



**Data Analysis and Decision Making  
Summer 2016**

**Professor:** Myles D. Garvey  
**Office:** **Virtual Facebook Office (Tues, Thurs 8:30am – 11:30am)**  
**Email:** [rbsdadm2016@gmail.com](mailto:rbsdadm2016@gmail.com)  
**Office Hours:** Before and after class.  
By Appointment  
**Classroom:** Off-Campus Drew – Brothers College Room 217  
**Time:** W, 6:00P.M. - 9:30pm  
**Course Web Page:** Facebook Profile: <https://www.facebook.com/professorgarvey>  
Facebook Group: <https://www.facebook.com/groups/1531681940468766/>

**YouTube Channel:** [https://www.youtube.com/playlist?list=PLD3KsreTdwwmykz0J\\_kQMSg9Zs5Rl7ZJ\\_](https://www.youtube.com/playlist?list=PLD3KsreTdwwmykz0J_kQMSg9Zs5Rl7ZJ_)

**Textbook (Recommended, not required):**

Data, Models, and Decisions: The Fundamentals of Management Science by Dimitris Bertsimas and Robert Freund. Charlestown, MA: Dynamic Ideas, 2004. ISBN: 9780975914601

Most material will be from notes, presentation slides and lectures that I will provide to you through blackboard and in the classroom. You are not required to buy the text book, but if you need additional examples for the problems, I recommend the above. Please note that some material may NOT be covered in the textbook. In that instance, I will provide additional reading material that can be found on either YouTube or the internet.

**Course Description:**

Introduces statistics as applied to managerial problems. Emphasis is on conceptual understanding as well as conducting statistical analyses. Students learn the limitations and potential of statistics. Topics include descriptive statistics, continuous distributions, confidence intervals for means and proportions, and regression. Application areas include finance, operations, and marketing. Introduces the basic concepts of model building and its role in rational decision making. Knowledge of specific modeling techniques, such as linear and nonlinear programming, decision analysis, and simulation, along with some insight into their practical application is acquired. Students are encouraged to take an analytic view of decision making by formalizing trade-offs, specifying constraints, providing for uncertainty, and performing sensitivity analyses.

**Course Format:**

The course will consist of a combination of lectures, class discussion, case studies and, when appropriate, videos. The lecture/discussion component will be devoted to presentation and discussion of theories, concepts and analytical techniques. Several videos and case studies may

also be used in lectures to connect the theory to real-world application. Students are expected to take notes during videos [if shown] and engage in discussion after.

The notes serve as background information for lecture and casework. Students are *expected to read* the corresponding notes *after* each class in order to solidify their knowledge attained in lecture. Notes are posted every Thursday night at 11:59pm. While the textbook is NOT required, it is recommended to have access to additional examples for problems.

**Policies (There are quite a few, please be sure to read them all!):**

- Please adhere to professional behavior in class. Refrain from chatting, reading the newspaper, answering phones, wearing headsets etc. Such behavior is disruptive and discourteous and WILL result in you being thrown out for the remaining time of the class. I cannot be more clear on this. If this is a continued pattern, this will result in you receiving an F for the course.
- Important announcements will be made on Facebook. Once the class begins, you have two days to join the Facebook Group. If you are uncomfortable using your personal FB account, create a new one specifically for the class. Otherwise, I recommend you change you privacy settings so you do not display any information that would show up on my news feed (not that I snoop around, but I care about having your privacy protected). If you elect not to use FB, you will only be limiting your ability to get important announcements AND access to supplemental course material. Please note that I WILL NOT be held accountable to a lack of any very important announcements made through Facebook. You must also join the Facebook group for this class. The link is specified above.
- Final course grades are final. Let me repeat this. Final course grades are final! Changes will only be made if there is a mistake in the calculation of the final grade, but legitimate evidence suggesting the contrary must be presented to the professor. Legitimate constitutes the use of the professor's calculation in grade mismatching with the grade received. See below for more detail. It does NOT include a mistake made on a particular assignment or exam or project.
- Accommodating students with special learning needs: In accordance with the university policy, students with documented sensory and/or other learning disabilities should inform the professor, so that their special needs may be accommodated. Please let me know IMMEDIATELY following the first lecture.
- As you may know, it is against university policy to cheat. It is a very serious violation of academic integrity. I am here to help you, but I cannot do so if you are not putting effort into your work. Please note that if cheating of any kind is observed in/out of the class, you will be reported to a higher authority in accordance with university policy on academic dishonesty. Cheating includes working in groups on individual projects/assignments, copying off other exams, breaking outlined policies for exams or projects, etc.
- I have set up an email account through Google specifically for this course. Any emails directed to me to any other email other than the one listed on this syllabus WILL be ignored. I get hundreds of emails a day, and as such, I have a tendency to ignore many of

them. However, if you contact me through this email, you will receive a response in less than 24 hours.

