

Catalogue de cours

Course Catalogue

2024-2025



FACULTÉ
D'INFORMATIQUE

Membre de l'Université
Toulouse Capitole



Semestre 1



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- ▣ [Bases de données relationnelles](#)
- ▣ [Data Analysis and Visualisation](#)
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- ▣ [Object Oriented Programming](#)
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Semestre 2



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Semestre 1

- 5 ECTS
- CM-TD : 36h

Advanced Databases

- 5 ECTS
- CM : 15h
- TD : 15h

Bases de données relationnelles

- 5 ECTS
- CM-TD : 36h

Data Analysis and Visualisation

- 6 ECTS
- CM-TD : 45h
- Project Week

Innovative Software Methods

- 6 ECTS
- CM-TD 45h
- Project Week

Internet of Things

- 5 ECTS
- CM-TD : 36h

Object Oriented Programming

- 5 ECTS
- CM-TD : 36h

Project Management

- 2 ECTS
- CM-TD : 15h

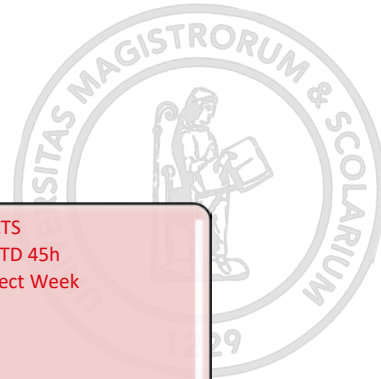
Research Workshop (semestre 1)

- 5 ECTS
- CM-TD : 36h

Software Design

- 2 ECTS
- Project Week

Term Project 1



Advanced Databases

Degree : Master 1 2IS

ECTS : 5

Code : IMUMA129

Volume : CM-TD : 36h

Langue / Language : English

Description : Nouveau cours, descriptif en attente.

New course, description not yet available.

Evaluation : Contrôle continu intégral 2 évaluations minimum Continuous assessment 2 evaluations

Enseignant/Teacher Enseignant à définir. Teacher to be announced.

Bases de données relationnelles

Degree : Licence 3 MIAHSH MIAGE

ECTS : 5

Code : ILUMA525

Volume : CM : 15h TD : 15h

Langue / Language : French / English

Description : 15h CM : en français + supports de cours en anglais 15h TD : en anglais

Evaluation : Contrôle continu intégral 2 évaluations minimum Continuous assessment 2 evaluations

Enseignant / Teacher : L. Perrussel.

Data Analysis and Visualisation

Degree : Master 1 2IS

ECTS : 5

Code : IMUMA133

Volume : CM-TD : 36h

Langue / Language : English

Description : Data analysis is more and more important in the understanding of business and decision making processes that usually include descriptive and predictive analysis. In this course, we address two main problems for computer scientists concerned by data analysis: data collection and data visualization. The course will be divided as follows: first, students will learn how to extract and deal with imperfections in data (data munging). Second, classical calculus techniques will be considered (such as data mining, Bayesian inference and regression). Third, the students will focus on communicating the results. The main techniques and principles for interactive visualization will be considered, and students will have the opportunity to experiment different kinds of tools from predefined libraries to specialized software. Prerequisites: probability and statistics (basics), database management (SQL), algorithms.

Evaluation : Contrôle continu intégral 2 évaluations minimum Continuous assessment 2 evaluations

Enseignant/Teacher : Enseignant à définir. Teacher to be announced.

Innovative Software Methods

Degree : Master 2 2IS

ECTS : 6

Code : IMUMA301

Volume : CM-TD : 45h + Project Week

Langue / Language : English

Description : The aim of this course is to study new software and innovation processes. This course will consider as a starting point classical processes, namely iterative and incremental processes. It will then go further by first exploring recent techniques such as Xtreme programming; it will then consider new techniques issued from the field of innovation management, at first gamification. Gamification has been recently viewed as a disruptive factor in a software process and fosters innovation. The course will emphasize the experimental dimension: students will experiment numerous games. Prerequisites: software process, project management, Agile development

Evaluation : Contrôle continu intégral 2 évaluations minimum + semaine bloquée Continuous assessment 2 evaluations + dedicated project week

Enseignant/Teacher : M. Chauvin

Internet of Things

Degree : Master 2 2IS

ECTS : 6

Code : IMUMA305

Volume : CM-TD : 45h + Project Week

Langue / Language : English

Description : This course provides a comprehensive introduction to the Internet of Things (IoT), an emerging technology that interconnects physical devices to the internet, enabling them to collect, share, and act on data.

Students will explore the fundamental concepts, architecture, and components of IoT systems, including sensors, actuators, communication protocols, and data processing and retrieval techniques.

The curriculum covers key areas such as device connection with Raspberry Pi board, the attraction and storage of data in a MongoDB database and their display using web-based technology (including Angular, Node.JS ...).

Through focused hands-on and a term project, students will gain the skills needed to design, implement, and manage IoT solutions.

