

## *The Hebrew University of Jerusalem*

### *Syllabus*

### *Foundations of spatial statistics - 40733*

*Last update 05-08-2019*

*HU Credits:* 2

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

*Responsible Department:* Geography

*Academic year:* 0

*Semester:* 2nd Semester

*Teaching Languages:* Hebrew

*Campus:* Mt. Scopus

*Course/Module Coordinator:* Shaul Tsionit

*Coordinator Email:* [shaultz@openu.ac.il](mailto:shaultz@openu.ac.il)

*Coordinator Office Hours:*

*Teaching Staff:*

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Dr. Shaul Tsionit

Course/Module description:

The course deals with the basic principals of the analysis of spatio-statistic data. Two main subjects are being discussed: Geo-statistics and Spatial-econometrics.

Course/Module aims:

Learning outcomes - On successful completion of this module, students should be able to:

- 1.To understand outcomes of spatial-statistics analysis.
- 2.To analyze spatial-statistics data by software.
- 3.To critically evaluate spatial-statistics analysis.

Attendance requirements(%):

Teaching arrangement and method of instruction:

Course/Module Content:

Course topics:

- 1.Review: Descriptive statistics, Estimation and Statistical tests, Linear Regression.
- 2.Background: Space and Time, Scale problems, Bivariate Normal Distiribution, Principal components analysis.
- 3.Geostatistics: Central location indecies, dispersion and differentiation indecies, correlation indecies.
- 4.Spatial-econometrics: Autoregressive model, Error model, Smoothing methods.

Required Reading:

ספרות עזר

א קלרמן, (1986), מונו-גיאוגרפיה - פרקים בסטטיסטיקה של נתונים מרחביים, אוניברסיטת חיפה.

Anselin L, (2005), Spatial Data with GeoDa: A Workbook,  
<http://geodacenter.asu.edu/system/files/geodaworkbook.pdf>

Burt J E & Barber G M, (1996), Elementary Statistics for Geographers, Guilford Press, New-York.

S. Gibbons and H.G. Overman, "Mostely Pointless Spatial Econometrics?",  
Discussion paper 61, Spatial Economics Research Centre (SERC), London School of

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Economics, 2010.

J.P. LeSage, *The Theory and Practice of Spatial Econometrics*, University of Toledo, 1999.

De Smith M, Goodchild M F, and Longley P A, (2007), *Geospatial Analysis: A Comprehensive Guide to Principles, Techniques and Software Tools*, Winchelsea Press, Leicester UK,

<http://www.spatialanalysisonline.com/>

Isaaks E H and Srivastava R M, (1989), *An Introduction to Applied Geostatistics*, Oxford University Press, New York.

Sall J & Lehman A & Creighton, L, (2001), *JMP Start Statistics*, SAS Institute Inc, Duxbury, Canada.

Exploring

#### Additional Reading Material:

Anselin L, (2005), *Spatial Data with GeoDa: A Workbook*,

<http://geodacenter.asu.edu/system/files/geodaworkbook.pdf>

Burt J E & Barber G M, (1996), *Elementary Statistics for Geographers*, Guilford Press, New-York.

De Smith M, Goodchild M F, and Longley P A, (2007), *Geospatial Analysis: A Comprehensive Guide to Principles, Techniques and Software Tools*, Winchelsea Press, Leicester UK,

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#### 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: