ST4Health

Science & Technology for Health Master's Program

ST4Health

At a Glance

Welcome to ST4Health

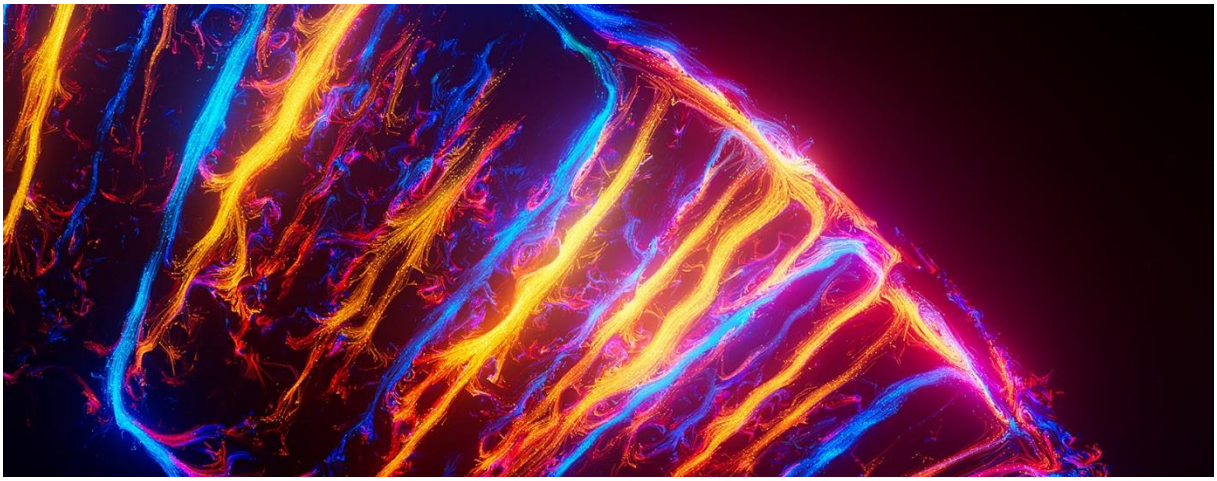


Photo credit: Alexandre Dizeux/ Physics for Medicine Paris

Shaping the future of healthcare through science, engineering and innovation

Welcome to the Master's program Science & Technology for Health (ST4Health) at Université PSL.

Healthcare is undergoing profound transformations driven by advances in biomedical engineering, artificial intelligence, digital technologies, data science, biotechnology and neuroscience. Addressing today's healthcare challenges requires professionals capable of working across disciplines and collaborating with scientists, engineers, clinicians, entrepreneurs and policymakers.

ST4Health was designed to train this new generation of innovators.

Bringing together expertise from across PSL University and its partners, the program combines rigorous scientific training, project-based learning, research experience and exposure to real-world healthcare challenges. Students from diverse backgrounds in engineering, life sciences, medicine, physics, mathematics, computer science and related disciplines learn to work together to design tomorrow's health solutions.

Over two years, you will acquire both a broad understanding of biomedical engineering and advanced expertise in one of three specialization tracks:

- **Artificial Intelligence & Digital Health (AIH)**
- **Biomaterials & Engineering for Health (BEH)**
- **Digital Mental Health (DMH)**

Whether your ambition is to pursue research, develop innovative medical technologies, contribute to digital health transformation, launch a startup or continue towards a PhD, ST4Health provides the scientific foundations, interdisciplinary mindset and professional skills needed to become a key actor in healthcare innovation.

Located within the dynamic ecosystem of Université PSL, PariSanté Campus and Institut Curie, ST4Health offers a unique environment where education, research, clinical practice and innovation converge to shape the future of health.

We are delighted to welcome you to this exciting journey.

The ST4Health Team

Your Journey at ST4Health

Master 1

Semester 1

Core courses *(3 ECTS)*
- Scientific communication &Soft skills
- Language (English/French)
- Weekly conferences

Elective specialization courses *(21 ECTS)*
Life sciences, Data science, Engineering, Neurosciences,...

Project *(6 ECTS)*
State-of-the-Art study

Semester 2

Elective specialization courses *(21 ECTS + Language 1 ECTS)*
Life sciences, Data science, Engineering, Neurosciences...