- **There is no additional opportunity for extra credit or point addition.** I give all of you an opportunity for extra credit via Facebook. If you realize that your grades are not up to par with your expectations, do not expect me to hand out extra credit assignments only for you. I give you full ability to get a few extra points via Facebook posts. Please keep this in mind!

### Evaluation:

Work	Percent
Case Studies (4 of them)	10% (40% Total)
Midterm Exam	20%
Attendance	20%
Final Exam	20%
Total	100

### Final Grades:

Number Range(inclusive-exclusive)	Grade
90.0-101.0	A
85-90	B+
80-85	B
75-80	C+
70-75	C
60-69	D
0-60	F

### Attendance

All students are EXPECTED to be present during our daily classes and must participate. I understand that things come up and sometimes you cannot make it to class. With that said, I am requiring you to attend and participate for 10 out of the 11 classes (Exams NOT included). Which means, you can choose to take 1 class to yourself. BE ADVISED. I DO NOT RECOMMEND SKIPPING CLASS! If you skip a class, for what ever reason, you, and only you, are required to catch up on the material you missed out on. Attendance is taken at random times throughout the class, so please ensure that you attend. In addition, if you miss for than 3 classes, including your one “free” miss, then you will have a total of 20 points deducted from your final grade. SO PLEASE ATTEND CLASS! Please note that sometimes material covered in lecture may not be covered in the notes and class videos. So please ensure that if you miss a class that you get the lecture notes from someone in class.

### Case Studies

You will be assigned 4 case studies, each worth 10% of your final grade. You are given ONLY one chance to submit. Once your assignment is submitted, you cannot resubmit. In addition, I will not be held responsible for not submitting. If a grade does not show up on my end, that means you did not submit. If you see a blue circle, it means you are still working on the assignment and it has not been submitted, so BE SURE IT IS SUBMITTED AND NOT ONLY SAVED!

Late submissions are accepted but at a penalty. For every half hour past the due date, it's 10 points deducted. Assignments are typically due at 11:59pm. Submitting one second after this time is already 10 points deducted. The deduction schedule is as follows (left number inclusive, right number exclusive. For example, at 12:29am, you would lose 20 points):

Time Window Submitted	Points Deducted
11:59pm – 12:29am	10
12:29am – 12:59am	20
12:59am – 1:29am	30
1:29am – 1:59am	40
1:59am – 2:29am	50
2:29am – 2:59am	60
2:59am – 3:29am	70
3:29am – 3:59am	80
3:59am – 4:29am	90
4:29am – 4:59am	100

Moral of the story: don't be late with submitting the assignments! Let me also be very, very, VERY clear on this. After 4:59am, no submissions will be counted. You must remember that most students in this course are working hard on the assignments. I cannot delay a release of the solutions just so you can submit it late. Once 4:59am comes around, solutions are available on Blackboard. Once said solutions are posted, there is ZERO opportunity for submission.

You are allowed to work in groups on these if you choose to and I actually encourage all of you to do so. Everyone, however, must provide a submission and do so on time. Point deductions for late submissions will only be applied on an individual basis, not on a group basis.

### Format for the Case Studies

I am not a huge stickler on format. You must, however, provide the following sections in your write up:

1. A Summary of the Problem
  1. Give a brief introduction to the problem. Please do NOT copy and paste the original problem from the given case study. Give a brief two paragraph description of the overall goals of the study and what must be found in order to solve the problem.
2. Method of solving
  1. Describe which tools you learned in class which will be employed in the problem solving. Describe why the methods you are using will lead to a solution to the problems in the case study.
  2. Give the derivation (if one is required) or how specifically you solved your problem in detail. Typically, the case study will guide you towards what should be

found and reported on. You must identify the proper tools required to solve the problem as well as use them with any other information or data.

