Course Syllabus

Department/Faculty
Engineering School

Graduate Program
Electrical Engineering and Computing

Degree
☒ Academic Master's ☒ Doctorate (PhD) ☐ Professional Master's

Course Name
Scientific Data Analysis

Professor(s)*
Dr. Paulo José de Aguiar Simões

Office hours
48

Course Overview
Introduction and application of methods and techniques for processing, analysis and visualization of scientific data using Python.

Topics outline

- Review of Python programming
- Reading and writing datasets
- Analysis of 1D, 2D and n-D datasets
- Model fitting
- Data visualization for analysis, publications and presentations

Letter Grade Assignment
Grade A (Excellent) - Grade points between 9 and 10
Grade B (Good) - Grade points between 8 and 8.9
Grade C (Satisfactory) - Grade points between 7 and 7.9
Grade D (Unsatisfactory) - Grade points between 0 and 6.9

Texts, Materials, and supplies

KONG, Q., SIAUW, T., BAYEN, A. **Python Programming And Numerical Methods: A Guide For Engineers And Scientists.** Academic Press, 2020.

VANDERPLAS, J. **Python Data Science Handbook**, O'Reilly Media, 2016

RAMAN, K. **Mastering Python Data Visualization.** New York: Pact Publishing, 2015

IVEZIC, Z., CONNOLLY, A.J., VANDERPLAS, J.T., GRAY, **A. Statistics, Data Mining and Machine Learning in Astronomy: A Practical Python Guide for the Analysis of Survey Data.** Princeton: Princeton University Press, 2014.

LANDAU, R.H., PÁEZ, M.J., BORDEIANU, C.C., **Computational Physics: Problem Solving with Computers.** WILEY-VCH Verlag GmbH & Co. 2012.

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