Project *(8 ECTS)*
Biomedical engineering group project

Master 2

Semester 3

Core courses *(all M2 tracks – 12 ECTS)*
- ST4Health Challenge
- Research methodology
- Medical sciences for engineers
- Society & Innovation for health
- Upgrade in biology
- Upgrade in programming
- Weekly conferences
- Language (English/French)

Track courses *(minimum 18 ECTS in one of the tracks)*
- AI & Digital Health – 7 track courses
- Biomat. & Eng. for Health – 8 track courses
- Digital Mental Health – 8 track courses

Semester 4

Core courses *(all M2 tracks – 6 ECTS)*
- Healthcare organization & development of health products
- Entrepreneurship in health and medtech

Master thesis *(24 ECTS – 5-6 month research internship)*
- AI & Digital Health
- Biomat. & Eng. for Health
- Digital Mental Health

Three specialization tracks

Track – AI & Digital Health (AIH)
Study & design of data science, AI and image analysis approaches to accelerate progress in personalized medicine and support the emergence of new healthcare technologies.

Track – Biomaterials & Engineering for Health (BEH)
Study & design of materials, devices and technologies interfaced with biological systems to create and develop innovative therapeutic and diagnostic solutions.

Track – Digital Mental Health (DMH)
Study & design of innovative solutions using digital sciences and technologies for the diagnosis and treatment of mental health pathologies.

What skills will you develop?

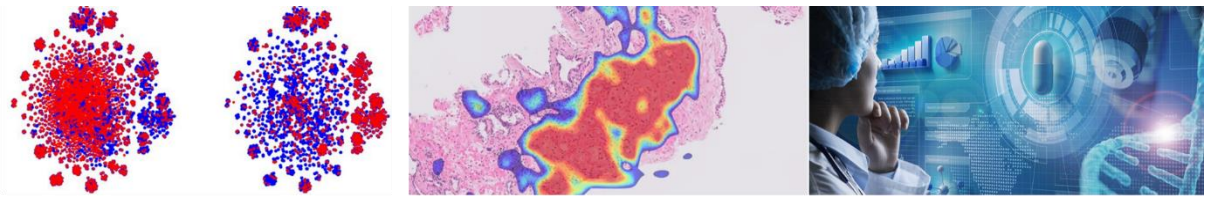
- Biomedical Engineering
- Artificial Intelligence & Data Science
- Life Sciences & Medicine
- Research Methodology
- Innovation & Entrepreneurship
- Project Management
- Scientific Communication
- Interdisciplinary Teamwork

Where can ST4Health take you?

- Research Engineer
- Biomedical Engineer
- Health Data Scientist
- AI Engineer for Healthcare
- Medical Device Specialist
- Neurotechnology Specialist
- Innovation Consultant
- Entrepreneur
- PhD Candidate

Artificial Intelligence & Digital Health (AIH Track)

A forward-looking program at the interface of artificial intelligence, data science, and healthcare innovation. The AIH track trains students to design responsible AI-based solutions for prevention, diagnosis, treatment, and healthcare organization, while placing clinical relevance, ethical awareness, and patient benefit at the heart of digital health transformation.



From Gichaoua et al. JCIM 2024 – CC-BY 4.0

Turning health data into medical innovation

The AIH track trains students to use artificial intelligence, data science and computational methods to address major challenges in biomedical research and healthcare. Students learn how to analyse complex health data, design robust AI workflows, and evaluate digital tools for applications such as medical imaging, clinical decision support, computational biology, bioinformatics, digital pathology, multi-omics integration, precision medicine and drug discovery.

The track combines advanced methodological training with a critical understanding of the specific constraints of health data: heterogeneity, limited annotation, bias, interpretability, reproducibility, privacy and clinical relevance.

Who should apply?

AIH is suited to students with backgrounds in computer science, data science, applied mathematics, physics, engineering, biomedical sciences, quantitative life sciences as well as health sciences (medicine, pharmacy, etc), who want to apply computational approaches to biomedical and clinical questions.

What you will learn

Students develop specialized skills in:

- Machine learning and deep learning for health
- Biomedical and clinical data analysis
- Medical image processing
- Bioinformatics and computational biology
- Multimodal and multi-omics data integration
- Responsible and interpretable AI for healthcare

Research & career opportunities

The Master thesis is a 5–6-month research internship in a laboratory, hospital, institute or innovation environment. Projects may focus on AI for medical imaging, digital pathology, foundation models for health, clinical decision support, precision medicine, drug discovery or computational biology.

