

Degree programme	Type	Course
Business and Information Technology	OB	3

Contact lecturer

Name : David Esteban Palma Araneda

Email : david.palma@uab.cat

Prerequisites

Since the course deals specifically with obtaining and organizing data, it is important to take into account, and refresh if necessary, the concepts introduced in the Database Analysis and Design compulsory course, especially in relation to SQL queries.

Group languages

You can consult this information at the [end](#) of the document.

Objectives

The main goal of the subject is to introduce students to the set of tools and skills necessary to create useful and complete dashboards for strategic decision-making within an organization.

At the end of the semester, students should be able to:

- Collect and understand the information generated in business processes
- Structure the information to obtain a dimensional model that generates the Data Warehouse of the company
- Use intensively one of the main Business Intelligence programs.
- Evaluate the appropriateness and fit of multiple modelling approaches to common problems in business.

Learning outcomes

- CM13 (Propose relational databases that collect the characteristics, functionalities and structure appropriate to the organisation.) Propose relational databases that collect the characteristics, functionalities and structure appropriate to the organisation.

Contents

1. Business Intelligence, Data Warehouse and Dimensional Model

2. Dimensional model applied to different business processes (transactions, sales, inventory, accounting, order management, electronic commerce, ...)

3. Tour of the Processes and Tasks of the ETL system (Extraction, Transformation, and Load)

4. The representation of data: metrics, KPI, good visualization practices, ...

5. Integration of Databases at the Dimensional level

6. Fundamentals and basic applications of (statistical) data modelling

Learning activities and methodology

Title	Hours	ECTS	Learning outcomes
Laboratory classes	15	0.6	CM13
Tutorials and follow-up of the work to be done and the cases to prepare	15	0.6	CM13
Related readings, preparation of cases and practices, study and elaboration of schemes	87	3.48	CM13
Lectures, discussion of cases and presentation of works	30	1.2	CM13

The coursework will be structured around alternating theory and practice. Each time a new topic is introduced, the relevant theoretical concepts will be presented first, followed immediately by practical applications using real or synthetic databases. There will be three types of practical work: (i) short exercises to be completed during class, (ii) assessable assignments in the form of laboratory work to be submitted within a given deadline, and (iii) a module project to be developed throughout the semester. Most of the practical work will be carried out in groups, which will be formed at the beginning of the semestre and will remain the same throughout.

For this subject, the use of Artificial Intelligence (AI) technologies is permitted exclusively in support tasks, such as bibliographic or information search, proofreading of texts, correcting code, or translations. The student should clearly identify which parts have been generated with this technology, specify the tools used, and include critical reflection on how these have influenced the process and the final outcome of the activity. The non-transparency of the use of AI in this assessable activity will be considered academic dishonesty and may lead to a partial or total penalty in the grade of the activity, or greater sanctions in cases of severity. In any case, the use of AI is prohibited in any exam.

Note: 15 minutes from one scheduled class will be used for students to complete the teaching and module evaluation survey.

Annotation: within the schedule set by the centre or degree programme, 15 minutes of one class will be reserved for students to evaluate their lecturers and their courses or modules through questionnaires.

Assessment

Continuous assessment activities

Title	Weight	Hours	ECTS	Learning outcomes
Group tasks	30%	0	0	CM13
Individual tests and final test	40%	3	0.12	CM13
Business Intelligence project	30%	0	0	CM13

The course assessment (course grade, NAsig) will consist of three elements:

1. Group assignments (30%): Throughout the semester, assignments will be posted that must be completed in working groups (which will remain the same throughout the semester) and submitted via the virtual campus.
2. Individual exams (40% total, 20% each): Two in-person exams will be held on the dates indicated by the faculty.
3. A group project (30%): This project will be carried out in groups and in different stages throughout the semester. The project consists of:
 4. Obtaining a real database, ideally from a company or institution (or failing that, from an open data source), and restructuring it into a star schema.
 5. Defining relevant key performance indicators (KPIs) and generating dashboards for their visualization.
 6. Propose and answer a relevant research question using available data and a modeling technique studied in the course.

If the grade on the exam component (NExam) is less than 4.0, then the presentation grade (NPres) will be calculated as the lowest among 4.0 and the course grade (NAsig), that is, $NPres = \min(4.0; NAsig)$. Otherwise, $NPres = NAsig$.

Those achieving a presentation grade (NPres) between 3.5 and 4.9 may take a makeup exam.

This course does not allow for a single assessment method.

Calendar of evaluation activities

The dates of the evaluation activities (exercises in the classroom, assignments, ...) will be announced well in advance during the semester.

