**BA in Management Program
Fall 2020**

**MGMT203 –** **Introduction to Data Analysis and Research in Business**

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**Office Hours:** By appointment

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| --- | --- | --- | --- |
| **Type** | **Time** | **Days** | **Where** |
| Class |  12.40-14.30 | Monday |  |
| Class |  13.40-14.30 | Tuesday |  |
| Recitation A2 |

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| --- | --- |
| 17.40-18.30 |  |

 | Tuesday | FMAN L018 |
| RecitationA3 |  17.40-18.30 | Tuesday | FMAN G013-14 |
| RecitationA4 |  17.40-18.30 | Tuesday | FASS 1098 |
| RecitationA1 |  17.40-18.30 | Tuesday | FMAN G060 |

**Course Objective:**

* To introduce the students to functional areas of management and decision analysis
* To improve the computer skills of the students.
* To improve presentation and teamwork skills of students

**Learning Outcomes:**Upon successful completion of the course, a student should be able to:

1. Perform advanced data analysis and processing
2. Perform an introductory level of regression
3. Perform an introductory level of optimization
4. Use Microsoft Excel, DADM-Tools, and StatTool add-ins.
5. Prepare, present and discuss as a team the cases related to subjects studied

Upon successful completion of the course, the student should be able to have:

**Knowledge Content:**

* Exploring Data
* Introduction to Probability, central limit theorem, Normal distribution
* Introduction to confidence interval estimation, hypothesis testing and t-tests, ANOVA, Chi-square, regression analysis

**Skills Content:**

* Simple database functionality of MS Excel, DADM-Tools and StatTool Add-ins
* Effective presentation skills, and case discussions
* Teamwork

**Course Material:**

**Main Books:**

* Albright, S.C., Winston, W.l. (2020), Business Analytics: Data Analytics and Decision Making”, 7th ed., Centage Learning, Australia

**OR**

* Albright, S.C., Winston, W.l. (2017), “Business Analytics: Data Analytics and Decision Making”, 6th ed., Centage Learning, Australia

**(Please get the main course book as early as possible )**

**Supplemental Books**

* Shmueli, G., Patel, N.R., Bruce, P.C. (2016),” Data Mining for Business Intelligence”, Wiley, 3rd Edition, New Jersey
* James, G. , Witten, D., Hastie, T., Tibshirani, R. (2013), An Introduction to Statistical Learning, with Applications in R, Springer, New York,
* Bertsimas, D., O’Hair, A., Pulleyblank, W. (2016), “The Analytics Edge”, Dynamic Ideas
* Winston, W.l., Albright, S.C. (2016), “Practical Management Science”, Centage Learning, Australia
* B. W. Taylor III ( 2016), “Introduction to Management Sciences (12th ed.)”, Pearson, Boston, ISBN-13: 978-0133778847

**Reading materials : -**

**List of Cases**

Module1:

1. Web Analytics at Quality Alloys,

Web Analytics at Quality Alloys, Inc., Student Spreadsheet

1. Churn in the cellular phone market (case 3.3 from the main book)

Module 2:

1. Employee Retention at D&Y(Case 8.2. from the main book)
2. Data-Enabled Insight from Sericulture

Module 3:

1. Package Pricing at Mission Hospital.

Package Pricing at Mission Hospital, Spreadsheet Supplement

1. Pricing of players in the Indian Premier League

Pricing of Players in the Indian Premier League, Spreadsheet Supplement

**The links of the Harvard cases are given below. Please download then as soon as possible**

Web Analytics at Quality Alloys, Inc.CU44-PDF-ENG<https://hbsp.harvard.edu/tu/11394813>

Web Analytics at Quality Alloys, Inc., Student SpreadsheetCU46-XLS-ENG<https://hbsp.harvard.edu/tu/36e13f30>

Data-Enabled Insights from Sericulture: Jayalaxmi Agro TechIMB735-PDF-ENG<https://hbsp.harvard.edu/tu/f9966e62>

