Syllabus

Advanced Data Analysis - 77742

Last update 16-08-2018

HU Credits: 4

Responsible Department: Physics

Academic year: 0

Semester: 1st Semester

Teaching Languages: English

Campus: E. Safra

Course/Module Coordinator: Dr. Assaf Horesh

Coordinator Email: assafh@mail.huji.ac.il

Coordinator Office Hours: by appointment

Teaching Staff:
Dr. Assaf Horesh

Course/Module description:
The class will teach advanced methods of analyzing experimental and

observational data and will introduce the relevant statistical and numerical tools

Course/Module aims:
 To teach advanced methods of data analysis

Learning outcomes - On successful completion of this module, students should be able to:
  1. Calculation of prob. distributions and fitting to experimental data including noise and systematics
2. Fitting and analsis of BIG DATA
3. Applying Baysian analysis
4. Using Monte-Carlo integration
5. Analyze dynamical multi-scale time series
6. Multi dimensional stochasic optimization

Attendance requirements(%):

Teaching arrangement and method of instruction: Lectures

Course/Module Content:
  Intro to data analysis
Probability distributions
Generating functions, moments, and central moments
Covariance and correlation matrices
Fitting and hypothesis testing
PCA
Bootstrap and Jackknife methods
Bayesian statistics
Monte-Carlo methods
Dealing with statistical and systematic uncertainties
Advanced and numerical methods

Required Reading:
 None

Additional Reading Material:
  None

Course/Module evaluation:
End of year written/oral examination 0 %
Presentation 0 %
Participation in Tutorials 0 %
Project work 100 %
Assignments 0 %
Reports 0 %
Research project 0 %
Quizzes 0 %
Other 0 %

<u>*Additional information:*</u>
open for third year students, by approval