Analysis and processing of biomedical signals

Semester
Fall

In brief

Course langage: French

Presentation

Learning objectives

To enable the general engineer to identify the problems that may arise in signal and image processing for biomedical purposes, and to provide him or her with the essential elements for the extraction, processing and representation of information. Acquire the principles of a scientific approach and new and specific techniques for biomedical signal processing. Master the techniques of processing, analysis and interpretation.

Description of the programme

The study of biomedical signals and images is a particular field of signal processing. Biomedical signal processing is a discipline that has undergone significant development in recent years. Diagnostic support using signal processing tools plays a key role in the progress of medicine. This course will cover the fundamental aspects of extraction, processing and representation of information contained in signals.
The aim is to discover some basic techniques used for the modeling and analysis of biological signals and images, from concrete examples of application of these techniques to the needs of the medical field (electroencephalogram, electrocardiogram, magnetic resonance imaging, nuclear imaging...). To use, but also to adapt different techniques, such as filtering, spectral analysis, time-frequency analysis, estimation, pattern recognition, etc., in order to make the best use of them for the desired applications.
Directed work sessions on the use of simulation and analysis software will aim to illustrate the theoretical content of the course by using real and/or simulated data.

Generic central skills and knowledge targeted in the discipline

- Learn to question the choice of methods.
- Master the basic principles of modeling and analysis.

- Master the complexity of the systems and problems they encounter.
- To have a strategic vision and know how to implement it.

How knowledge is tested

Continuous assessment: an average of the reports and writings

Bibliography

Course materials

Teaching team

Salah Bourennane
Caroline Fossati

Sustainable Development Goal


Climate action


Life below water


Life on land

Total des heures		**30h**
CM	Master class	24h
TD	Directed work	6h

Useful info

Name responsible for EU

Lead Instructor
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