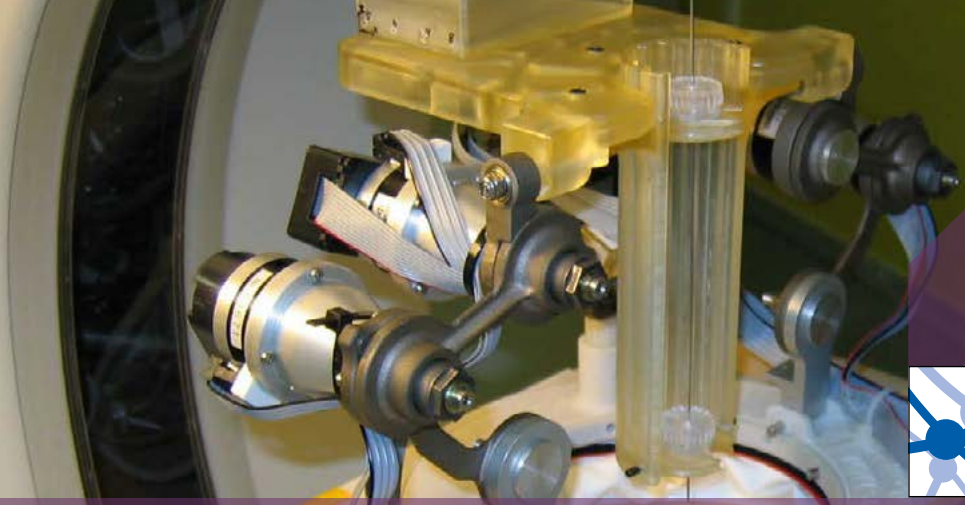

↗ 5 introductory courses for and by research
↗ Access to PhD studies
↗ Globally-driven
↗ Adjustable program
↗ Support by excellence international research institutes

École d'ingénieurs
Télécom Physique Strasbourg

Master of Imaging, Robotics and Biomedical Engineering (MSc degree)

PURPOSES / SKILLS

This research- and innovation- oriented Master's course aims at providing the future Engineer with in-depth skills in the following area:

- control theory, medical and surgical robotics
- data processing and analysis
- control of complex systems and development of robotic solutions
- computer vision and imaging modalities
- photonics and nanotechnologies for healthcare
- topography and photogrammetry

This program allows for the acquisition of skills in solving scientific and technological usually complex problems, in the fields of R&D or discovery research.

CAREER AND INTERNSHIP PROSPECTS

- **Industry**: Airbus, Alcatel-Lucent, Daimler, EDF, General Motors, Safran, Siemens, ST-Microelectronics, Renault, Thales, Total... and high-potential technology start-ups
- **Research organizations:** *CEA* (French Alternative Energies and Atomic Energy Commission), *CERN* (European Organization for Nuclear Research), *CNRS* (National Center for Scientific Research), *INRAP* (National Institute for Preventive Archaeological Research), *INRIA* (National Institute for Research in Computer Science and Control), *INSERM* (National Institute of Health and Medical Research), *ONERA* (National Centre for Aerospace Research), universities , etc.

PARTNERS

Research institutes and technology transfer organizations:

- ICube research institute (*CNRS*, National Center for Scientific Research) – Engineering, Computer and Imaging Sciences, 625 active members, 263 permanent employees, 183 PhD students
- *IRCAD* (Research Institute Against Digestive Cancer) and its branches in Asia (Taiwan), South America (Brazil) and Africa
- *CRT* (Technology Resource Center) for laser processing (IREPA LASER)
- *IHU* (Hospital University of Strasbourg) for image-guided mini-invasive surgery
- The Master of Imaging, Robotics and Biomedical Engineering is jointly accredited by the *INSA* (National Institute for Applied Sciences) of Strasbourg.

THE MASTER'S DEGREE IN NUMBERS

- 160 students enrolled every year
- 500 hours of training in the first year, 250 hours of training in the second year
- 19 weeks of internship on a research topic in the second year
- Training seminars in English (Medical Robotics)

IMT Grand Est
Université de Strasbourg

ADMISSIONS

- Engineering students in the fields of Information Technology (*Télécom Physique Strasbourg*, *INSA*, etc.), Physics, Electronics and Control Theory / Automated Systems Electromechanics and Computer Science, as well as students from the Faculty of Medicine (specific program)
- Download the application form on the Master's course website: www.master-iriv.fr

- Application submission and admission decision: in Spring
- Start of the academic year: September
  The detailed calendar is available on the website: www.master-iriv.fr

COURSES

Year	Control Theory, Signal, Computer Science	Physics and Nanophotonics
1st semester 30 ECTS	↗ Signal Processing ↗ Probability and Statistics ↗ Computer Science ↗ Robotics, Control Theory, Image, Vision ↗ Language	↗ Signal Processing ↗ Probability and Statistics ↗ Computer Science ↗ Experimental Physics ↗ Nanosciences, Laser Physics ↗ Language
2nd semester 30 ECTS	↗ Digital control ↗ Sustainable Engineering ↗ Science for Healthcare ↗ Biomechanics and Healthcare ↗ Image Processing ↗ Electronics and Embedded Systems ↗ Telecommunications and Cybersecurity ↗ Research project ↗ Financial Management ↗ Language	↗ Statistical Physics ↗ Atomic Physics ↗ Photonics, Instrumental Photonics ↗ Light-Material Interaction ↗ Nanosciences ↗ Research project ↗ Financial Management ↗ Language
3rd semester 30 ECTS	Core curriculum: Imaging Modalities and Image Processing ↗ **Image and Data:** methodological tools in image processing, medical image processing, biological and bioinformatic image processing, radar image processing, computer vision, pattern learning and recognition, deep learning, etc. ↗ **Control Theory and Robotics:** manipulation and mobile robotics, robust control, optimal control, optimal estimation and filtering, non-linear systems, , real time and embedded systems, optimization, etc. ↗ **Imaging, Medical and Surgical Robotics:** computer-assisted medical-surgical gestures, medical imaging devices, anatomy and medical image processing, medical robotics, etc. ↗ **Nanophotonics:** photonics, laser and femtosecond techniques, non-linear optics, biophotonics, microphotonics, power photonics, biomedical optics, etc. ↗ **Topography and photogrammetry:** teledetection, geographical information systems, photogrammetry, digital terrain model, pattern recognition	
4th semester	Research internship and bibliographical report	

INTERNATIONAL MOBILITY

- Research internships in a foreign country within bilateral agreements between *Télécom Physique Strasbourg* and 40 international partnerships

Contacts

Télécom Physique Strasbourg
Pôle API - Parc d'Innovation
300 Bd Sébastien Brant
CS 10413
67412 ILLKIRCH Cedex
France

tps-scolarite@unistra.fr

www.telecom-physique.fr
www.master-iriv.fr

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