3. Results

1. Summarize your technical results as well as what the results mean in plain English. Your audience typically won't enjoy reading tables of numbers or heavy mathematics. They like short summary tables, graphs, charts and plain English. After you have described the technical results, translate them into a meaning that any audience, regardless of their mathematical background, can understand.

4. Managerial Implications

1. With any type of problem solving there are usually decisions attached to the solutions. You must take your results and provide recommendations for the best possible decision to make. Justify why you believe the recommended decision will be the best to make. Also perform a sensitivity analysis where appropriate (we will discuss this later in the course).

5. Any attached files or mathematical derivations

1. If your mathematical derivations are long or your work was done using Excel or some other type of software, you must provide the files which show the work. If it is a mathematical derivation, you must type it in Equation Editor in Word (Open Office has a similar editor).

## Exams

There will be two exams, the midterm and final. It will be worth 20% of the final grade. You will be allowed an hour and a half to complete the exam. Make-up exams are not encouraged, however if it is absolutely necessary to miss an exam, notification must be given **BEFORE** the exam in a written form at a **MINIMUM** of one weeks prior to the exam. Failure to inform me anytime less than one weeks prior will result in a 0. The **ONLY** exception is if it is some form of medial emergency and the proper documentation must be presented[Proper Documentation is as follows:

Medical Emergency: I need a doctors note, which I can confirm by calling them and speaking to them personally (not an assistant, not a secretary, the doctor him/herself).

Funeral/Family Death: I need evidence that such event occurred. As morbid as this sounds, I am willing to be flexible, but I need some type of evidence that such an event has occurred. Evidence can comprise of an obituary in the newspaper with the same last name, a prayer card from a wake or any other evidence.

Family Emergency: You must provide some type of evidence that you indeed could not make the exam due to extreme circumstances, where “extreme” is defined as out of the ordinary, out of your control, and not due to your own negligence.

Exceptions: The following is not considered a “family emergency” and will result in a 0 on exams: traffic, weather, waking up late, acts of God or unnatural phenomena, etc. In other words, certain events you have control over in regards to time, so please ensure you make it to the exam at the scheduled times announced in class.

Otherwise a make up exam will not be allowed. Any makeup must be completed before the exams are returned to the class, which generally will be the session following the exam. Suggestions for

studying for the exam: Attend the class, listen to in class discussions, read the notes and DO PROBLEMS!

### **Microsoft Excel**

Some of the material we will discuss will require the use of Microsoft Excel. In today's modern era of apps, this should not be hard to come by. You are free to use Google Sheets or Open (Libre) Office. I will be switching between Google Sheets and Open (Libre) Office in class.

### **YouTube**

I have a YouTube channel with video lectures for this course. I will provide the link to you on Facebook (it is also listed above). These videos are recorded screencasts of myself going through the material and extra examples. I admit that the videos are not the most exciting, however, hopefully such material will help you if you missed something in class and you felt uncomfortable asking a question.

Please note, the videos are intended to SUPPLEMENT, NOT REPLACE in-class lecture. If you miss more than your 4-class forgiveness allotment, you WILL be warned. IF you miss more than 5 classes, you will have an immediate 20 points deducted from your final grade. SO, keep in mind, attending is very important!

Videos will be posted on Thursday Nights at the latest.

### **Facebook, Communication with Professor and Extra Credit**

I try my best to remain in consistent and constant contact with all of you. As such, I want to be very VERY clear on this. My two primary sources of communication is Facebook and Gmail. You have a specific email for this course (see above on page 1). If you email me at any other email, you will not get a response. In addition, while I can communicate via email, ALL class announcements will be posted on Facebook. Please note that Blackboard will NOT be used to post announcements. What does this mean for you? It means if you have a Facebook account, you must join the course group. I HIGHLY encourage you to adjust your privacy settings if you do not wish to have your content show on my news feed. If you still feel uncomfortable adding me as a friend, open up a separate account. EVERY student is required to have Facebook. If you have never used it, open an account and start using it. Using a social media platform is a great skill to add to your experience.