Graduates may pursue careers as health data scientists, AI engineers for healthcare, computational biologists, bioinformatics specialists, medical imaging scientists, digital health specialists or research engineers. The track also provides strong preparation for PhD studies in AI, biomedical engineering, bioinformatics, computational biology or digital health.

Biomaterials & Engineering for Health (BEH Track)

A hands-on bioengineering program focused on the design of materials, devices, and technologies that interact with living systems for medical applications. The BEH track prepares students to develop biomaterials and therapeutic and diagnostic technologies by connecting scientific approaches with engineering creativity, biological complexity, and unmet clinical needs.

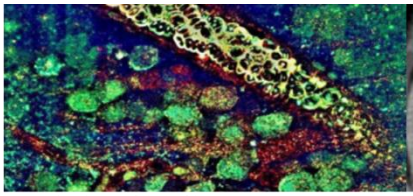


Image credit: Institut Langevin / Université PSL

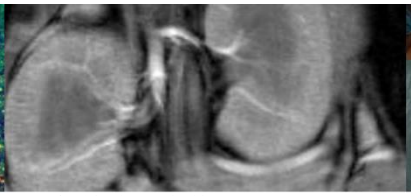


Image credit: Chimie ParisTech / Université PSL



Engineering materials and devices for tomorrow's healthcare

The BEH track focuses on the design of materials, devices and engineering strategies for biomedical and healthcare applications. Students explore how materials interact with living systems and how these interactions can be controlled to develop innovative solutions for diagnosis, therapy, regeneration, monitoring and biomedical research.

The track connects material properties, biological responses, medical needs and technological constraints. It provides a strong scientific and engineering foundation for students interested in developing tangible health technologies, from biomaterials and implants to diagnostic tools and biomedical imaging systems.

Who should apply?

BEH is designed for students with backgrounds in engineering, physical sciences, life sciences, or health sciences (medicine, pharmacy, etc.) who wish to address healthcare challenges through the development of innovative materials and devices interfacing with biological systems.

What you will learn

Students develop specialized skills in:

- Biomaterials and biointerfaces
- Materials–biology interactions
- Tissue engineering and regenerative medicine
- Implantable and medical device engineering
- Nanomedicine and diagnostic technologies
- Biomedical imaging and health-oriented engineering design

Research & career opportunities

The Master thesis is a 5–6-month research internship. Projects may involve biomaterial and implant engineering, surface engineering for medicine, biointerfaces, tissue engineering, nanomedicine, biomedical imaging, diagnostic technologies, or physics and chemistry applied to health.

Graduates are prepared for careers in biomaterials engineering, medical device R&D, MedTech and BioTech industries, diagnostic technology development, biomedical imaging, tissue engineering, research engineering, innovation management or technology transfer. The track also prepares students for PhD studies in biomaterials, biomedical engineering, medical physics, chemistry, materials science or related fields.

Digital Mental Health (DMH Track)

An interdisciplinary program combining neuroscience, artificial intelligence, and cutting-edge technologies to address the growing mental health crisis in France and worldwide. This unique master's track trains experts who can harness advanced technologies to explore the complex connections between brain activity, cognition, and behavior, whilst placing human experience at the center of mental health challenges.

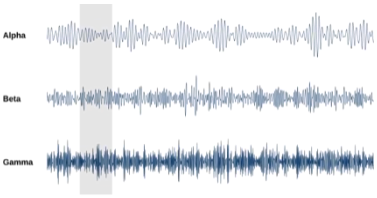




Photo credit: Alexandre Dizeux/ Physics for Medicine Paris

Science and technology for the future of mental healthcare

In response to the growing mental health crisis, the DMH track explores how neuroscience, psychiatry, psychology, artificial intelligence, computational approaches, neurotechnology and digital health can contribute to better understanding, assessing, monitoring and supporting mental health.

The track is designed around a balanced view of digital mental health: technologies are studied not only as tools, but also in relation to clinical practice, lived experience, ethics, society and patient-centered innovation. Students learn to critically evaluate digital mental health solutions and to contribute responsibly to innovation in this rapidly evolving field.

