The Hebrew University of Jerusalem

Syllabus

Supplementary Math Course -Linear Algebra - 76967

Last update 21-09-2023

HU Credits: *2*

Degree/Cycle: *2nd degree (Master)*

Responsible Department: *Brain Science: Computation & Information Proc.*

Academic year: *0*

Semester:

Teaching Languages: *English*

Campus: *E. Safra*

Course/Module Coordinator: *Rachel Cohen*

Coordinator Email: *Rache.cohen5@mail.huji.ac.il*

Coordinator Office Hours:

Teaching Staff:

Prof Yoram Burak,
Ms. Rachel Cohen

Course/Module description:
ELSC Self-Study Supplementary Math Course- Linear Algebra for Neuroscience

Course/Module aims:

Learning outcomes - On successful completion of this module, students should be able to:
to apply the basic tools from Linear Algebra.
This course is essential for participation in the more advanced mandatory courses of ELSC program.

Attendance requirements(%):

Teaching arrangement and method of instruction:

Course/Module Content:
● *Vector and matrix arithmetics: elementary operations between vectors and matrices, linear combinations, linear dependence and independence, elementary matrices, invertibility, trace, similarity between matrices.*
● *Determinants: calculation, geometrical interpretation, multiplication rules and the effect of elementary operations.*
● *Systems of linear equations: general solutions of homogeneous and inhomogeneous systems, dependency on parameters, the inverse matrix.*
● *Finite dimensional vector spaces: Rn spaces, matrix spaces, polynom spaces, spanned sub-spaces, column and row spaces of a matrix, basis and dimension.*
● *Linear transformations: matrix representation of transformations, basis change transformations, representation of linear transformations in different bases, the dimension theorem for linear transformations.*
● *Matrix diagonalization: eigenvectors, eigenvalues, characteristic polynomial, diagonalization over real and complex spaces.*
● *Inner product spaces: standard inner product in Rn, orthogonality, orthonormal bases (GrahmSchmidt process), vector coordinates by orthogonal basis, Cauchy-Schwartz inequality.*

Required Reading:
on Moodle

Additional Reading Material:

Grading Scheme:
Written / Oral / Practical Exam 100 %

Additional information: