COURSE SYLLABUS

COURSE TITLE:	MANAGEMENT SCIENCE	**COURSE CODE:**	DSCI220
PREREQUISITES:	COMP120 (Excel)	**SEMESTER:**	SPRING 2017
INSTRUCTOR:	Bruno Fischer Colonimos	**CREDITS:**	3
EMAIL:	bruno.fischer.prof@free.fr	**SCHEDULE:**	Wednesdays GR 1: 8h30-11h30 GR 2: 11h30-14h30

COURSE DESCRIPTION:

The purpose of the course is to enable the students to use quantitative approaches in practical business decision-making. During the course, the students will learn how a modeling process may help them to structure decision situations, and to improve his/her decision-making skills

COURSE OBJECTIVES:

It is hoped that the students will be familiar with the basic concepts of Decision Analysis, Project Scheduling, and Linear Programming, and should be able to use a modeling approach to improve decision-making processes.

The emphasis of the course will be placed on the ability to

- Structure a decision-making process.
- Formulate a model of the situation.
- Solve the model, using a computer.
- Interpret the results.

EXPECTED LEARNING OUTCOMES:

Upon completion of this course students should be able to:

- Define Management Science / Operations Research and its application fields.
- Use decision analysis criteria in situations where uncertainty is dominant and use decision trees when modeling sequential decisions under risk.
- Understand and use the notions of critical activities, earliest and latest times, as well as slack, in the context of the management of a project, and understand the usefulness of a project management software system
- Identify and formulate a linear programming problem. Solve a linear program, using a spreadsheet program such as Microsoft Excel, and interpret the results.

MANDATORY TEXTBOOK:

Ragsdale, Cliff T., *Managerial Decision Modeling*, Thomson/South-Western.
ISBN-13: 9780538478731

Additional course material (Handouts, class exercises, special projects, tests and exams) may be handed out by the professor, although the main source for printed material will be the textbook.

EVALUATIONS:

Exams: a midterm exam and a final exam will contribute to the final grade for 70%. The final exam will consist in written part and a computer part.

- The written part is a classical written exam: students will be required to formulate models and solve problems on paper.
- During the computer part of the final exam, students will be provided with simple problems, which they will be required to solve, using a computer and Microsoft Excel.

Presentations, assignments and in-class tests: the students will be assigned homework, and may be required to participate to additional in-class tests. They will also be offered the opportunity to prepare and present a short presentation (3 subjects will be proposed by the instructor).

Group project: The student will work in teams of 3 to treat a case study. The written report will be graded and will contribute to the final grade for 10%.

The final grade will be determined as follows:

Continuous Assessment		**30%**
Attendance, participation	10%	
Homework	10%	
Group project	10%	
Midterm exam		**35%**
Final Exam		**35%**

A presentation may be credited by up to 10 points added to the Participation or Homework grade. (out of 100).

***Nota Bene*: More than 2 absences, justified or unjustified, will cause the grade to be automatically set to F. Being late counts as one half of an absence.**

COURSE SCHEDULE:

Dates	Session Content
Session 1 February 1 COMPUTER LAB	**Operations Research/Management Science: Introduction.** What is Operation Research ? Introduction to Management Science / Operations research, OR models, usage, scope. **Modeling with Excel:** Example: preparing and using a simple model with Microsoft Excel
Session 2 February 8	**Introduction to Decision Analysis: Decision-making under uncertainty and risk - Payoff tables, decision criteria.** Decision-making under uncertainty or risk: Formal representations; Decision criteria.
Session 1 February 15	**Sequential decisions under risk (I) :** Sequential decisions under risk: The decision tree approach. Constructing and solving a decision tree.
Session 4 February 22 COMPUTER LAB	**Sequential decisions under risk : Decision trees (II)**
Session 5 March 1	**Project Scheduling : PERT/CPM** What is project management? Scheduling and Project Management. Work breakdown. Activities. Scheduling Methods: brief overview. Introduction to CPM/MPM and PERT: Representations (AON), earliest and latest times, slack, critical path. Interpretation. Gantt chart.
Session 6 March 8	**Introduction to linear optimization (Linear Programming)** Example of a linear programming model. Fundamental assumptions of linear programming. Graphical solution of an LP
Session 7 March 15	**Mid-Term examination**
	SPRING BREAK
Session 8 April 5 COMPUTER LAB	**Linear Programming: Model formulation, spreadsheet solutions** Formulating and solving an LP with Microsoft Excel.
Session 9 April 12 COMPUTER LAB	**Linear Programming: More LP model formulation**
Session 10 April 19 COMPUTER LAB	**Linear Programming: Sensitivity Analysis**

Session 11 April 26 COMPUTER LAB	**Linear Programming: Special problems, integer programming, transportation problems,**
Session 12 May 3 COMPUTER LAB	**Final examination: Computer part**

Final Exams will be scheduled by the administration and will be posted by 31 March 2017. The last day of the semester is 12 May 2017. DO NOT PLAN ANY TRAVEL BEFORE THIS DATE AS THERE ARE NO MAKE-UP EXAMS.