Extended Syllabus

Course Title	Time Series Data Analysis and Forecasting	Semester	MGT6705
Credit	Theory (3.0)	Course Number	
Class Time	Monday/ Wednesday 16:30~17:45	Enrollment Eligibility	

Instructor's Photo		
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	Office: MA709 **Office Hours:**	

Ⅰ. Course Overview

1. Description

This course is an introduction to time series data analysis and forecasting. Several statistical techniques are covered and examined for application in quantitative decision-making. The main purpose of the course is to provide useful information and insights for the basic statistical data analysis. The contents covered in this course will be as follows: 1. Regression analysis 2. Logistic regression analysis 3. Panel data analysis 4. Decomposition model 5. ARMA model 6. ARMAX model.

2. Prerequisites

Basic knowledge on mathematics (integration & differentiation)

3. Course Format (%)

Lecture	Discussion	Experiment /Practicum	Field study	Presentations	Other
70%	30%	%	%	%	%

4. Evaluation (%)

Mid-term Project	Final Project	Mid Exam	Final Exam	Assignments	Participation
30%	50%	%	%	15%	5%

Ⅱ. Course Objectives

Knowledge: The education of the following statistical techniques: (1) Multiple Regression Model (2) Logistic Regression Model (3) Decomposition Model (Trend, Seasonality), (4) Auto Regressive Integrated Moving Average (ARIMA) Model, (5) ARMA with exogenous variable (ARMAX) model, (6) Panel Data Analysis

Skill: You will learn how statistical techniques above are actually used in practice. Homework materials or class projects will include practical examples with tremendous savings in many areas.

Attitude: The course covers globalization through various international case studies to resolve problems. Also the course emphasizes ethical standards to protect professional integrity and to minimize ethical breaches. Finally, the course pursues the Excellences in a view of professional analyst by introducing practical data analysis with statistics computer software as well as statistical theories.

Ⅲ. Course Format

1. To understand and uphold ethical standards for the statistics profession 2. To become familiar with the statistical terminology, basic principles and steps involved in planning and conducting statistical studies. 3. To apply statistical tools to interpret and convert data into useful information necessary to make sound business decisions. 4. To obtain a working knowledge of the following areas of statistics: descriptive statistics, probability and statistical inference.

IV. Course Requirements and Grading Criteria

Total 4~6 Home works (15%)

Mid-term project: Individual based project (Multiple regression) mid report (30%)

Final project: Team project (Time series data analysis): presentation + final report (50%)

Ⅴ. Course Policies

Attendance Policy:

You are expected to attend class on a regular basis and are responsible for all material discussed in class. Any student with more than three unexcused absences may be dropped from the class. Any necessary absence occurring while a student is representing the Business School in some official way will be considered an excused absence.

Homework Policy:

1. You are encouraged to discuss the homework problems with your class mates, but should try to solve them for yourself.

2. If you hand-in your homework without enough explanation to your answers, you will receive only partial scores.

3. You will receive partial scores for the late hand-ins.

Other Policy:

1. Students who disturb or leave the class room in the middle of class w/o noticing a rational reason will be warned and will receive penalty in the final grade.

2. Final grade will not change for any reason except for the case of miscounting the exam score, etc.

3. If you do not take a mid-exam or a final-exam, your grade will be "F".

Cheating: Cheating will not be tolerated. Anyone caught due to the cheating will be immediately removed from the class list and receive an "F" for the course with a disciplinary punishment.

Ⅵ. Materials and References

1. Class materials and class related announcements will be uploaded at Sogang Cyber Campus before the class (http://cybernet.sogang.ac.kr/).

Ⅶ. Course Schedule

Before Mid-term:

0) Review of statistics

1) Simple & multiple regression analysis techniques

2) Logistic regression Decomposition model

3) Panel data analysis

4) Introduction of time series data analysis

After Mid-term:

5) Decomposition model

6) Autoregressive model

7) ARIMA/ ARMAX model

8) Advanced ARIMA model

9) Spectral Analysis

Week 1 (dd/ mm)	**Learning Objectives**	Review of Statistics
	Topics	
	Class Work (Methods)	
	Materials (Required Readings)	
	Assignments	
Week 2 (dd/ mm)	**Learning Objectives** **Topics** **Class Work (Methods)** **Materials (Required Readings)** **Assignments**	Multiple Regression Model
Week 3 (dd/ mm)	**Learning Objectives**	Multiple Regression Model
	Topics	
	Class Work (Methods)	
	Materials (Required Readings)	
	Assignments	
Week 4 (dd/ mm)	**Learning Objectives** **Topics** **Class Work (Methods)** **Materials (Required Readings)**	Multiple Regression Model
	Assignments	
Week 5 (dd/ mm)	**Learning Objectives**	Introduction to time series data analysis
	Topics	
	Class Work (Methods)	
	Materials (Required Readings)	
	Assignments	
Week 6	**Learning Objectives**	Decomposition model
	Topics **Class Work (Methods)**	

(dd/ mm)	Materials (Required Readings) Assignments	
Week 7 (dd/ mm)	Learning Objectives	Mid-exam
	Topics	
	Class Work (Methods)	
	Materials (Required Readings)	
	Assignments	
Week 8 (dd/ mm)	Learning Objectives Topics	Mid-Project
	Class Work (Methods) Materials (Required Readings)	
	Assignments	
Week 9 (dd/ mm)	Learning Objectives	AR mode
	Topics	
	Class Work (Methods)	
	Materials (Required Readings)	
	Assignments	
Week 10 (dd/ mm)	Learning Objectives Topics Class Work (Methods) Materials (Required Readings)	ARMA mode
	Assignments	
Week 11 (dd/ mm)	Learning Objectives	ARMA model
	Topics	
	Class Work (Methods)	
	Materials (Required Readings)	
	Assignments	
Week 12 (dd/ mm)	Learning Objectives Topics Class Work (Methods)	ARMAX model
	Materials (Required Readings) Assignments	
Week 13 (dd/ mm)	Learning Objectives	ARMAX model
	Topics	
	Class Work (Methods)	
	Materials (Required Readings)	
	Assignments	
Week 14 (dd/ mm)	Learning Objectives Topics	Final-exam
	Class Work (Methods)	
	Materials (Required Readings)	

	Assignments	
Week 15 (dd/ mm)	**Learning Objectives**	Final Project presentation
	Topics	
	Class Work (Methods)	
	Materials (Required Readings)	
	Assignments	
Week 16 (dd/ mm)	**Learning Objectives**	Final-Project submission
	Topics **Class Work (Methods)**	
	Materials (Required Readings) **Assignments**	

Ⅷ. Special Accommodations

Disability related services: If you have a documented disability that may impact your performance in this class and for which you may require accommodations, you must be registered and provide documentation of your disability to the Assistant for help.

IX. Aid for the Challenged Students

Please feel free to ask for helps if you need any help.