

The course will enable the student to acquire advanced knowledge and skills regarding electrochemical and electroanalytical as well as sensor techniques, instrumentation and procedures employed in physical, chemical and material science research laboratories, in analysis, quality control and material characterization laboratories. Experience will also be gained in the design (through the experimental design, in the context of Quality by Design) of research methodologies for various applications. In this context, the student will acquire the theoretical-practical foundations of electrochemical and electroanalytical techniques (conductometric, potentiometric, voltammetric, amperometric, impedimetric, spectroelectrochemical ones) as well as for the production of sensors (electrochemical, field-effect, optical, piezoelectric, thermal ones).

EXPECTED LEARNING OUTCOMES

- Develop an in-depth, extensive knowledge of principles, protocols and applications of electrochemical and electroanalytical and sensor techniques
- Acquire detailed specific knowledge regarding the characteristics and functioning of complex electrochemical and electroanalytical and sensor instrumentation in use in materials' analyses and quality control laboratories
- Use Experimental Design techniques for experimental planning