

### The Hebrew University of Jerusalem

Syllabus

# *Dynamic mapping and spatial data visualization - 40891*

*Last update 09-11-2019* 

<u>HU Credits:</u> 2

Degree/Cycle: 2nd degree (Master)

Responsible Department: Geography

<u>Academic year:</u> 0

Semester: 2nd Semester

Teaching Languages: Hebrew

<u>Campus:</u> Mt. Scopus

Course/Module Coordinator: Dr. Michal Lichter

Coordinator Email: Michal.Lichter@mail.huji.ac.il

Coordinator Office Hours: Wed 5:30 PM

#### <u>Teaching Staff:</u>

Dr. Michal Lichter

#### Course/Module description:

This course will explore different kinds of spatial data and the appropriate ways to visualize them. Real world data will be used to illustrate the issues, problems and solutions encountered when visualizing spatial data. Different mapping platforms will be leveraged to create dynamic interactive maps

*course github repository: https://github.com/mlichter2/interactive\_visualizations\_huji* 

#### Course/Module aims:

Acquiring knowledge and skills in dynamic mapping and spatial data visualization

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

Choose the right visualization techniques for different type of spatial data Generate dynamic maps for EDA (Exploratory Data analysis) purposes Generate Customized Interactive Dynamic maps using JavaScript libraries and mapping APIs

Apply the knowledge and skill acquired in 1-3 to produce interactive space and timedynamic 3d maps

<u>Attendance requirements(%):</u> 80

Teaching arrangement and method of instruction:

#### Course/Module Content:

Introduction and general concepts
Understanding spatial data, symbology and visualization techniques
Acquiring skills for spatial data visualization assessment
Brief introduction to HTML, CSS and JavaScript
Dynamic and interactive maps using leaflet and D3.js
Introduction to D3.js and Javascript mapping libraries

Color schemes: html colors and color scales in d3 Adding the time dimension: dates in JavaScript Adding interactions and dynamic data filtering: buttons, sliders, menus and more Adding an interactive legend Using additional JavaScript libraries Base maps 4. 3D and time-dynamic mapping with Cesium.js - WebGL Virtual Globe Introduction to Cesium.js 3D mapping Adding temporal data and time-dynamic interactions +introduction to CZML Terrain and shadows

Required Reading:

Additional Reading Material:

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

Additional information:

course github repository: https://github.com/mlichter2/interactive\_visualizations\_huji