The Hebrew University of Jerusalem

Syllabus

PROBABILITY AND STATISTICS WORKSHOP FOR ENGINEERING - 83102

Last update 15-03-2019

<u>HU Credits:</u>   1

<u>Degree/Cycle:</u> 1st degree (Bachelor)

<u>Responsible Department:</u> Applied Physics

<u>Academic year:</u> 0

<u>Semester:</u> 2nd Semester

<u>Teaching Languages:</u> Hebrew

<u>Campus:</u> E. Safra

<u>Course/Module Coordinator:</u> Royi Jacobovic

<u>Coordinator Email:</u> royi.jacobovic@mail.huji.ac.il

<u>Coordinator Office Hours:</u> Sunday, 10:45-11:45

<u>*Teaching Staff:*</u>
  Mr. Royi Jacobovic

<u>*Course/Module description:*</u>
  This course is a second course in probability which aims to provide preparation for Random signals and variables (67652). Such preparation includes revision over concepts which have already been presented in your first probability course with some new notions that will also be introduced. In each week, some definitions and results will be discussed in class, mostly without proofs or any other rigorous justifications due to time limitations. Then, you will have a problem set which contains some proofs of results appear in class along with relevant examples.

<u>*Course/Module aims:*</u>
  See course description.

<u>*Learning outcomes - On successful completion of this module, students should be able to:*</u>
  The students will apply basic methods of basic probability which are applied in the next course about signals and random variables (65652).

<u>*Attendance requirements(%):*</u>
  None.

Teaching arrangement and method of instruction: Lectures and self exercises

<u>*Course/Module Content:*</u>
  1) Probability spaces and random variables
2) Transformations of random variables.
3) Expectation and variance of random variables.
4) Transforms of random variables.
4) Bivariate random vectors.
5) Independence and correlation.
6) Conditional distribution.
7) Conditional expectation and variance.
8) Transformations of bivariate random vectors.
9) Covariance matrices of bivariate random vectors.

Required Reading:
 Lecture notes and problem sets including their solutions.

 Additional Reading Material:
  1) Bertsekas, D. P., & Tsitsiklis, J. N. (2002). Introduction to probability (Vol. 1). Belmont, MA: Athena Scientific.

2) Ross, S. (2014). A first course in probability. Pearson.

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

Additional information:
  Some 25-50 percent of the final exam will be taken from the problem sets and the lecture notes.