

NATIONAL UNIVERSITY OF SINGAPORE  
NUS Business School  
Department of Decision Sciences

DSC 4213 Analytics for Consulting

Lecturers : Prof. Andrew Lim & Assoc. Prof. Wang Tong

Session : Semester I, 2016-17

1. Brief description of module

Decisions supported by timely data analyses are the norm in this “Big Data” era. Many industries including (but not limited to) supply chain management, marketing, finance, human resources, and sports, rely on analytics-savvy analysts/consultants to improve efficiency, profitability, customer satisfaction, and performance. This course aims to equip students with a scientific/analytical mindset to carry out and to think critically about such analysis.

Through case analyses and their presentation, participants will gain exposure to

- **Decision and Risk Analyses** i.e. systematic assessment of Strategies, Risks, and Payoffs using Decision Trees and Sensitivity Analyses.
- **Business Optimization Models** i.e. Productive allocation of scarce resources e.g. Optimal Product / Advertising Mix, Revenue Management, Portfolio / Supply Chain / Cash Flow / Production Network Optimization, ...
- **Simulation** for hard-to-analyse applications e.g. Hedging decisions, Market Share Dynamics, Buy / Sell now or later?, Fund returns scenarios, ...
- **Ranking algorithms:** the Google page rank algorithm, ranking with multiple attributes, ...
- **Data Mining and Statistical Tools:** Applications of regression analysis, logistic regression, simulation and regression.

*Microsoft Excel* (e.g. SOLVER, PivotTable) and add-in software e.g. PrecisionTree, StatTools, @RISK will be used as analytical enablers throughout the module.

2. Textbook

- Data Analysis, Optimization and Simulation Modeling by Albright, Zappe, Winston, 4<sup>th</sup> edition and onwards. There is also an e-book version (5<sup>th</sup> edition, 2014) with a 2 year time expiry.
  1. Its numerous worked examples and Excel tutorials are useful references.
  2. It comes with a “premium website access card” which among other functionalities allows you to download and use the industrial version of the DecisionTools software suite for a period of 2 years.
- Cases illustrating the use of these tools in a diverse range of applications will be discussed in class (these will be distributed the week before they are covered).

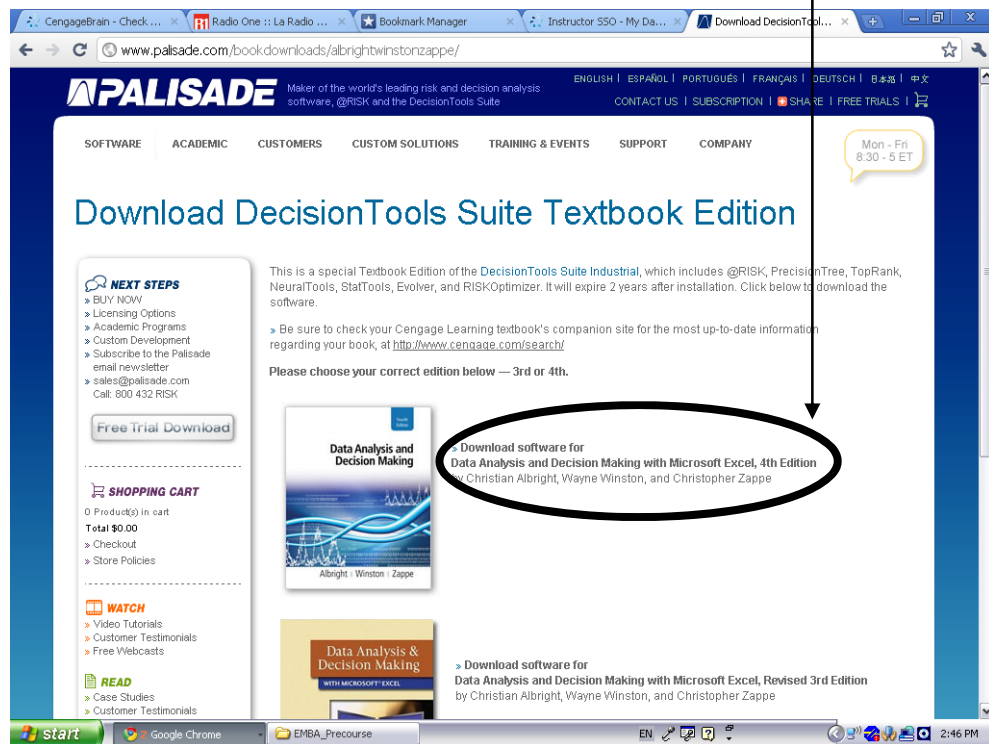
3. Tentative Assessment

Individual + group homework	25%
Group HW presentation	5%
Class participation	10%
End-of-semester Team Project	30%
Take-home project	30%

Weightage of components may change

**NOTES:**

- Bring a laptop to EVERY class: this is a hands-on course.
- The DecisionTools software suite (PrecisionTree, @Risk, StatTools etc) runs on Windows Excel only. If you are using an Apple laptop, you must load (1) Windows (2) Excel for Windows on it in order to run this software suite.
- Use the “premium website access card” placed at the front of the text to download it (~150 MB; takes 1 hour!) as indicated by this arrow. Do NOT click anything else on this screen. We can help you install the software suite at the start of the course.



- We will use SOLVER in the very first class. This is a tool native to MS Excel.

We would also like to draw your attention to the university policy regarding academic integrity.

#### ACADEMIC HONESTY & PLAGIARISM

Academic integrity and honesty is essential for the pursuit and acquisition of knowledge. The University and School expect every student to uphold academic integrity & honesty at all times. Academic dishonesty is any misrepresentation with the intent to deceive, or failure to acknowledge the source, or falsification of information, or inaccuracy of statements, or cheating at examinations/tests, or inappropriate use of resources.

Plagiarism is 'the practice of taking someone else's work or ideas and passing them off as one's own' (The New Oxford Dictionary of English). The University and School will not condone plagiarism. Students should adopt this rule - You have the obligation to make clear to the assessor which is your own work, and which is the work of others. Otherwise, your assessor is entitled to assume that everything being presented for assessment is being presented as entirely your own work. This is a minimum standard. **In case of any doubts, you should consult your instructor.**

Additional guidance is available at:

<http://www.nus.edu.sg/registrar/adminpolicy/acceptance.html#NUSCodeofStudentConduct>

Online Module on Plagiarism:

<http://emodule.nus.edu.sg/ac/>