

Data Bases

Course title - Intitulé du cours	Data Bases
Level / Semester - Niveau /semestre	M1 / S2
School - Composante	Ecole d'Economie de Toulouse
Teacher - Enseignant responsable	TOURNIER RONAN
Lecture Hours - Volume Horaire CM	15
TA Hours - Volume horaire TD	0
TP Hours - Volume horaire TP	0
Course Language - Langue du cours	Anglais
TA and/or TP Language - Langue des TD et/ou TP	Anglais

Teaching staff contacts - Coordonnées de l'équipe pédagogique :

Ronan Tournier, Mail: ronan.tournier@ut-capitole.fr; Office: MQ201 – AR367; Office days when students may drop by: undefined at this state of the year. However, online communication should be preferred (either the Moodle discussion forum for course questions or the mail for administrative enquiries).

Course's Objectives - Objectifs du cours :

The objective of this course is to earn a basic knowledge on Decision Support Systems (data analysis) using database systems. The course presents an overview of the possible computer software architectures (interconnection of different software and data sources) that can be used for data analysis, focussing on querying data sources and designing multidimensional databases to be used with typical On-Line Analytical Processing tools (called OLAP tools or Business Intelligence tools).

Methods taught will concern understanding analysis requirements by elaborating a multidimensional database and relevant data presentations.

Skills developed will be: expressing data requirements in terms of data query language (using the database query language SQL); expressing analysis requirements in terms of multidimensional database schemas; and designing relevant data presentation reports or dashboards.

Prerequisites - Pré requis :

Knowledge of how to use a computer and managing computer files.

Knowledge in using a spreadsheet tool may help (such as Open Office/Libre Office Calc or Microsoft Excel).

Practical information about the sessions - Modalités pratiques de gestion du cours :

Courses will use videos and sessions will be dedicated to discussions and practical work. Some sessions may be distance learning using virtual classrooms. Frequent multiple choice question tests will be available in order to ease course knowledge retention.

Laptops may be used in class with Microsoft Office Access (2010 or later). Note that Microsoft Office is available for students for free (see the procedure on the University's Website). However, laptops will

only be usable for half of the course as SAP Business Objects is only available on the university computers and there is no student licence.

Students will have a project that will require, among other things, using SAP Business Objects.

Grading system - Modalités d'évaluation :

Several positioning MCQ (multiple choice question) tests will be provided on the Moodle platform. Their usage and progression in the answers which is the goal of these positioning tests, will be monitored and taken into account in the two following grades:

- A project done in pairs (40% of the final grade) and in two parts will be handed in during the semester.
- A final exam (60% of the final grade) that may be done on-line.

Bibliography/references - Bibliographie/références :

Many books exist, but here is one :

Kimball, Ralph; Margy Ross (2013). The Data Warehouse Toolkit: The Definitive Guide to Dimensional Modeling (3rd ed.). Wiley. Note that the French version of this book that dates from 2007 is not recommended as its content is outdated (it corresponds to the 1st edition of the book).

Session planning - Planification des séances :

First session is dedicated to an introduction to decision support and decision support systems (as well as a word on pivot tables and Excel—the most used tool);

The rest of the course (both course sessions and computer sessions) is divided in roughly two halves:

- Query languages for databases (SQL). Starting with simple queries to the more complex analytical queries (application with Microsoft Access);
- OLAP analytical tools, design of multidimensional databases and analytical reports (application with SAP Business Objects—Business Intelligence suite).

Other – Autre :

The design of multidimensional databases (the last part of the course) will be done using a research prototype tool called **GraphicOLAP** (available as download in Moodle). As this tool is still in development, feedback on the interface and bugs are welcome.

Distance learning – Enseignement à distance :

Distance learning can be provided when necessary by implementing, for example: virtual classrooms for interaction between students and the teacher, online tutorials using the university computers from a remote access.

All lectures will be preceded by videos followed by MCQ tests for easing knowledge retention. Sessions will be focused on discussions and questions on difficult parts.

Throughout the year, forums will be used for course discussions and when necessary specific chats will be opened.