Who should apply?

DMH is suited to students interested in mental health, neuroscience, psychology, psychiatry, cognitive science, biomedical engineering, data science or digital health, and who wish to work at the interface between brain sciences, behaviour, care and technology.

What you will learn

Students develop specialized skills in:

- Psychiatry and mental health research
- Advanced neuroscience and brain–body interactions
- Computational psychiatry and AI for mental health
- Neurotechnology, neuroimaging and neural data analysis
- Connected devices, digital interventions and neurofeedback
- Ethical, participatory and patient-centred design

Research & career opportunities

The Master thesis is a 5–6-month research internship. Projects may focus on computational psychiatry, digital phenotyping, AI-based mental health data analysis, neurofeedback, brain-computer interfaces, connected devices, virtual reality, neuromodulation, neuroscience data analysis or digital therapeutics.

Graduates may pursue careers as digital mental health specialists, neuroscience data analysts, research engineers in neurotechnology, digital health innovation specialists, clinical research associates, mental health technology consultants or AI and mental health researchers. The track also provides a strong foundation for PhD studies in neuroscience, psychiatry, cognitive science, computational psychiatry, digital health or neurotechnology.

Practical information

Program format

- **Degree:** Master's degree in Science & Technology for Health
- **University:** Université PSL
- **Language of instruction:** English
- **Duration:** Two years (possibility to enter in M2 year)
- **ECTS credits:** 120 ECTS (60 ECTS per year)
- **Mode of study:** Full-time
- **Main teaching locations:** PariSanté Campus, ESPCI Paris – PSL and partner institutions
- **Specialization tracks:**
    - AI & Digital Health
    - Biomaterials & Engineering for Health
    - Digital Mental Health

Who should apply?

ST4Health is intended for motivated students with a strong academic background in science, engineering or health-related disciplines. The program is particularly suitable for students trained in:

- engineering;
- physics, chemistry or materials science;
- biology, biotechnology, neuroscience, or life sciences;
- mathematics, computer science or data science;
- medicine, pharmacy or other health sciences.

Applicants should be interested in interdisciplinary work and motivated to address health challenges through scientific and technological innovation.

Teaching locations

Courses are mainly delivered in Paris, within PSL's academic and innovation ecosystem. Key locations include:

- **PariSanté Campus** [map], a major hub dedicated to digital health, health innovation and interdisciplinary collaboration;
- **ESPCI Paris – PSL** [map], a leading engineering and research institution within PSL;
- partner institutions and research sites depending on courses, projects and internships.

International environment

ST4Health is taught in English and welcomes students from diverse academic and geographical backgrounds. The program prepares students to work in international research and innovation environments, where collaboration across disciplines and cultures is essential.

Student support

Students benefit from academic guidance throughout the program, including support for course selection, track orientation, project definition and internship preparation. PSL also provides services for student life (Campus life@PSL | PSL), international students (PSL Welcome Desk | PSL), administrative support and well-being.

Welcome to the ST4Health Community

By joining ST4Health, you become part of a vibrant and diverse community of students, researchers, clinicians, engineers and innovators working together to shape the future of healthcare.

Over the next two years, you will develop scientific expertise, technical skills and an interdisciplinary mindset that will enable you to address complex healthcare challenges and contribute to meaningful innovations. Beyond the courses themselves, ST4Health offers opportunities to engage in research, collaborate across disciplines, interact with healthcare professionals and participate in a dynamic ecosystem of innovation.

The program will challenge you to step outside your comfort zone, explore new fields, work in multidisciplinary teams and transform ideas into solutions with real-world impact.

Whether your future lies in research, industry, entrepreneurship or clinical innovation, we hope that ST4Health will provide the foundations, inspiration and network to help you achieve your ambitions.

We look forward to accompanying you on this exciting journey.

Welcome to ST4Health. Welcome to Université PSL.

The ST4Health Team



Contacts

For general information, admissions and administrative questions, please contact:

ST4Health Master Program
Université PSL
Email: admin@st4health.fr
Website: ST4Health website

For track-specific information:

- AI & Digital Health — AIH: aih@st4health.fr
- Biomaterials & Engineering for Health — BEH: beh@st4health.fr
- Digital Mental Health — DMH: dmh@st4health.fr