SHAKE THE FUTURE.

CENTRALE NANTES

2ND AND 3RD YEAR SPECIALISATION

ENVIRONMENT MOBILITY HEALTH

The aim of the project is to develop a model of an Android mobile application which allows the user to:

> define a route in the Nantes Métropole area,

> select a mode of transport (pedestrian, bicycle, car, public transport),

> calculate or estimate the user's environmental exposure on the journey,

> receive recommendations based on his/her profile and the probability of impact on his/her health of said environmental exposure.
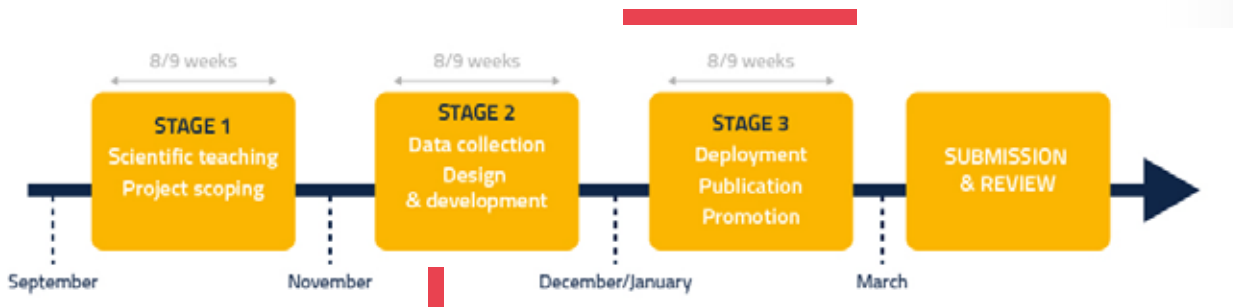
COURSE CONTENT

> Specifications and UML
> Project Management
> Framework of the project
> Design and development
> Deployment and promotion
> Internship

PROGRAMMING GROUP

> Introduction to Programming
> Geographical Information Systems (GIS)
> Databases
> Android and Programming

DATA COLLECTION GROUP

> Expert intervention on data capture (including pollen)
> Acquisition of air quality data
> Respiratory health and environmental exposure
> Mobility and route planning

OVERVIEW

The Environment Mobility Health project specialisation is proposed in partnership with Nantes University Hospital, within the framework of innovative projects focusing on respiratory health, led by Professor Antoine Magnan, president of the establishment's medical community, and Professor François-Xavier Blanc, Head of Respiratory Care. The project is a specific component of the work of the IRC Lung O2.

The specialisation brings together the technological expertise of Centrale Nantes (data analysis and applications, digital city, IT, mobility, etc.), Gustave Eiffel University (environmental measurements, particles, etc.), Nantes University Hospital (respiratory health), and Air Pays de la Loire (environmental exposure).

Finally, the option is fully in keeping with the following strategic objectives at Centrale Nantes:

> deliver project-based teaching;
> set up innovative and engaging methods of learning for our students;
> firmly anchor health within our programmes alongside our main partner: Nantes University Hospital;
> focus on environmental impact and ecological transition within the curriculum.

COURSE ARRANGEMENTS

A group of up to 12 students will follow the specialisation from September 2020 to March 2021. The students will be divided into two groups of expertise: programming and data collection.

The project specialisation comprises:

> Project work supervised by the head of the specialisation;
> Scientific classes on the fundamental subjects;
> Scientific supervision from the partners (Nantes University Hospital, Gustave Eiffel University, Air Pays de la Loire).

TEACHING STAFF

HEAD OF SPECIALISATION:
Thomas Lechevallier

CONTACT :
thomas.lechevallier@ec-nantes.fr

PROJECT PHASES

1. Knowledge and skills-based learning:

> Data capture, analysis, calculation, optimisation, modelling, simulation, air quality (linked to Data Analysis and Applications specialisation, Gustave Eiffel University, Air PDL)
> Development of mobile geographic applications (linked to Digital City and Computer Science specialisations);
> Transport, Mobility and Itinerary Planning (linked to Air Quality Research - David Chalet, and SLP Research Group in the LS2N Laboratory)
> Respiratory Health (Partnership with Nantes University Hospital, Professor Magnan, Professor Blanc)
> Project (scoping, design, development, validation, training, deployment, promotion, operation)

2. Data capture

> Data collection:
   > Nantes Environment: Air PDL
   > Cartography: Open Street Map (for example)
   > Health: Nantes University Hospital
> Scientific testing on a multi-transport itinerary (Hôtel Dieu to ECN by car, bicycle, on foot, bus, tram, etc). Link with Gustave Eiffel University, Research conducted by David Chalet, Matisse Lesage and Julien Cario
> Patient data testing (from patient file to user profile, connected health objects and partnership with Nantes University Hospital)

3. Application development

> Specifications
> Development (design, developments, validation, production, operation)

4. Promotion and handover

> Scientific publication
> Presentation of results
> Communication on results and methods employed
> Consolidation for handover

Ingénieur grande école

graduate programme