האוניברסיטה העברית בירושלים
THE HEBREW UNIVERSITY OF JERUSALEM

The Hebrew University of Jerusalem

Syllabus

Introduction to geospatial data science - 40710

Last update 05-03-2019

HU Credits: 3

Degree/Cycle: 2nd degree (Master)

Responsible Department: Geography

Academic year: 0

Semester: 2nd Semester

Teaching Languages: Hebrew

Campus: Mt. Scopus

Course/Module Coordinator: Dr. Rotem Bar-Or

Coordinator Email: baror@huji.ac.il

Coordinator Office Hours:

Teaching Staff:

Dr.

Course/Module description:

The course introduces Geo-Spatial Big Data problem characteristics, and the common methods for analysis and presentation of big data.

The course is planned for 3rd year undergrads, and Masters students.

Course/Module aims:

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

At the completion of this course, students will be able to:
1. Identify big data problem when they encounter one.
2. Understand the concept of big data analysis, including its statistical characteristics.
3. Communicate big data research professionally, including technical and academic terminology.
4. Asses the analysis limitations of big data sources, based on the data-set nature.
5. Read and write big data from/to files.
6. Run various operators and filters on big data-sets for acquiring focused sub-sets.
7. Visualize big data: plot and produce publication quality graphics for presentation.
8. Process raw data, implement the above skills, and conclude.

Attendance requirements(%):

Teaching arrangement and method of instruction:

Course/Module Content:

Orientation:

- *Defining big data*
- *Famous big data problems and opportunities*
- *The computational costs of big data analysis*
- *Theoretical limitation and constrains when dealing with big data*

Technical:

• Parallel Computing & big data system architecture (Spark, Hadoop etc.)
• I/O from files: general & geo-spatial formats
• Parsing geospatial data from data-sets
• Operators & filters

Visualization:
• Info-graphic basics for big data
• Producing condensed 2D and 3D plots
• Mapping and geospatial presentation
• Animations

Processing:

• Planning analysis framework
• Project assignment: precessing existing data-set and presenting results & conclusions.

Required Reading:
TBD

Additional Reading Material:
TBD

Course/Module evaluation:
End of year written/oral examination 0 %
Presentation 0 %
Participation in Tutorials 0 %
Project work 50 %
Assignments 50 %
Reports 0 %
Research project 0 %
Quizzes 0 %
Other 0 %

Additional information: