

CES7AH - CES9AE STATISTICAL DATA PROCESSING

CES7AH - CES9AE		ECTS Credits : 4	Semester : S7	
Statistical data processing		Duration : 36 hours		
Person(s) in charge :				
Olivier DECK, Professeur, olivier.deck@mines-nancy.univ-lorraine.fr , Judith Sausse, Professeur, judith.sausse@mines-nancy.univ-lorraine.fr Thierry VERDEL, Professeur, thierry.verdel@mines-nancy.univ-lorraine.fr				
Keywords :				
Exploring and visualising data - statistical analysis - modeling and predicating				
Prerequisites : First year statistics course or equivalent				
Goal : Model and simulate real systems				
Program and contents :				
<p>In the 70s and 80s, the development of computer technology enabled information storage which, in its most classical form, resembled tables of data, usually of great size. In many fields (geology, meteorology, medicine, economy, marketing, quality control, form recognition etc), through data analysis we were able to extract some of this information and digest it, principally to aid the decision process, or more generally to comprehend in some way the nature of phenomenon pertaining to the data</p> <p>These forecasting methods especially enabled a prediction of the future developments of a phenomenon through a model founded on its past behaviour and the relative context. Since the 90s the digitisation of information has led to an accumulation of considerable masses of stored information in digital, amorphous and dynamic databases of public and private institutions, all kinds of data such as figures, text, images, sounds etc. Datamining is symbolic of the industrialisation of data analysis allowing a true exploitation of the gold mine of commercial information: "extracting precious minerals from the swamp of data".</p>				
Abilities :				
Level	Description and operational vocabulary			
Know	the			
Understand	The main methods we will see are : - Multiple regression, analysis of variance and logistical regression - Analysis and anticipation of time series - Factorial analysis of correspondences - Automatic classifications and discrimination using decision tree analysis - Non linear neuronal methods for anticipation, discrimination and classification			
Apply	The application of these techniques throws up a number of questions for the user, essentially:			
Analyse	<ul style="list-style-type: none">• What types of problems can be dealt with?• Which method is best?• Which data should I select?• What sort of results will it produce?• What are their limitations?• How can they be applied?			
Summarise				
Assess	JMP and R software will be used systematically throughout this course, both in the lectures and the practical lessons; focusing on real case studies in various sectors.			
Evaluation :				
<input checked="" type="checkbox"/> Writtent test	<input checked="" type="checkbox"/> Continuous assessment	<input type="checkbox"/> Oral presentation	<input checked="" type="checkbox"/> Project	<input checked="" type="checkbox"/> Written test