The date of the final exam is scheduled in the assessment calendar of the Faculty.

"The dates of evaluation activities cannot be modified unless there is an exceptional and duly justified reason why an evaluation activity cannot be carried out. In this case, the degree coordinator will contact both the teaching staff and the affected student, and a new date will be scheduled within the same academic period to make up for the missed evaluation activity." **Section 1 of Article 115. Calendar of evaluation activities (Academic Regulations UAB).**

Students of the Faculty of Economics and Business, who in accordance with the previous paragraph need to change an evaluation activity date must process the request by filling out an Application for exams' reschedule

https://eformularis.uab.cat/group/deganat_feie/application-for-exams-reschedule

Grade revision process

After all grading activities have ended, students will be informed of the date and way in which the course

grades will be published. Students will be also be informed of the procedure, place, date and time of grade revision following University regulations.

Retake Process

"To be eligible to participate in the retake process, it is required for students to have been previously been evaluated for at least two-thirds of the total evaluation activities of the subject." **Section 3 of Article 112 ter. The recovery (UAB Academic Regulations).** Additionally, it is required that the student to have achieved an average grade of the subject between 3.5 and 4.9.

The date of the retake exam will be posted in the calendar of evaluation activities of the Faculty. Students who take this exam and pass will get a grade of 5 for the subject. If the student does not pass the retake, the grade will remain unchanged, and hence, the student will fail the course.

Irregularities in evaluation activities

In spite of other disciplinary measures deemed appropriate, and in accordance with current academic regulations, *"in the case that the student makes any irregularity that could lead to a significant variation in the grade of an evaluation activity, it will be graded with a 0, regardless of the disciplinary process that can be instructed. In case of various irregularities occur in the evaluation of the same subject, the final grade of this subject will be 0"*. **Section 10 of Article 116. Results of the evaluation. (UAB Academic Regulations).**

In this sense, any delivery that is identified plagiarized by other colleagues or any other source entails a zero in that evaluation. In case of plagiarism between classmates, the zero will be as much for the plagiarist as for the one that facilitates the plagiarism.

Bibliography

Kimball, Ralph y Ross, Margy ((2013): The Data Warehouse Toolkit: The definitive guide to Dimensional Modeling. Tercera edicion

Few, Stephen (2013): Information Dashboard Design: Displaying data for at-a-glance monitoring, Second Edition, Analytics Press

Few, Stephen (2012): Show Me the Numbers: Designing Tables and Graphs to Enlighten, Second Edition, Analytics Press

Clark, Dan (2020): Beginning Microsoft Power BI. A Practical Guide to Self-Service Data Analytics, APress Berkeley, CA, Accés: <https://link.springer.com/openurl?genre=book&isbn=978-1-4842-5620-6>

Aspin, Adam (2020): Pro Power BI Desktop. Self-Service Analytics and Data Visualization for the Power User, Apress Berkeley, CA, Accés: <https://link.springer.com/openurl?genre=book&isbn=978-1-4842-5763-0>

Aspin, Adam (2021): Pro Power BI Theme Creation. JSON Stylesheets for Automated Dashboard Formatting, Apress Berkeley, CA, Accés: <https://link.springer.com/openurl?genre=book&isbn=978-1-4842-7068-4>

Seamark, Philip and Martens, Thomas (2021): Pro DAX with Power BI. Business Intelligence with PowerPivot and SQL Server Analysis Services Tabular, Apress Berkeley, CA, Accés: <https://link.springer.com/openurl?genre=book&isbn=978-1-4842-4897-3>

Ehrenmueller-Jensen, Markus (2020): Self-Service AI with Power BI Desktop. Machine Learning Insights for Business, Apress Berkeley, CA, Accés: <https://link.springer.com/openurl?genre=book&isbn=978-1-4842-6231-3>

Wade, Ryan (2020): Advanced Analytics in Power BI with R and Python Ingesting, Transforming, Visualizing, Apress Berkeley, CA, Accés: <https://link.springer.com/openurl?genre=book&isbn=978-1-4842-5829-3>

Software

Specific BI software, such as Power BI or Tableau, always in appropriate educational versions.

Course groups and languages

The information provided is provisional until November 30. After this date, you will be able to consult the language of each group through this [link](#). To access the information, you will need to enter the course CODE

Type of teaching	Group	Language	Semester	Shift
(TE) Theory	20	Spanish	second semester	morning-mixed
(PLAB) Practical laboratories	204	Spanish	second semester	morning-mixed
(PLAB) Practical laboratories	205	Spanish	second semester	morning-mixed
(PLAB) Practical laboratories	206	Spanish	second semester	morning-mixed