Scoring

Course title - Intitulé du cours	Scoring
Level / Semester - Niveau /semestre	M2 / S2
School - Composante	Ecole d'Economie de Toulouse
Teacher - Enseignant responsable	THOMAS Christine
Other teacher(s) - Autre(s) enseignant(s)	ROUX David
Other teacher(s) - Autre(s) enseignant(s)	
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Lecture Hours - Volume Horaire CM	30 (part I : 9H, part II : 21H)
TA Hours - Volume horaire TD	
TP Hours - Volume horaire TP	
Course Language - Langue du cours	Anglais
TA and/or TP Language - Langue des TD et/ou TP	Anglais

Teaching staff contacts - Coordonnées de l'équipe pédagogique :

1) Christine Thomas-Agnan
   Office number: T210 E-mail:i christine.thomas@tse-fr.eul
   Teaching Hours : 30
   Preferred means of interaction: at the end of class, by appointment

2) David Roux david.roux.consulting@gmail.com
   Teaching Hours : 21
   Preferred means of interaction: by email

Course's Objectives - Objectifs du cours :

Part I Theory (by Christine Thomas): After defining the scoring goals and vocabulary, the first chapter of the course is an introduction to the generalized linear model. Then we cover extensively the logistic regression model. We detail the definition, estimation and interpretation of the odds ratios as well as the computations of marginal effects. We then discuss tools such as the Lorenz and ROC curves for the evaluation of the quality of a scoring model (and the selection of a score threshold for the logitic case). Codes are given in R.

Part II Practice: David Roux Banking Area is one of the areas of application of scoring is very usefull. Presentation of the main methodologies used (regression, GLM, logistic, scoring and rating – compared to some others ones)- Practical application with the realization of a project per group of students by using SAS software.

Prerequisites - Pré requis :

Basic knowledge about linear regression, classification. Practice of R and SAS.

Practical information about the sessions - Modalités pratiques de gestion du cours :

Personal computers allowed. The course attendence is compulsory

Grading system - Modalités d'évaluation :

50% of the grade is a final exam on the theoretical part with exercises and interpretation of R code. The remaining 50% of the grade is a project with D. Roux. Project per group of students - Bonus for participation No late project accepted.

Distance learning – Enseignement à distance :

Distance learning can be provided when necessary by implementing, for example: / En cas de nécessité, un enseignement à distance sera assuré en mobilisant, par exemple :

- Interactive virtual classrooms / Classe en ligne interactive
- MCQ tests and other online exercises and assignments / QCM et exercices en ligne
- Remote (online) tutorials (classes) / TP/TD à distance
- Chatrooms / Forums

References

About generalized linear models

chapters 1 and 6 of Extending the linear model with R, J.J. Faraway, Chapman \& Hall/CRC, 2006.
chapter 7 of W.N. Venables and B.D.Ripley, Modern Applied Statistics with S, 2002, Springer. \item
chapter 1 and 2 of Generalized additive models, an introduction with R, S. Wood, Chapman \& Hall/CRC, 2006.
chapter 2 of L. Fahrmeir and G. Tutz, Multivariate statistical modelling based on generalized linear models, Springer series in statistics, 1994. 2)

About logistic regression and alternatives

J.M. Hilbe, Logistic regression models, CRC Press, Chapman and Hall, 2009.
D.W. Hosmer, S. Lemeshow, Applied logistic regression, second edition, Wiley, 2000.
chapter 10 of S. Tufféry, Data mining et statistique décisionnelle, 2005.
S. Tufféry, Etude de cas en statistique décisionnelle, 2009.
chapter 2 of JP. Nakache and J. Confais, Statistique explicative appliquée, Technip, 2003.
M. Bardos, Analyse discriminante, application au risque et scoring financier, Dunod, 2001.
G. Shmueli et al., Data mining for business, techniques, and applications in R, Wiley, 2018.
About the practice of scoring

R. Anderson, The credit scoring toolkit, Oxford U.P., 2007. –
Thomas, Edelman and Crook, Credit scoring and its applications, SIAM, 2002.
N. Siddiqi, Credit risk scorecards, Wiley, 2006