

## Parcours Biohealth engineering 2e année

### Présentation

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With the rapid advance of biomedical engineering, life sciences and physical sciences have converged to create a new discipline: biomedicine. This convergence is helping scientists to make important breakthroughs, such as nanoscale systems for disease detection and drug delivery, predictive computer models of disease progression and drug response, and increasingly affordable forms of biometric analysis for personalized medicine.

Over the past 150 years, average life expectancy has increased by approximately 4 to 5 years per generation. the gap between the active and inactive has widened, and pressure on health and social care costs for society has increased. as chronic disease becomes more prevalent and populations continue to age, eu healthcare systems are striving to shift the burden of care from hospitals to the community and the individual. There is consequently a growing need for biomedical innovations to be more user-centred, empowering patients to manage their healthy living and active ageing. Postgraduate recruits to the fast-growing sector of biomedical engineering will need to bring not only their expertise in a particular field, but also a thorough grounding in a range of technologies and the ability to apply their knowledge and skills to the design of new products and services. Health4life addresses this need with a novel programme combining education and research.

### Admission

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The master of Health Engineering is open in initial training and continuing education. The 2nd year is accessible on file (and / or interview) to the candidates having validated the 1st year of master of a compatible course or else by a validation of studies or acquired according to the conditions determined by the university or training. Public continuing education : You are in charge of continuing education :

- if you resume your studies after 2 years of interruption of studies
- or if you followed training under the continuous training regime one of the previous 2 years
- or if you are an employee, job seeker, self-employed

If you do not have the diploma required to integrate the training, you can undertake a [validation of personal and professional achievements \(VAPP\)](#)

How to apply depends on your profile ? You are a student of French nationality, or you reside in the EU, or you reside in a country not covered by the Studies in France procedure (see below), you must apply via the ecandidat application on the dates below :

- Only the 2nd year of the Master in health engineering is in English language : Online application for the track Healthy living - health 4 life engineering 2nd year master : application from 1st of March to 30 of April 2021
- You live in one of the countries below. You are therefore subject to the Studies in France procedure: online applications entered on the Campus France site. The dates of candidacies are specified on this site. The "Studies in France" procedure only concerns students residing in one of the following 41 countries: Algeria, Argentina, Benin, Brazil, Burkina Faso, Burundi, Cameroon, Chile, China, Colombia, Comoros, Congo Brazzaville, South Korea , Ivory Coast, Djibouti, Egypt, United States, Gabon, Guinea, India, Indonesia, Iran, Japan, Kuwait, Lebanon, Madagascar, Mali, Morocco, Mauritius, Mauritania, Mexico, Peru, Democratic Republic of the Congo, Russia , Senegal, Singapore, Taiwan, Togo, Tunisia, Turkey and Vietnam.

- For more information, we invite you to consult the master of Health engineering website or the training catalog

## Poursuite d'études

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Health4life leads on naturally to PhD positions and/or R&D careers in world-leading industries, high-potential start-ups, teaching hospitals and universities, where students are able to utilise their skills in collaborative cutting-edge research and innovation projects, translating technologies into viable applications for the benefit of all.

Our multidisciplinary, two-summer school programme offers diverse perspectives in all areas of health.

Examples of prospects

- Pursuing doctoral thesis studies (around 40% of students are doing a thesis in France or elsewhere)
- Executive in hospital and industrial teams in the health sector
- Research engineer in academia
- Creation of start-ups in the field of engineering for health

## Infos pratiques :

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- > Composante : UFR Pharmacie
- > Niveau : Bac +5
- > Durée : 1 an
- > Type de formation : Formation initiale / continue, Formation à distance
- > Lieu : Grenoble - La Tronche domaine de la Merci

## Contacts

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### Responsable pédagogique

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### Secrétariat de scolarité

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### Responsable formation continue

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## Programme

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### FIRST SEMESTER (30 ECTS credits)

#### Mandatory subjects

- CompMed Thematic school (late August 2021) at the European Scientific Institute (ESI), Archamps

- Methods and means for BioHealth research
- Language (French or English)

#### Elective subjects

- Innovative projects in biotechnologies (Grenoble School of Management)
- Proteomics for health research
- Innovative cell and gene therapies
- Biomarkers and *in vitro* diagnostics
- Current and future perspectives for the control of infectious agents
- Animal experimentation
- Micro and nanotechnologies for health
- Genetics and epigenetics of infertility
- Pharmacological repositionning
- Artificial Intelligence for Health subjects (large range of choices)

### SECOND SEMESTER (30 ECTS credits)

6-months internship in a company, a lab or at the hospital, in France or elsewhere

Thematic school (10 days): either Safer Nanomaterials, or Precision Oncology

### Master 2e année

#### Semestre 9

7 option(s) au choix parmi 19

<b>UE Computer-based medicine for chronic diseases (ESI summer school archamps)</b>	6 ECTS
<b>UE Molecular tools for the diagnosis and treatment of genetic diseases</b>	3 ECTS
<b>UE Proteomics for health research</b>	3 ECTS
<b>UE Technological innovation in health</b>	
<b>UE Computational biology</b>	
<b>UE French as a foreign language</b>	
<b>UE other UGA's mentions</b>	
<b>UE other UGA's mentions</b>	
<b>UE Research project - long internship</b>	
<b>UE Research project - short internship 1</b>	
<b>UE Computer-aided drug design : therapeutic applications</b>	3 ECTS
<b>UE Innovative cell and gene therapies</b>	9 ECTS
<b>UE Animal experimentation</b>	3 ECTS
<b>UE Environmental epidemiology</b>	
<b>UE Regulations in health and environmental safety</b>	
<b>UE Modeling in environmental health</b>	

#### UE Methods in environment, health and GIS

<b>UE Micro and nanotechnologies for health</b>	3 ECTS
<b>UE Pollutants and health</b>	3 ECTS

#### Semestre 10

1 option(s) au choix parmi 4

<b>UE Big data for healthy living (ESI summer school archamps)</b>	6 ECTS
<b>UE Safer ecodesign for nanomaterials (ESI summer school archamps)</b>	
<b>UE Augmented reality in surgery</b>	
<b>UE Technological innovation in health</b>	