

Disciplina : Statistical Data Analysis in R

Curso de pós-graduação no PPGF – Segundo Semestre – 2019
30 HORAS – 6 CRÉDITOS

Prof. Dr. Viktor Ermakov – Professor visitante

TURMA 1: início 13 DE AGOSTO DE 2019 às Terças das 10 às 12 horas

TURMA 2: início 14 DE AGOSTO DE 2019 às Quartas das 8 às 10 horas

Ementa da disciplina:

- Big picture of statistics.
- Measure of center and variation.
- Categorical and quantitative data analysis.
- Probability, laws of probability.
- Probability distributions.
- Analysis of variance.
- Introduction into R.
- Data analysis in R.

Bibliografia principal:

1. Johnson, R.A., Bhattacharyya, G.K., "Statistics Principles & Methods". John Wiley & Sons, Inc., 2010.
2. Kerns, Jay G., "Introduction to Probability and Statistics Using R", 2018.
3. Box, George E. P., Hunter, J. Stuart, Hunter, William G., Statistics for Experimenters, John Wiley & Sons, Inc., 2005.

Disciplina: Synthesis and Characterization of Nanoparticles

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TURMA 2: início 14 DE AGOSTO DE 2019 às Quartas das 10 às 12 horas

Ementa da disciplina:

- Course Overview (introduction to terminology, nanoparticle classification, brief overview of synthesis and characterization techniques);
- Overview on theoretical fundamentals of nanomaterials: optical, electrical and structural properties at nanometric sizes;
- Overview of bottom-up synthesis methods (pyrolysis, inert gas condensation, solvothermal reaction, sol-gel fabrication, structured media);
- Overview of top-down synthesis method (milling, thermal spraying, laser ablation);
- Important parameters of nanoparticles (size, shape, surface properties, crystallinity, and dispersion state);
- Overview of common characterization techniques (X-ray, UV-Vis, IR spectroscopy, transmission scanning electron microscopy and tunneling microscopy, single-particle measurements);
- Functionalization of nanoparticles, electrostatic properties (z potential) and their implementations.
- Application of nanoparticles (energy, sensing and biomedical applications).
- Metallic, semiconductor and dielectric nanoparticles synthesized by laser ablation and assisted laser ablation in different environments (liquids, vacuum and controlled atmosphere).

Bibliografia principal:

1. Mahmood Aliofkhazraei – Handbook of Nanoparticles, Springer, 2015, 1439 p.
2. Claudia Altavilla, Enrico Ciliberto – Inorganic Nanoparticles: Synthesis, Applications, and Perspectives, CRC Press, 2010, 576 p.
3. Günter Schmid – Nanoparticles: From Theory to Application, Wiley, 2004, 434 p.
4. E.R. Leite, C. Ribeiro – Crystallization and Growth of Colloidal Nanocrystals, SpringerBriefs in Materials, DOI 10.1007/978-1-4614-1308-0_1.