

**** Title ****

Digital Health Lab (DHL)

**** CFU ****

9 fundamentals

**** Learning outcomes ****

Students will learn the main computational challenges experienced by pharmaceutical, nutrition, sport and biomedical companies to run their research and development activities, and to design and manufacture products. Students will learn how to choose the best computational technology to solve specific problems. Students will learn how to interact with stakeholders in the pharmaceutical, nutrition, sport and biomedical fields by developing a suitable technical language and by learning how to present complex computational results to non-experts.

**** Syllabus ****

Industrial and academic projects, and learning experiences, proposed by medical doctors, biologists and biotechnologists, pharmacologists, sport trainers and, more generally, operators from the med tech, bio tech, pharma tech, sport and life sciences at large. A non-exhaustive list of applications is covering collection, integration and interpretation of multi-modal and multi-omics data, biomarker identification, pathway analysis, target identification, dose-regimen optimization, clinical trials, cohort identification, drug mechanism of actions, medical imaging, platform design for the Health Data Space, etc.

The course will be organized in three main phases: the first one will include seminars and lectures concerning with potential projects/problems on biomed/sport/wellness/nutrition data to address/solve with advanced software solutions, by exploiting the techniques learned in the two-years of this master degree; the second phase will require students to form small groups, choose one of the projects to address, and implement it in the rest of the course; the third last phase will require every group to provide a pitch describing the results achieved with its own project.

**** Course organization & Assessment****

Lectures: 25%

Laboratory/practice: 75%

Assessment: team project and its discussion via a pitch

**** Prerequisites ****

Advanced tools, techniques and methodologies learned in the first year of the course, and it is suggested to have (at least) attended the Bioinformatics and Systems Biology course.