



## Training Offer

### Process Continuous Improvement

- **Lean Six Sigma**
- **Design of Experiments (DoE):** introductory, intermediate, and advanced levels
- **Statistical Process Control (SPC):** introductory, intermediate, and advanced levels
- **Empirical Modeling based on industrial and laboratory data:** introductory, intermediate, and advanced levels
- **Industrial Soft Sensors development**
- **Development of predictive models** for estimating product properties (especially those difficult to determine) based on analytical measurements (**NIR**, **FT-IR**, etc.) and industrial data.

### Statistical Methods and Machine Learning

- **Statistical Methods:** basic, intermediate, and advanced levels
- **Exploratory Data Analysis (EDA)**
- **Parametric and Non-Parametric Hypothesis Testing**
- **ANOVA (Analysis of Variance)**
- **Simple and Multiple Linear Regression**
- **Chemometrics**
- **Big Data Analytics**
- **Decision Trees:** CART, Random Forests, Gradient Boosting Trees
- **Regularization Methods:** Ridge regression, LASSO

### Polymers and Composite Materials

- **Polymers (General):** Synthesis or modification of polymers
- **Polymeric Coatings** (biomedical or industrial applications)
- **Polymer Characterization Methods**
- **Polymer Functionalization**
- **Polymer Degradation**
- **Characterization of Polymeric Materials**
- **Determination of Surface Properties** of materials / interactions with biological systems
- **Polyelectrolytes** (characterization and performance, including natural polyelectrolytes)



## Biomaterials

- **Biomaterials:** properties and applications
- **Selection and Extraction of natural bioactive compounds**
- **Controlled Release Systems** for bioactive compounds
- **Tissue Engineering**

## Microbiology and Novel Foods

- **Industrial Microbiology Laboratories**
- **Functional Foods**
- **Development of New Formulations**

## Waste and Effluent Management

- **Waste Management**
- **Processing and Treatment of hazardous industrial waste**
- **Physicochemical Analysis of liquid effluents**
- **Membrane Technology** for biotechnological product separation
- **Air Pollution and Gaseous Emission Control**
- **Treatment and Valorization of Effluents** for value-added products
- **Material Recovery** from effluents and solid waste
- **Effluent Treatment Systems**
- **Nanotechnologies** in effluent treatment and soil remediation

## Operations Management

- **Optimal Scheduling and Planning** of processes
- **Optimization Tools** and their application to operations management
- **Process Optimization** (Introduction to PSE - Process Systems Engineering)

## Systems Dynamics and Modeling

- **Modeling and Simulation** of industrial processes



## Automatic Control

- **Industrial Information Systems** and support technologies
- **Introduction to Production Control Technology** for chemical processes
- **General Principles of P/D Controller Tuning** for chemical processes
- **Advanced Control** of chemical processes / batch systems
- **Control and Optimization** of industrial processes

## Introduction to Advanced Computational Platforms

- **Software Training:** Matlab, GAMS, Python, Mathematica, Aspen
- **Open Source Industrial Information Systems**
- **CFD (Computational Fluid Dynamics)**

## Material Characterization

- **Thermal Analysis of Materials**
- **Characterization of Granular Materials** (micrometric and nanometric)
- **Charge Determination** of granular materials (powders, colloids, and emulsions)
- **Rheology** (rheological characterization)

## Nanomaterials and Gels

- **Sol-Gel Technology**
- **Aerogel Production**
- **Nanomaterials - Gels**
- **Preparation of Micro and Nano-particles**

## Fundamental Training

- **From Forest to Paper**
- **Fundamental Aspects of Cellulose and Paper Chemistry**
- **Tissue Paper**
- **Chemical Technology Laboratories**
- **Dimensional Analysis**
- **Experimental Activity Workshops** for secondary education



- **Grant Writing:** How to prepare project applications for European Programs or Portugal 2020/2030
- **Entrepreneurship and Innovation**
- **Communication Techniques**
- **Negotiation and Interpersonal Relations**