Particular attention will be paid to the sparing use of the various components and software in order to respect energy resource constraints.

Evaluation : Contrôle continu intégral 2 évaluations minimum Continuous assessment 2 evaluations

Enseignant/Teacher : B. Gaudou / L. Marsan

Object Oriented Programming

Degree : Master 1 MIAGE 2IS

ECTS : 5

Code : IMUMA131

Volume : CM-TD : 36h

Langue / Language : English

Description : The objective of this course is to be able to realise an application combining data management from multiple sources (Internet, files, databases...) with statistical analysis and data visualisation. The course will be divided into three parts, each one involving a final project to be delivered: an initial section on advanced object programming, a second section on implementing algorithms from artificial intelligence, and a final part on Framework-based software development and design pattern. Prerequisites: basic algorithmic, basic notions of Java programming (variables, cycles, conditionals, classes and methods...), basics of object programming, graphical interfaces.

Evaluation : Contrôle continu intégral 2 évaluations minimum Continuous assessment 2 evaluations

Enseignant/Teacher : Enseignant à définir. Teacher to be announced..

Project Management

Degree : Master 1 2IS

ECTS : 5

Code : IMUMA122

Volume : CM-TD : 36h

Langue / Language : English

Description : This course will start with an introduction to agile project management and an overview of agile methodologies, with an emphasis on the problematics surrounding the adoption of these practices. Agile planning will then be the central theme of the course, from project initiation, to estimates and release plan, to monitoring iterations. Additional topics will include how to lead an agile team, managing stakeholders engagement, and ensuring delivery of values in agile projects

Evaluation : Contrôle continu intégral 2 évaluations minimum Continuous assessment 2 evaluations

Enseignant/Teacher : B. Marsa.

Research Workshop (semestre 1)

Degree : Master 1 2IS

ECTS : 2

Code : IMUMA123

Volume : CM-TD : 15h

Langue / Language : English

Description : Contemporary job market requires a dynamic adaptation to new technologies and practices. The first objective of this weekly workshop is to acquire the capabilities for personal development to be used for life-long personal and group training: information search, elaboration, and presentation (Objective 1). A second objective is to share knowledge and experiences among the group of students to obtain an homogeneous group (Objective 2). Finally, the third objective is to learn how to work in a team, putting in practice what is being learned in the soft skills course (Objective 3). Critical thoughts and constructive attitude will be encouraged.

Evaluation : Contrôle continu intégral 2 évaluations minimum Continuous assessment 2 evaluations

Enseignant/Teacher : Enseignant à définir. Teacher to be announced.



Software Design

Degree : Master 1 2IS

ECTS : 5

Code : IMUMA119

Volume : CM-TD : 36h

Langue / Language : English

Description : Nouveau cours, descriptif en attente. New course, description not yet available.

Evaluation : Contrôle continu intégral 2 évaluations minimum Continuous assessment 2 evaluations

Enseignant/Teacher : Enseignant à définir. Teacher to be announced.

Term Project 1

Degree : Master 1 2IS

ECTS : 2

Code : IMUMA127

Volume : Project Week

Langue / Language : English

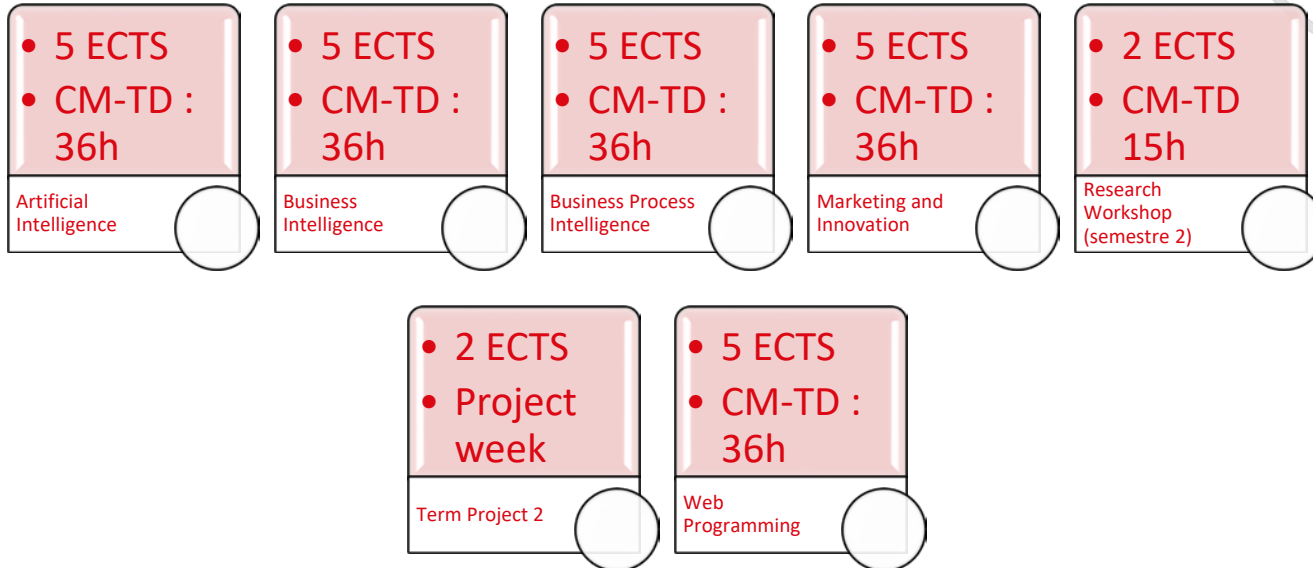
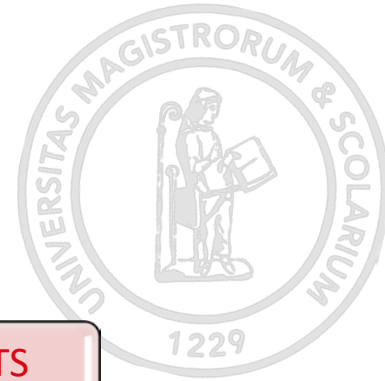
Description : Nouveau cours, descriptif en attente. New course, description not yet available.

