SYLLABUS OF THE COURSE
PREDICTIVE ANALYTICS WITH SAS

Lecturer : Grégoire De Lassence (SAS Responsable Pédagogie et Recherche)

1. Course Objectives

This course covers the skills required for analyzing data and Factory Analytics Automation using SAS Viya. After a short introduction using Data Viz, the main part is Machine Learning and focus on RoI.

This course is particularly useful for managers and consultants dealing with Business Analytics activities or companies, as well as data-miner and data-scientist positions. A minimum level in statistics is necessary for that course, although the course will concentrate more on the tool and SAS Viya for Data Mining and Machine Learning, than the underlying statistical models, which will be introduced at the beginning of each lesson.

The main goal is to have a global vision from the full analytical life cycle, from Data Integration, Data Quality, Data Preparation, Modeling and deployment up to Models in production Monitoring.

The course mixes management, statistics, operations research and computer science skills.

Potential positions linked to the course: Business Analyst, Consultant, Marketing analyst / researcher, Data miner, Data scientist, Operation manager

2. Learning Goals

The three main Learning Goals of ESSEC Business School that are targeted by this course are:
"Managing process"
"Managing Complexity"
"Achieving analytical excellence"

The specific learning goals of this course are:

- build and understand predictive models such as Decision Trees, Forest, Gradient Boosting, Regressions, Neural Networks (and other algorithms like SVM, RNN, DNN, CNN...)
- compare and explain complex models
- design scoring tools, generate and use score codes
- modify data for better analysis results (create and transform variables, manage missing data, select variable …)
- understand Analytics Factory Automation

- Communicate on Value Added from Modelling
- Calculating Return on Investment
- use several interfaces for Machine Leaning on SAS Viya
    - from point and click SAS Visual Analytics to communicate on Model Value
    - SAS Model Studio to build pipeline,
    - and code in SAS Studio
- Integration and communication with Open source, mainly Python. How a paid platform can be much cheaper than open source gaz factory.
- Building model is interesting. Securing the full process and maintaining is mandatory.

3. Assessment and grading

The assessment will be based on 3 elements:

- Data Viz questions on SAS Visual Analytics 20% of the final grade
- A **Case Study** to be done individually: 60% of the final grade
- A participation grade: 20% of the final grade

Two absences are playoffs.

4. Course Agenda

Monday - 9:00 -12:00 AM / 1:15 - 4:15 PM

Course Introduction: Introduction of Business Intelligence, Business Analytics, Big Data DataViz and Machine Learning

Explore Data Viz with SAS Visual Analytics - Data Viz *(Start_SCYP_V4L_3.5_DV_ML_en.docx)*

SAS Visual Statistics, a part of SAS Visual Analytics

Introduction on Machine Learning technics

Communicate on model value - calculate RoI

Questions on Insight Toy Demo Data - SAS Visual Analytics

Tuesday - 9:00 - 12:00 AM / 1:15 - 4:15 PM

SAS Model Studio: Interactive Machine Learning in Pipeline 1/2

Supervised Machine Learning Using SAS® Viya *(LWCPML35.pdf)*

Cloud Analytic Services Architecture

Data Preparation and Exploration

Comparing Models

Wednesday - 9:00 -12:00 AM - 1:15 -4:15 PM

SAS Model Studio: Interactive Machine Learning in Pipeline 2/2

Regressions, Decision Tree, Forest, Gradient Boosting, Neural Networks, Support Vector Machines

Comparing Models and implementation

Thursday - 9:00 -12:00 AM 1:15 -4:15 PM

Supervised Machine Learning Using SAS® Viya - coding *(LWDMML35_001.pdf)*

Starting Data Mining Project: data, process and management in SAS Studio, on SAS Viya

Open source Integration

Friday - 9:00 -12:00 AM / 1:15 -4:15 PM

Case study for evaluation – "Business case"

5. Bibliography

Analytics at Work - Thomas H. Davenport – The Wiley and SAS Business Series

Business Analytics for Managers - Thomas H. Davenport – The Wiley and SAS Business Series

Competing on Analytics - Thomas H. Davenport – The Wiley and SAS Business Series

Data Lake Architecture: Designing the Data Lake and Avoiding the Garbage Dump - Bill Inmon

DW 2.0 – The Architecture for the Next Generation of Data Warehousing – Editions Morgan Kaufmann – W.H. Inmon, Derek Strauss, Genia Neushloss – 2008

Tamming the Big Data Tidal Wave – Bill Francks – The Wiley and SAS Business Series

The Executive's Guide to Enterprise Social Media Strategy: How Social Networks Are Radically Transforming Your Business - Mike Barlow and David B. Thoma – The Wiley and SAS Business Series