MGS 3100: Business Analysis Syllabus

Spring 2011

Note: This is a sample syllabus for reference of Cairo University faculty member. Please contact Professor Hassan El Alfy for more information

Prerequisites

- Course: Math 1070
- Computer Skills Prerequisites:
  - CSP 1-Basic microcomputing skills
  - CSP 2-Basic microcomputing spreadsheet skills
  - CSP 6-Basic word processing skills

(See general catalog for details of skills required.)

If you do not have the stated prerequisites, you should consider dropping now and attempting this course only after you have satisfied them. Specifically, lack of Excel skills has caused more heartburn than anything else. That is, however, not to underestimate the role of the mathematics part of this class in causing heartburn.

Textbook


Welcome to the Class

Having a good class is a combination of both of our contributions.

You need to:

1. read the assigned readings before class and attend class prepared to discuss them,
2. ask questions when you don't understand the material (remember, if you have a question, there will be a bunch of other people in the class wondering the very same thing),
3. participate and contribute in the class discussion (treating everyone with respect) and
4. jointly work on the homework assignments.
This will make the class much more interesting and you’ll learn more. The latter two ideas are especially important in mastering the material.

I will

1. Come prepared to every class.
2. plan my class so we can accomplish the specific learning objectives that are listed in the syllabus (detailed cognitive objectives will be provided as we go on) and
3. create a respectful classroom environment that encourages you to ask questions and participate,

And this will make the class much more interesting.

**General Course Objectives**

To apply models in support of decision making in a business, using some of the most commonly used modeling approaches and principles. By the end of the class you should:

- Demonstrate competence in analysis and development of some common models, both mathematically and graphically.
- Demonstrate competence in using and developing a spreadsheet for analysis.
- Be able to interpret model results in the context of the business situation and explain them clearly.

**What We’ll Cover in the Class**

**Overview**

- Define basic modeling terms, including (but not limited to) Physical model, Analog model, Symbolic model, Deterministic model, Probabilistic model, Decision Variable, Random Variable, Parameter, Performance measure, Objective function, Revenue, Fixed Cost, Variable Cost, Overhead Cost, Sunk Cost, Demand, Price.
- Explain the overview of the modeling process, including types of models, data collection, analysis, and interpretation.
Define basic modeling terms, including (but not limited to) Physical model, Analog model, Symbolic model, Deterministic model, Probabilistic model, Decision Variable, Random Variable, Parameter, Performance measure, Objective function, Revenue, Fixed Cost, Variable Cost, Overhead Cost, Sunk Cost, Demand, Price

Explain an overview of the modeling process, including types of models, data collection, analysis, and interpretation

Analyze a business situation to identify revenues, costs, and other parameters relevant to the modeling process

Draw an influence diagram to map the relationships between different variables of interest

Build a basic profit model both with a spreadsheet and without

Perform Breakeven analysis algebraically and graphically, both with a spreadsheet and without

Perform Crossover analysis algebraically and graphically, both with a spreadsheet and without

Interpret the results of Breakeven and Crossover analyses

Simulation

Compare and contrast simulation with other types of modeling
Determine when simulation is an appropriate technique to use
Use random numbers from a random number table or a spreadsheet function
Graph the results of the simulations and interpret

Decision Analysis

Understand the dollar value of information
Define the terms Decision Alternative, States of Nature, Payoff
Compute a payoff matrix for a given business scenario
Define the criteria for choosing the best decision
Compute Expected Value (EV) and the EV of Perfect Information (EVPI)
Construct and solve a decision tree by assigning payoffs to branches, pruning of branches at decision nodes, and assigning probabilities and calculating expected values at chance nodes
Combine sample data with prior probabilities using Bayes Theorem; incorporating these posterior probabilities into a decision tree analysis
Calculate the Expected Value of Sample Information (EVSI) and the efficiency of sample information.

Forecasting

Define the types of forecasting - Quantitative (causal and time series) and Qualitative
Forecast using the following methods (on a spreadsheet):
  - Naïve
Moving Averages
- Simple Exponential Smoothing
- Trend (linear only)
- Seasonal Indices (simplified approach)
- Regression

- Compute Bias, MAD (Mean Absolute Deviation), MAPE (Mean Absolute Percentage Error), Standard Error, and R-Squared
- Compare and contrast the different forecasting methods
- Interpret the results of the different forecasting methods

Quality Management

- Understand the basic concepts of Quality Management
- Understand the difference between common cause (natural) variation and special cause (assignable) variation
- Understand how control charts can be used to help manage by exception
- Create control charts for attribute and variable measures
- Calculate process capability and understand how it is used to determine the sigma level of a process

Attendance / Class Participation

You are expected to attend all classes and participate actively in regular class lectures, as well as projects and exam reviews. It is your responsibility to check the Web site of this class prior to the class to download and print any updated or newly posted class material. If you miss a class, you are responsible for remaining current.

