



Sungkyunkwan University (SKKU) International Summer Semester (ISS) 2023

## Business Analytics

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### COURSE DESCRIPTION

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This course will provide students with an introduction to business analytics. This course will change the way you think about data and its role in business. We will examine how data analytics technologies can be used to improve decision-making. We will study the fundamental principles and techniques of business analytics and will examine real-world examples and cases to place data-mining techniques in context and to develop business analytic thinking.

### READING MATERIALS

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The following readings are required for classroom activities and homework assignments. Students are required to register with Harvard Business Online: (URL provided here:

<https://hbsp.harvard.edu/import/1023362>)

### REQUIRED SOFTWARE: Excel, R, Tableau

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**R:** R is a free software environment for statistical computing and graphics, and is widely used by both academia and industry.

<https://www.r-project.org/index.html>

**RStudio** is a user friendly environment for R that has become popular. Each student should download these two programs: Please note: even if you already have them, please check for updates.

<https://www.rstudio.com/products/RStudio/#Desk>

**Tableau** is a commercial database visualization tool that supports many different ways to interact with the data. Tableau has given students free academic licenses so that you can install the software on your own computer.

<https://www.tableau.com/academic/students>

### COURSE REQUIREMENTS AND GRADING

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Students are responsible for all reading assignments, handouts, and lecture materials. Students who miss class are expected to make arrangements with fellow students for lecture material. SKKU regulations require students to attend at least 80% of all classes.

	Grading		Scale	
Participation	10%	90-100%	A	PASS
Individual Assignment	40%	87-89%	B+	PASS
Group Case Analysis	25%	84-86%	B	PASS
Group Analytics project	25%	80-83%	B-	PASS
		77-79%	C+	PASS
		74-76%	C	PASS
		70-73%	C-	PASS
Total	100%	67-69%	D+	PASS
		60-66%	D	PASS
		59% or lower	F	FAIL

## **CLASS PARTICIPATION**

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The class participation grade will be based on the frequency and quality of your comments (for attendance policy please refer to the last page of the syllabus). I will often direct questions to the class as a whole or towards specific individuals – thus, be prepared to be "cold called" (If you find this extremely aversive, please let me know). Keep in mind that your grade for participation is not simply a function of the amount of "air time" or "space" you take up. You will be evaluated on how well you respond to the questions and how effectively you take into account the comments and analyses of your classmates.

The criteria to be considered in calculating the participation mark are:

- quality of contribution (e.g., relevance, contribution to understanding, critical analysis, clarity of contribution, originality, comparative insight, consistency of valuable contribution, facilitation of further discussion, evidence of learning in the subject)
- contribution to group climate (e.g., not domineering/brevity, courtesy and tack)
- attitude to learning (e.g., interest, attentiveness in class)

## **INDIVIDUAL ASSIGNMENTS**

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There will be multiple assignments throughout the semester. These assignments include all individual analytical exercises. You will be asked to solve specific business analytics problems relevant to corresponding lectures by using some statistical software tools (such as R or Tableau).

## **GROUP CASE ANALYSIS**

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You will analyze two cases over the semester. In preparation, group members should meet to process and analyze the reading, quantitatively work on the data, draw out key ideas, and central questions, develop the discussion structure and topics, and collaboratively plan for a productive, engaging discussion of the work.

Importantly note that all groups have to analyze each case and, following the presentation, there will be an open discussion of the case by the entire class. I will post a short list of questions (3-5) to guide the case study readings & your analysis. All class members should review these questions to support full engagement in the presenting group's learning activities and discussion.

## **GROUP ANALYTICS PROJECT**

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The objective of the group project is to provide you with an opportunity to apply what you learn to a real business issue of interest. As a first step, you have to select a project of interest for your group. It would be useful if the project involves a real problem facing a specific company, but this is not absolutely necessary. The project should be related to the material covered in the course and imply at least one technique covered in the course. Its scope should be limited enough that it can be completed by the end of the semester.

### **Interim Deliverables: Proposal Presentation**

To make sure that you are on track, I would like each group to submit a PowerPoint project proposal by July 14<sup>th</sup>. A general format of the proposal is as follows:

- An outline of the problem that you proposed to study
- Your proposed approaches to solve it
- Data to be employed and how you plan to obtain the data
- Business models to be used for analyses
- Anticipated managerial implications

I would like each group to prepare a 10-15 minute presentation outlining the objectives of the project, data to be employed, how they are being analyzed, how this might solve the problem you

are analyzing, and any problems you are encountering in the conduct of the project. It is expected that this will be rough, and that the class and I will have suggestions for how to proceed. The objectives of this exercise are to make sure that each project is feasible, for me to provide direction, and for the class to get a feel for the range of projects being proposed.

### **Final Deliverables: Presentation & Report**

Doing the last class session on July 18 - 19, each group will make a 20-minute presentation to the entire class, followed by 5 minutes for Q&A. This 20-minute limit of your presentation is a strict limit. Please rehearse your presentation a few times to make sure that you can complete your talk within this time limit. Your order of presentation will be determined randomly. The dress code of the group presentation is business casual.

The presentation should include:

- A statement of the problem
- A brief description of the data, model(s), and analyses
- A brief summary of the results
- Recommendations and managerial implications

Each group should submit your presentation slides at the beginning of the class on July 18 and the final report (Due July 19). It is required that you include technical appendices outlining details of the business analytics used (e.g., R-coding, outputs, Tableau dashboard/story board). It is also required that you provide all the relevant references for your research. Such supplementary material will provide useful guidance for me to judge the quality of your work.

### **Peer Evaluations**

Team members will be evaluated using the peer evaluation form. Peer evaluations impact each individual's project grade. Each individual in the team is evaluated by all others using the attached, confidential form. The individual's average percentage contribution is the percent score that the individual will receive for the project. For example, if the individual receives an 80%, 85%, and 90% from his/her team members his/her average percentage score is 85%. Thus, if the project grade was 90 out of 100 points, that individual would receive a 76.5 (90 points \* 85%) for the project.

**PLEASE NOTE: THERE IS NO REASON FOR ONE OR TWO INDIVIDUALS TO CARRY A TEAM. THE TEAM IS EXPECTED TO BE A TEAM.**

## COURSE SCHEDULE

\* This schedule may be revised, if needed. Changes to the schedule will be announced in class.

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### WEEK I

6/26 Mon	Fundamental Concepts & Definitions
6/27 Tue	R: Getting Started (Basic Statistic Review)
6/28 Wed	Simple Regression
6/29 Thu	Multiple Regression

### WEEK II

7/03 Mon	Predictive Models
7/04 Tue	HBR Case #1: Amazon
7/05 Wed	HBR Case #2: A-Rod: Signing the Best Player in Baseball
7/06 Thu	Exam

### WEEK III

7/10 Mon	Web Analytics (Google Analytics)
7/11 Tue	Search Engine Optimization
7/12 Wed	HBR Case #3: Web Analytics at QA, Inc.
7/13 Thu	Visual Analytics for Data-Driven Decision Making I
7/14 Fri	Visual Analytics for Data-Driven Decision Making II

### WEEK IV

7/17 Mon	Group Project Work Session
7/18 Tue	Group Project Presentation II
7/19 Wed	Group Project Presentation II