Data-Enabled Insights from Sericulture: Jayalaxmi Agro Tech, Spreadsheet SupplementIMB737-XLS-ENG<https://hbsp.harvard.edu/tu/2c11fe6b>

Package Pricing at Mission HospitalIMB527-PDF-ENG<https://hbsp.harvard.edu/tu/a69640b6>

Package Pricing at Mission Hospital, Spreadsheet SupplementIMB529-XLS-ENG<https://hbsp.harvard.edu/tu/4a8497f4>

Pricing of players in the Indian Premier LeagueIMB379-PDF-ENG<https://hbsp.harvard.edu/tu/2947399c>

Pricing of Players in the Indian Premier League, Spreadsheet SupplementIMB381-XLS-ENG<https://hbsp.harvard.edu/tu/014a7c3d>

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| **Cases of Module 1** | **Date:** | **Presentation of Randomly Selected Team & Discussion and Answers to the questions prepared by the best performing team: November 9, 2020** |
| Subject:Teamwork:  Grading: | Module 11. Web Analytics at Quality Alloys, Inc.2. Churn in the cellular phone market (case 3.3 from the book)YesIndividual & Team |
| **Cases of Module 2** | **Date:** | **Presentation of Randomly Selected Team & Discussion and Answers to the questions prepared by the best performing team: December 7, 2020** |
| Subject:Teamwork: Grading: | Module 2 1. Employee Retention at D&Y(**Case 8.2. from the book**)
2. Data-Enabled Insight from Sericulture

YesIndividual & Team |
| **Cases of Module 3** | **Date:** | **Presentation of Randomly Selected Team & Discussion and Answers to the questions prepared by the best performing team: January 4, 2020** |
| Subject:Teamwork: Grading: | Module 31.Package pricing at mission hospital2.Pricing of playersYesIndividual & Team |

**Optional Reading Material:**

**Course Web:**

Students are expected to check the website every week as the partial lecture note slides will be posted here as well as the assignments.

**Sabanci University uses a very powerful web-based tool called Turnitin. Turnitin is the worldwide standard in online plagiarism prevention. It allows instructors to compare student papers against a database composed of millions of articles. Every paper you submit will be scanned by Turnitin, and results will be reflected in your grades.**

**Instructional Design:**

Three important modules run through the lecture:

* + **Module 1**: Exploring Data
		- Introduction to Business Analytics, Describing the distribution of a variable,
		- Finding Relationships among variables, Business Intelligence Tools for Data Analysis (chapters 1,2,3)
	+ **Module 2:** Introduction to probability
		- Probability, probability distributions,(chapter 4) , Normal distribution, Binomial distribution, Exponentioal Distribution,(chapter 5)
		- Statistical Inference, Sampling (selected parts of chapter 7): Confidence Interval Estimation(chapter 8), Hypothesis Testing (Chapter 9)
	+ **Module 3:** Regression Analysis
		- Estimating relationships(chapter 10),
		- Statistical Inference(chapter 11)

**Instructional Design:**

**For each module**,

At least three weeks will be taught by the instructor using the lecture note slides and supplementary materials

The week following this theoretical part, ***the teams of 5 students*** will prepare:

A powerpoint presentation of 30-45 slides per case

The students will select their own team and may change their team from one module analysis to the other (You can change your teams from one module to the next although this is not obligatory)

The presentations will be submitted one week before the date of presentation and the best performing team for the case discussions will be selected separately both by the votes of the students (weight 40%) and of the instructor (weight (60%) 4 days before the presentation date (i.e. Thursday until 5 p.m.).

The **team showing the best performance in the discussion and synthesis of a case** will have to prepare the questions to be discussed during the presentation of that case

The team who will make the presentation of cases related to the module will be randomly selected by the instructor before the presentation date

**All teams are expected to be present in the presentation date .**

A team once selected randomly for a case presentation will not be eligible for subsequent presentation related to the other modules but will responsible to prepare the powerpoints for those cases.

