The Hebrew University of Jerusalem

Syllabus

Introduction to signal processing and data analysis - 78852

Last update 18-10-2019

HU Credits: 4

Degree/Cycle: 2nd degree (Master)

Responsible Department: Brain & Behavioral Sciences

Academic year: 0

Semester: 1st Semester

Teaching Languages: English and Hebrew

Campus: E. Safra

Course/Module Coordinator: Dr. Tsevi Beatus

Coordinator Email: tsevi.beatus@mail.huji.ac.il

Coordinator Office Hours: Thursday 11:00-12:00

Teaching Staff:
  Dr. Tsevi Beatus
Mr.

Course/Module description:
  An introductory course to basic concepts in data analysis and signal processing, and their implementation in Matlab. These skills are important for research in the life sciences and bio-enginerring, particularly in fields that involve measurements such as microscopy, spectroscopy, motion tracking, as well as work with large databases. The course is open also for 3rd year undergraduate students, under approval by the lecturer.

Course/Module aims:
  1. Analyze spatiotemporal and visual data.
2. Formulate and solve numerical models.
3. Fit a model to data.
4. Students will also practice how to independently acquire new programming skills required for their own research.

Learning outcomes - On successful completion of this module, students should be able to:
  See "Course aims".

Attendance requirements(%):
  None

Teaching arrangement and method of instruction: Lecture and TA in a computer lab

Course/Module Content:
  1. Basic programming in Matlab.
2. Image and video analysis.
3. Analyzing spatiotemporal data (filtering, numerical differentiation, autocorrelation, spectral analysis).
4. Numerical modeling (model fitting, modeling using ordinary differential equations).

Required Reading:
 Will be given during the course.

 Additional Reading Material:
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 Course/Module evaluation:
 End of year written/oral examination 0 %
 Presentation 0 %
 Participation in Tutorials 0 %
 Project work 45 %
 Assignments 50 %
 Reports 0 %
 Research project 0 %
 Quizzes 0 %
 Other 5 %
Attendance and participation

Additional information:
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