Evaluation : Term Project

Enseignant/Teacher : Enseignant à définir. Teacher to be announced..



Semestre 2



Artificial Intelligence

Degree : Master 1 2IS

ECTS : 5

Code : IMUMA134

Volume : CM-TD : 36h

Langue / Language : English

Description : Artificial intelligence is a collection of computational techniques whose applications are revolutionising the way in which we think and make businesses. The objective of this course is to be able to conceive and program two examples of such applications: a recommender system and automated profiling system, and an automated personal assistant. The techniques that will be learned range from machine learning techniques such as clustering and deep learning, to optimisation, knowledge management, inference, and the basics of natural language processing. Prerequisites: good programming skills, basics of algorithms.

Evaluation : Contrôle continu intégral 2 évaluations minimum Continuous assessment 2 evaluations

Enseignant/Teacher : U. Grandi.

Business Intelligence

Degree : Master 1 MIAGE 2IS

ECTS : 5

Code : IMUMA130

Volume : CM-TD : 36h

Langue / Language : English

Description : The objectives of this course are to study the concepts associated to Business Intelligence (BI) as well as to conceive and implement the components of a decision support system. First, we study the decision process in the context of a company strategy. Second, we identify the different components of a decision support system, focusing on new concepts like Self-Service BI. Third, we study how to conceive and deploy a data warehouse (data model, extraction transformation and loading processes, SQL queries). Fourth, we address multidimensional modelling (conceptual, logical and physical models) and implementation. Finally, we study new solutions dedicated to data restitution and data visualisation.

Evaluation : Contrôle continu intégral 2 évaluations minimum Continuous assessment 2 evaluations

Enseignant / Teacher: M. Garouani – R. Tournier.

Business Process Intelligence

Degree : Master 1 2IS

ECTS : 5

Code : IMUMA120

Volume : CM-TD : 36h

Langue / Language : English

Description : Nouveau cours, descriptif en attente. New course, description not yet available.

Evaluation : Contrôle continu intégral 2 évaluations minimum Continuous assessment 2 evaluations

Enseignant/Teacher : Enseignant à définir. Teacher to be announced.

Marketing and Innovation

Degree : Master 1 2IS

ECTS : 5

Code : IMUMA121

Volume : CM-TD : 36h

Langue / Language : English

Description : Nouveau cours, descriptif en attente. New course, description not yet available.

Evaluation : Contrôle continu intégral 2 évaluations minimum Continuous assessment 2 evaluations

Enseignant/Teacher : Enseignant à définir. Teacher to be announced.



Research Workshop (semestre 2)

Degree : Master 1 2IS

ECTS : 2

Code :IMUMA124

Volume : CM-TD : 15h

Langue / Language : English

Description Nouveau cours, descriptif en attente. New course, description not yet available.

Evaluation : Contrôle continu intégral 2 évaluations minimum Continuous assessment 2 evaluations

Enseignant/Teacher : Enseignant à définir. Teacher to be announced..

Web Programming

Degree : Master 1 2IS

ECTS : 5

Code : IMUMA132

Volume : CM-TD : 36h

Langue / Language : English

Description : Nouveau cours, descriptif en attente. New course, description not yet available.

Evaluation : Contrôle continu intégral 2 évaluations minimum Continuous assessment 2 evaluations

Enseignant/Teacher : Enseignant à définir. Teacher to be announced.

Term Project 2

Degree : Master 1 MIAGE 2IS

ECTS : 2

Code : IMUMA128

Volume : Project Week

Langue / Language : English

Description : Nouveau cours, descriptif en attente. New course, description not yet available.

Evaluation : Term Project

Enseignant/Teacher : Enseignant à définir. Teacher to be announced..

