DU Public Health Data Sciences

This professional certificate (Diplôme Universitaire – DU), aims to meet the growing demand for professionals who can leverage data to improve population health. It is part of the training offered by the School of Public Health (Isped) of the University of Bordeaux, including a 2-year Master's program with different tracks, 23 other professional certificates, and 2 MOOCs on public health, from epidemiology to health promotion.

Training program
Online

Objectives

The first challenge is to introduce students to the fundamentals of data science in public health, with basic skills in statistics, epidemiology and health informatics. Another challenge is also to understand the ethical, legal and social issues linked to the use of health data. The training will be carried out in close collaboration with private companies in the sector, including the partner of the projet Santé Numérique, IQVIA – an international a leading global provider of advanced analytics, technology solutions, and clinical research services to the life sciences industry. Use cases and data sets will be provided for practical implementations. At the end of the five years of the CMA, the training will be sufficiently stabilized.
The DU can be obtained after one or more years, by successively validating the different training modules.

Skills acquired after the training

The chosen approach must enable learners to:

- Know how to use and understand scientific literature
- Know how to develop a research question ("problem first" approach)
- Know the basics of statistical methodologies
- Know the fundamental principles of epidemiological science
- Have a working knowledge of current data legislation
- Know the basics of designing a health database
- Know the basics of programming and data structure
- Know the fundamental digital tools for data sciences: shell, networks & Docker
- Know the tools for communicable and reproducible data science

Target candidate profiles

- Students in public health or health sciences (medicine, pharmacy, biology, etc.) wishing to specialize in data analysis.
- Professionals: Computer engineers, statisticians or scientists wishing to acquire skills in health data science to improve their practice.
- Graduates in mathematics, computer science or statistics interested in the health field.

Contacts

Coordinators

- Prof Rodolphe Thiebaut
- Prof Gayo Diallo

Continuous Health Education Isped Unit

- isped.fc@u-bordeaux.fr

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*In December 2023, Isped was accredited as a School of Public Health by the **Agency for Public Health Education Accreditation (APHEA)**.*
This international recognition underlines the quality of the training on offer and the excellence of the programmes offered in the field of public health, as well as the resources deployed to welcome students and the general public.

Application

Contact : DU.dph@u-bordeaux.fr

From September 2nd to November 30th 2024

Institut de Santé Publique d'Épidémiologie et de Développement
146 rue Léo Saignat - CS61292
33076 Bordeaux Cedex France
www.isped.u-bordeaux.fr

Organisation

Teaching
Teaching is done exclusively remotely. Teaching is carried out exclusively in English.
The overall volume of the training is 180 hours.
The training is based on two transversal modules (module 1 and 2) and a triple base in Epidemiology (module 3), Statistics (module 4), Health Informatics (module 5). Depending on their previous academic or professional curriculum, students may be exempt from following certain modules, totally or partially, and will be given a certificate of equivalence by the faculty. An educational commission will meet to arbitrate.

Mentoring
Each learner can benefit from additional information through an inter-learner and learner-teacher "question-answer" exchange forum. In this forum learners formulate their questions and also answer certain questions asked by other learners. Within the forum, learners and teachers can discuss and exchange information about the courses.

Duration and schedule
The DU duration is 1 year and it is proposed each year

Training validation
The exam is composed of:
- a continuous assessment corresponding to personal work on a case study and counting for 25% of the general final grade
- an individual written test counting for 75% of the general final grade

Fees

Entry-level training
650€ training fees + CVEC fees for the facilities of the University of Bordeaux (ex. restaurants, libraries) * + registration fees**

Continuing education
- Self-funded: 1 250€ training fees +registration fees**
- Funded by the employer: 2100€ training fees +registration fees**

* CVEC: 103 €
** registration fees: 170 €

Program

Module 1: Digital tools for data sciences (30 h)
- Introduction to digital tools for data sciences
- Principles of Linux, Shell and scripts
- Version and code management, Maven
- Principles of containers and application cases with Docker
- YAML and Mark Down languages

Module 2: Ethical, regulatory aspects and bibliographic research (20 h)
- Main ethical principles for health data sciences
- Regulatory aspects of health data and General Data Protection Regulation (GDPR)
- The National Data Hubs, the National Health Data System (SNDS) and the European Health Data Space
- Principles of Bibliographic Research and analysis of scientific literature
- Principles for a reproductible study

Module 3: Fundamentals of Epidemiology (40 h)
- Introduction to Epidemiology
- The principles and methods for implementing the main study designs in epidemiology
- The principle of epidemiological surveillance
- Epidemiology study protocols and treatment of bias
- The main principles of cohort studies

Module 4: Fundamentals of Biostatistics (45 h)
- Introduction to health statistics
- Definition of study populations
- Confidence estimation and variance analysis
- Linear Regression Methods
- Multivariate analyzes
- Implementation with the R language

Module 5: Fundamentals of Health Informatics (45 h)
- Algorithmic principles and data structure
- Inputs/outputs and processing of heterogeneous data (text, tabular, etc.)
- Database modeling and implementation
- Structured and object-oriented programming
- Biomedical terminologies
- Implementation with Python

Application Procedure

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Compulsory documents to provide for acceptance:

- curriculum vitae (3 pages maximum),
- motivation letter,
- the diploma required to access the training (at a minimum)
- an activity report to decide on a possible module extension.

This activity report must indicate the courses taken, the professional experiences and the knowledge and skills acquired to obtain an equivalence of one or more modules of the training program.