

## **MA/MSc Digital Sociology - Goldsmiths, University of London**

### **Digital Social Research Methods: Computational Statistics and Data Mining (CSDM)**

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In this segment of the course students are introduced to elements of statistical computing, including summary statistics (mean, mode, median, extreme values, measures of data variation), data graphical representation and data distribution (histograms, scatter plots, pie charts, box plots, normal distribution), to the evaluation of existent relationships in data (feature correlation, feature independence or interdependence), and to hypothesis testing.

Students are also exposed to introductory concepts of Data Mining including clustering, classification and estimations, and to some of their representative techniques (in particular those concerning regressions, decision trees, k-means, etc), that are directly applicable in the area of research methods in Sociology.

Applications employing the presented concepts and techniques are illustrated with available datasets and specialised software (SPSS). Students will get hands-on experience by tackling specific practical tasks in the lab sessions, as for instance segmenting a population of individuals in distinct groups using clustering techniques, and finding characteristics of those groups using decision trees .

#### **Bibliography**

##### Essential material:

1. Discovering Statistics using SPSS, 3rd edition, by A. Field, Sage, 2009
2. Data Mining: A Tutorial Based Primer, by R. Roiger et al., Addison Wesley, 2002
3. CSDM Module website, by D. Stamate, 2012 (online teaching resources)

##### Further reading:

4. Social research methods, 3<sup>rd</sup> ed., by A. Bryman, Oxford University Press, 2008
5. Understanding social statistics, by Jane Fielding et al., Sage, 2nd edition, 2008
6. Making Social Sciences More Scientific: The Need for Predictive Models, by R. Taagepera, Oxford University Press, 2008
7. Quantitative Data Analysis using IBM SPSS 17, 18 & 19, A guide for Social Scientists, by A. Bryman et al., Routledge (Taylor & Francis), 2011