This cycle will be repeated until the end of semester.

The members of the teams showing the best performance at least twice will get an extra 10 points in bonus at the end of the term

**Grading**:

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| Recit. questionMidterm Exams (x2) | :5%:20% |
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| Quizzes (x3) | : 15% |
| Report delivered in the form of powerpoint presentation for the cases in each module Presentation performance(individual+team) | : 15%: 15% |
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| Final Exam | : 30% |

Evaluation of the reports related the cases for each module (to be done by the votes of the students other than the team members as well as by myself)

We will use the following criteria for the evaluation of case reports:

1) comprehensiveness in the discussion of the issues embedded in the case (persuasiveness of the arguments presented for this, 20 points), 2) comprehensiveness in alternative solution perspectives discussed on problem (30 points), 3) comprehensiveness of the logic presented to “make the case” for the preferred solution alternative (30 points), 4) creativity or uniqueness in the solution alternative presented (20 points)

Peer Evaluation in Teamwork

During the presentations, the students will be asked to provide an evaluation of the members of the presenting team.

Each student will score the presenters based on: 1) the presentation style, 2) answers to questions, and 3) timing. Scores will be given using a 0-100 scale for each criterion.

The peer evaluation based on the voting of the students will have a direct impact on the presentation grade with an effect of (60%) .

Students will also be asked to provide an evaluation of the members of their team in preparing the case report of each module. Each student will divide 100 points between the members of her team, including herself. This division should reflect that person’s judgment of the contribution of the members of her team. The scores should not be merely functions of time spent by each member, but they should be measures of the "contribution;" their relative contribution to the idea generation, research, analysis, writing, oral presentation, report writing, etc. If the team was highly functional, and each member did what they committed themselves to, then the student can assign the same mark to each member of the team. If, on the other hand, some members of the team did not fulfill their commitments and did not contribute as much as the others, then points can be distributed unevenly.

The points submitted by all members of the team will be aggregated by the instructor. Every student will be given his/her aggregate peer evaluation, without disclosing the individual peer evaluations to the students.

In case there is no consensus among the team, for example, if three students divide the marks evenly and the fourth one divides them unevenly, then the instructor will use his/her judgment to assign peer evaluation marks--possibly after meeting with the members of the team.

In cases where there are conflicting marks, it is most likely that the instructor will meet with the team members and provide a mark based on an interview. For example, in a group of four, if Students A and B believe they did most of the work, and Students C and D believe otherwise, the team may be called in for an interview in order to be fair to everyone.

Past experience indicates that in most groups points will be distributed evenly. There will be a few groups where peer evaluations will play a role in the marks. The primary goal of this exercise is to avoid giving undeserved credit to individuals who did not help their teams. However, it is possible to have upwards adjustments of marks in case of students who have done more than what the group expected of them.

The peer evaluation will have a direct impact on your case report. To give a simple example, if the group mark is 25 out of 30, and if your peer evaluation indicates that your contribution was less than what was expected, then your case report mark will be less than 25 out of 30. There are no simple rules for adjustment.

**Requirements:**

* It is mandatory to solve 70% of the after-recitation questions. There will be 1 question at the end of each recitation. You have to solve it in the last 10-20 minutes of the recit. and submit it through on-line. The TAs will grade them.
* There will be 10 question in all semester and you have to complete minimum 7 of them.
* If the student will miss more than 30% of the recit. Questions this will result with the failure in the course

A makeup exam for either midterms or quizzes will be done in the last week

**Academic Honesty:**

Learning is enhanced through cooperation and as such you are encouraged to work in groups, ask for and give help freely in all appropriate settings. At the same time, as a matter of personal integrity, you should only represent your own work as yours. Any work that is submitted to be evaluated in this class should be an original piece of writing, presenting your ideas in your own words. Everything you borrow from books, articles, or web sites (including those in the syllabus) should be properly cited. Although you are encouraged to discuss your ideas with others (including your friends in the class), it is important that you do not share your writing (slides, MS Excel files, reports, etc.) with anyone. Using ideas, text and other intellectual property developed by someone else while claiming it is your original work is *plagiarism*. **Copying from others or providing answers or information, written or oral, to others is *cheating*.** Unauthorized help from another person or having someone else write one’s report or assignment is *collusion*. Cheating, plagiarism and collusion are serious offenses that could result in an F grade and disciplinary action. Please pay utmost attention to avoid such accusations.

