

Parcours Biohealth engineering 1re et 2e année

Présentation

The master's program in BioHealth Engineering (BHE) provides a solid foundation for the development of sustainable biotechnological solutions and their use in health care. Students acquire knowledge about state-of-the-art techniques, experience in operating technological platforms and analyzing big data in the context of human health. Graduates have the competence necessary to research and develop diagnostics, disease prevention tools and therapies

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 innovative tools for diseases detection and drug design and delivery, for modeling diseases progression and drug response aiming at improving our skills in personalized medicine.

Over the past 150 years, thanks to basic and translational science, average life expectancy has increased leading to an increased occurrence in chronic diseases. There is consequently a growing need for scientists to increase their knowledge in multi-pathologic models in order to adjust biomedical innovations. 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.

Thus, the first year of the Master BHE aims at teaching basic sciences (basic technical skills in biology and chemistry, statistics, drug design and modeling, physiology, English) and initiation in innovative biomedical engineering (DNA/membrane/cell system technologies, data training). The 1st year of the master's program in BioHealth Engineering (BHE) consists in two terms (S7 and S8) of courses. Each term consist of approximately 30 ECTS credits. The courses presented on this page apply to studies starting in autumn 2022.

Admission

Conditions d'admission

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 \(VAPP\)](#)

You can also consult the prices applying to the public of the continuing education (link : <https://www.univ-grenoble-alpes.fr/consulter-nos-tarifs/>)

Candidature

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: application from the 1st of March to the 29th of April 2024.
- 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 application dates are as follows: from 01 october 2023 to 15 december 2023. These dates are also listed on the Campus France website.
- 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

Public cible

Non French speaking students with a background in :

- Molecular biology, cellular biology and biotechnologies (biotechnology courses)
- Biology, biochemistry, toxicology (health-environment courses)
- Medical imaging, signal processing, informatics...(innovative medical devices courses)

This program is also open to students with a medical or pharmaceutical background. This MSc can also be selected by french speaking students wishing to follow courses in english and to include a mobility in their 2nd year (courses or internship).

- Students from the first year of Master's programme (M1) « Ingénierie de la Santé »
- Students who have validated 4 years of higher education in biology, chemistry- biology...
- Students who validated 5 years of Pharmacy studies – industrial or research track
- MD or PharmD students with a strong scientific background, students in veterinary medicine
- Students in life sciences engineering
- Other profiles, after examination by the selection committee

Droits de scolarité

3500 € specific participation costs + national costs

Poursuite d'études

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

Insertion professionnelle

Find all the information concerning the success rate at the diploma and the future of our graduates (link: <https://www.univ-grenoble-alpes.fr/formation/devenir-de-nos-diplomes/>)

It is also possible to consult our resource documents From studies to employment classified by fields of training (link:

<https://prose.univ-grenoble-alpes.fr/metiers-secteurs/choisir-une-thematique-ou-un-secteur/>)

Infos pratiques :

- > Composante : UFR Pharmacie
- > Niveau : Bac +5
- > Durée : 2 ans
- > Type de formation : Formation initiale / continue, Formation à distance
- > Lieu : Grenoble - La Tronche domaine de la Merci

Contacts

Responsable pédagogique

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Secrétariat de scolarité

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Programme

Programme en cours de saisie, se référer aux MCCC dans les pièces à télécharger.

Master 1re année

Semestre 7

UE Biotechnology of membrane and cell systems	3 ECTS
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UE Planning and communication in science	3 ECTS
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UE French as a foreign language	
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UE Anglais	3 ECTS
UE Practical aspects of biotechnology - Fundamentals	3 ECTS
UE Physiology	3 ECTS
UE Pharmaceutical formulation	3 ECTS
UE Informatics and statistics	3 ECTS
0 option(s) au choix parmi 0	
UE Biotechnology of DNA systems	3 ECTS
UE Data management technologies, policies and ethics	3 ECTS
UE Scientific programming in Python	3 ECTS
UE Health Innovation Report	3 ECTS

Semestre 8

UE Introduction to drug discovery and drug design	3 ECTS
UE Hackathon project	3 ECTS
UE Internship	12 ECTS
0 option(s) au choix parmi 0	
UE Biotechnology engineering: design, experimentation and marketing	12 ECTS
UE Data challenge	6 ECTS
UE Image processing	6 ECTS

Master 2e année

Semestre 9

7 option(s) au choix parmi 10	
UE Computer-based medicine for chronic diseases (ESI summer school archamps)	6 ECTS
UE Proteomics for health research	3 ECTS
UE French as a foreign language	
UE other UGA's mentions	
UE other UGA's mentions	
UE Innovative cell and gene therapies	6 ECTS
UE Animal experimentation	3 ECTS
UE Modeling in environmental health	
UE Micro and nanotechnologies for health	3 ECTS
UE Pollutants and health	3 ECTS

UE Anglais	3 ECTS
UE Application of AI for Healthcare	3 ECTS
UE Artificial intelligence for OMICS	6 ECTS
UE BioHC School "Learning for health data"	6 ECTS
UE Biomedicines innovative project	6 ECTS
UE Regenerative medicine innovative project	6 ECTS
UE In vitro diagnostics innovative project	6 ECTS
UE Treatment and prophylaxis of infectious diseases	3 ECTS
UE Data analysis in health and environment	3 ECTS
UE Data management technologies, policies and ethics	3 ECTS
UE Drug repositioning	3 ECTS
UE Ethical and societal aspects of Artificial Intelligence	3 ECTS
UE Genetics and epigenetics of infertility	3 ECTS
UE Internet of things and AI for Health	3 ECTS
UE Introduction to AI for Health	3 ECTS
UE Machine learning and Deep learning for health	3 ECTS
UE Market analysis, finance, strategy	3 ECTS
UE Methods and means for biohealth research	6 ECTS
UE Neural network modelling AI for Health Applications	3 ECTS
UE Biomarkers and In Vitro Diagnostics	6 ECTS

Semestre 10

1 option(s) au choix parmi 6	
UE Ecole BioHC (Une école au choix parmi les écoles organisées)	6 ECTS
UE Entrepreneurship essentials (EIT)	6 ECTS
UE Projet Tutoré	6 ECTS
UE Stage EIT	18 ECTS
UE Stage 24 ECTS	24 ECTS
UE Stage	30 ECTS