Group Projects

This class will have group projects. You will need to form groups of three to four members by Jan 26, 2011. Send an email with the names and e-mail addresses of the members of your group.

<table>
<thead>
<tr>
<th>Students in 01:00 pm section:</th>
<th>Use <a href="mailto:mgs3100Sp2011.1pm@gmail.com">mgs3100Sp2011.1pm@gmail.com</a></th>
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<tr>
<td>- Students in 4:30 pm section:</td>
<td>Use <a href="mailto:mgs3100Sp2011.430pm@gmail.com">mgs3100Sp2011.430pm@gmail.com</a></td>
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Using correct email address is your responsibility. It helps prompt responses and failing to do so will not constitute an acceptable excuse for late work.
The projects, together with the instructions for completing them, will be posted on the Web site, and discussed in class.

Projects are due by the beginning of class on the due date, and they should be emailed to one of the appropriate addresses shown above. Do not bring print-outs, or disks, or anything else to class, your projects will be the attached MS Word or MS Excel files. Remember, if there is any question about whether you submitted your projects and homework on time, your email with the submission time is your proof, so keep them where you can easily get to them, and certainly do not delete them! Late project assignments will be penalized at a rate of 10 points (out of 100) per day.

Due dates are shown on the syllabus, but they can change. Changes will be posted on the Web site and announced in class. It is your responsibility to check the Web site every couple of days for any new announcements.

If there is any problem with your group members, you should notify me before the submission.

<table>
<thead>
<tr>
<th>Grading</th>
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<tbody>
<tr>
<td>Group Project 1</td>
<td>Profitability Analysis</td>
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<tr>
<td>Group Project 2</td>
<td>Forecasting Analysis</td>
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<tr>
<td>Exam 1</td>
<td>Profit Models / Simulation</td>
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<td>Exam 2</td>
<td>Forecasting</td>
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<td>Participation</td>
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<td>Final Exam</td>
<td>Comprehensive Departmental Exam</td>
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I will use plus-minus grading policy for this class. The following quality points will be used to calculate GPAs.

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<tr>
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<td>F</td>
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<tr>
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**Percentage**

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<tr>
<td>A</td>
<td>93% – 96%</td>
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<tr>
<td>A-</td>
<td>90% – 92%</td>
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<tr>
<td>B+</td>
<td>87% – 89%</td>
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<tr>
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<td>83% – 86%</td>
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<tr>
<td>B-</td>
<td>80% – 82%</td>
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<tr>
<td>C+</td>
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<tr>
<td>C</td>
<td>73% – 76%</td>
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<tr>
<td>C-</td>
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<td>D</td>
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**Grade of W**

Starting in Fall 2006, all undergraduate students are allowed to withdraw with a grade of W a maximum of six (6) times in their entire careers at Georgia State. Students who exceed the limit will automatically receive a grade of WF. (WFs count as Fs for GPA calculation purposes.) Withdrawals taken before Fall 2006 will not count against the limit and neither will hardship withdrawals, military withdrawals, withdrawals at other institutions, or withdrawals after the midpoint. (Withdrawals after the midpoint are automatically given a grade of WF.)

**Honor Code**

*Plagiarism in any form is not acceptable.* Evidence of plagiarism in any course including projects and exams will automatically result in punishment according to GSU statute which potentially includes expulsion from the university.

**Exams**

The exams and common final will test both your understanding of concepts and problem solving ability. For both the exams and common final exam, you may bring a calculator, one page of *hand-written* notes (you can use both sides), blank scratch paper, pencil
and eraser. *Use of any hand-held devices including but not limited to PDA, cell phone and iPod is not allowed.*

**Missing Exams**

No make up exams will be given.

If a student misses one exam with a legitimate excuse, the final exam grade will replace the zero grade. If a student misses an exam without a legitimate excuse, she or he will receive a grade of zero for that exam.

Legitimate reasons

- due to illness - note from doctor
- due to business - note from supervisor
- death in family - note from family member
- other - on a case by case basis

Please read carefully: I must be informed **before** the exam to count as an excused absence. If you cannot reach me, leave a message on my answering phone at home. Notifying me **after** the exam will result in a grade of **zero** for that exam. Your excuse must be submitted to me by the semester’s end and it must contain a telephone number so that absence can be verified. Failure to follow the guidelines will mean that you forfeit the excused absence option.