**Classroom policies and conduct**

Sabanci Management Undergraduate Program values participatory learning. Establishing the necessary social order for a participatory learning environment requires that we all:

* Come prepared to make helpful comments and ask questions that facilitate your own understanding and that of your classmates. This requires that you complete the assigned readings for each session before class starts.
* Listen to the person who has the floor.
* Come to class on time.
* Please have your laptop with you to be used for class activities such as taking notes or referring to a spread sheet. You should not be doing any non-class activities during class time. Laptop usage may be forbidden if it is abused or if it distracts the professor or other students.

**Course Schedule:**

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| **Week 1** | **Date:**  | October 5-6 |
| Topic: | Introduction to Business Analytics , Describing the distribution of a single variable |
| Requirements: | Chapter 1 , Chapter 2 |
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| **Week 2** | **Date:**  | October 12-13 |
| Topic: | Finding Relationships among variables  |
| Requirements: | Chapter 3 |
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| **Week 3** | **Date:** | October 19-20 |
| Topic:Requirement:  | Probability and Probability Distribution, Normal Distribution, Statistical Inference: Sampling Distribution,Selected parts of Chapter 4, chapter 5, chapter 7 |
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| **Week 4** | **Date:** | October 26-27 |
| Topic:Requirement:  | Confidence interval estimation,Chapter 8 |
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| **Week 5** | **Date:** | November 2-3 |
| Topic: | Hypothesis Testing |
| Requirements: | Chapter 9 |
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| **Week 6** | **Date:** | November 9 |
| Topic: | Presentation of cases of module 1 by the randomly selected team(s) and discussion based on the questions of the best performing team |
| Requirement | November 10Quiz 1: Questions related to the topics of module 1 |
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| **Week 7** | **Date:** | November 16-17 |
| Topic: | Tests for Normality, Chi-Square test for independence |
| Requirements: | Chapter 9 |
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| **Week 8** | **Date:** | November 23Midterm 1November 24 |
| Topic: | Regression Analysis: Estimating relationships |
| Requirements: | Chapter 10 |
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| **Week 9** | **Date:** | November 30 |
| Topic: | Regression Analysis: Estimating relationships |
| Requirements: | Chapter 10December 1Submission of module 2 cases powerpoint reports |
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| **Week 10** | **Date:** | December 7 |
| Topic: | Presentation of cases of module 2: by the randomly selected team(s) and discussion based on the questions of the best performing team, |
| Requirements: | December 8**Quiz 2: Questions related to the topics of module 2** |
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| **Week 11** | **Date:** | December 14**Midterm 2** |
| Topic: | December 15Regression Analysis: Estimating relationships ,  |
| Requirements: | Chapter 10 |
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| **Week 12** | **Date:** | December 21-22 |
| Topic: | Regression Analysis: Statistical Inference  |
| Requirements: | Chapter 11 |
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| **Week 13** | **Date:** | December 28 |
| Topic: | **Makeup exam** December 29Regression Analysis: Statistical InferenceChapter 11 |
| Requirements: | Submission of module 3 cases powerpoint reports |
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| **Week 14** | **Date:** | January 4 |
| Topic: | Presentation of cases of module 3: by the randomly selected team(s) and discussion based on the questions of the best performing team ,  |
| Requirements: | January 5**Quiz 3: Questions related to module 3)****Final (during the exam week)** |