a laptop works much better than a phone. The course page, `sitraka.lu/teaching/data-analytics`, gives the slides of each session (with the password given in class), the quizzes and the dates.

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Table 12. Tools.

| Tool | Used for | Access |
|---|---|---|
| Google Sheets or Excel for the web | Cleaning, pivot tables | Browser, with a free Google or Microsoft account |
| Data Studio, formerly Looker Studio (free version) | Dashboards | Browser, with a Google account |
| DuckDB in the browser | SQL | shell.duckdb.org; ready-to-query copies of the case tables are provided |
| Google Colab | Guided predictive models | Browser, with a Google account; prepared notebook, no code to write |
| An AI assistant of your choice | Session 5 workshop | ChatGPT, Claude, Copilot, Gemini or Le Chat; free tiers are enough |
| Olist Brazilian E-Commerce Public Dataset | The running case | Provided in class; licence CC BY-NC-SA 4.0 |

Data Studio and Colab require a Google account. If you prefer not to use your personal account, create a separate one for the course. Orange Data Mining, a free desktop program with a visual, drag-and-drop interface, is a good option for students who want to go further after Session 4; it is optional and not part of the course toolset.

## 11. Bibliography

### Essential reading


- Provost, F. and Fawcett, T. (2013). *Data Science for Business: What You Need to Know about Data Mining and Data-Analytic Thinking*. O'Reilly Media. Chapters 1 and 2 before Session 1; chapters 5 and 7 before Session 4.
- Knaflic, C. N. (2015). *Storytelling with Data: A Data Visualization Guide for Business Professionals*. Wiley. Chapters 1 to 3 before Session 2.
- Davenport, T. H. and Harris, J. G. (2017). *Competing on Analytics: The New Science of Winning*, updated edition. Harvard Business Review Press. Background for the whole course; no chapters are assigned.


### Supplemental reading


- Berinato, S. (2019). Data Science and the Art of Persuasion. *Harvard Business Review*, 97(1), 126–137.
- Perkins, M., Roe, J. and Furze, L. (2025). Reimagining the Artificial Intelligence Assessment Scale: a refined framework for educational assessment. *Journal of University Teaching and Learning Practice*, 22(7). doi:10.53761/rrm4y757
- Wexler, S., Shaffer, J. and Cotgreave, A. (2017). *The Big Book of Dashboards*. Wiley.
- Regulation (EU) 2024/1689 on artificial intelligence (AI Act), as amended by Regulation (EU) 2026/1744; Regulation (EU) 2016/679, the General Data Protection Regulation.


### Internet resources

- Course page: sitraka.lu/teaching/data-analytics

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- European Commission, regulatory framework for artificial intelligence: digital-strategy.ec.europa.eu
- European Commission, AI Act Service Desk: ai-act-service-desk.ec.europa.eu
- DuckDB in the browser: shell.duckdb.org

## 12. Course policies

- **Attendance.** With six sessions, each one carries real weight. Attendance is expected at every session and required for Session 6, and the attendance sheet is signed every morning and afternoon. If you cannot attend, tell me and the programme coordinator beforehand.
- **Absence from an assessed activity.** Under the programme rules, an absence from an assessed activity (the written exam, the pitch, Milestone 3 written in class) is graded 0, and its weight is not transferred to the other assessments. A documented reason is handled with the programme coordinator.
- **Online session.** Please keep your camera on during group work. The session is interactive and is not recorded.
- **Groups.** Groups are fixed in Session 1. If your group runs into difficulties, come to me early: problems are much easier to solve in December than in January.
- **Accessibility.** If you have an accommodation plan, for example extra time in written exams, let me know before 18 December 2026 so that it is in place for the exam.
- **Academic integrity.** University rules apply to all assessed work. The AI policy above explains what is allowed for each task.
- **Questions.** Email me at any time; I reply within two working days. I stay for 15 minutes after each on-campus session, and online meetings can be arranged on request.

Sitraka

*Version 1.2, 1 November 2026. Follows the structure of the faculty course sheet; adds end-of-session quizzes and participation, attendance and absence rules, exam seating time and the course page. Version 1.1, 2 October 2026: Regulation (EU) 2026/1744 and the current AI Assessment Scale. Content may be adjusted before the course starts; the assessment structure will not change after Session 1.*