I highly encourage you to reach out to me over FB messenger RATHER THAN email. My reasons for this are (1) I will be much more inclined to answer questions more quickly. A conversation can easily answer your questions in 5 minutes versus us playing email tag which can take over 5 hours. (2) I have a solid record of who I am in communication with. Which means I am able to see more easily who is struggling and who is not, and how to properly adjust class lectures to adapt to the dynamics of the class. (3) Most of you have Facebook and are probably on it more often than your own emails.

As such, Facebook will be used as this course's primary communication and learning medium. I will post articles and videos related to the lecture that I recommend you read/watch. Please note that if you FB Message me, I may not get back to you that instant depending on what time of the day it is. Be patient, but if I don't respond within 12 hours, be persistent. If I haven't gotten back

to you in less than 12 hours, that means I most likely looked over your message by mistake. In other words, “bug the heck out of me” until I answer.

If you wish to do so you are welcome to share articles and videos which will help advance the learning experience of the course. By every post you write, you earn 0.125 extra credit points on your FINAL grade (up to a MAX of 3 points [24 posts], each post is worth 0.125). You only have 12 weeks, which means you need to write 2 posts a week to get the full 3.0 points. Only posts that are posted between 6/5/2016 – 8/21/2016 11:59pm will be considered. A week is considered to be from Sunday to Sunday. Posts start on 6/5/2016 and everyone will automatically get 0.25 points for joining the group in the first week (such points will not be allotted if you join later than 6/5/2016). There is A MAX of 2 posts per week. Any over this will NOT be counted. At the end of the semester I will tally up all the posts and tack on the extra points you earned. In addition, the posts MUST be relevant to the course. Questions about exams, tests, or anything in general do NOT count. Comments on posts do not count either.

*A word of caution!* While I want to encourage ACADEMIC debate and argumentation, I highly DISCOURAGE illogical and irrelevant material that is posted. Please stay away from hot topics that are even mildly politically motivated (gun control, abortion, race issues, climate change/global warming, elections, income inequality, social justice, drug policy, etc...) These have nearly nothing to do with our course. If sharing of any articles that pertain to a political or hotly debated topic is performed, your post will be removed and you will be warned. Do it more than once and you lose any and all opportunity for extra credit. I want everyone to have RESPECT for everybody's perspective. However, this is an apolitical course, and NO political or hotly debated material should be present on my wall from students. Respect each other and learn from each other!

In addition, my Facebook wall and our group is intended for all of you to learn from myself and each other. It IS NOT a medium for promotion what-so-ever. Please refrain from writing posts that involve any mention of a group, band, personal business, product, service, or anything else that is related to promotional activity. Any such material posted WILL be deleted and you will be given a warning. Second time lands you on my blocked list.

**Tentative\*\* Course Outline**

Date	Class Number	Topic	Chapters	Due Dates	Notes
6/1/2016	1	Functions Review Calculus Review			
6/8/2016	2	Introduction to Decision Making Basic Probability Theory			Case Study 1 is assigned
6/15/2016	3	Discrete Probability Theory and Applications			
6/22/2016	4	Continuous Probability Theory and Applications Statistical Sampling and Simulation		Case Study 1 is due	Case Study 2 is assigned
6/29/2016	5	Modeling with Regression Midterm Review			
	No Class			Case Study 2 is Due	
7/13/2016	7	Midterm Exam Introduction to Optimization			
7/20/2016	8	Linear Programming			Case Study 3 Assigned
7/27/2016	9	Linear Optimization			



8/3/2016	10	Non-Linear Optimization		Case Study 3 is Due	Case Study 4 Assigned
8/10/2016	11	Discrete Optimization			
8/17/2016	12	Final Exam		Case Study 4 is due (on 8/20 @11:59pm)	

\*\*This schedule may be amended or changed at any time as necessary based on the Professor's discretion\*\*

### **Agreement with this Syllabus**

The intent of this syllabus is to be a contract between myself and all students in this course. With that said, by being enrolled in this class, you are agreeing to cooperate with all of the policies outlined in this syllabus as well as the course structure itself. If you fail to abide by these policies laid out above then it is at the professor's discretion to take action such as asking you to kindly leave the class or, in more serious instances, have you escorted out of the classroom by University Security. Please note that this syllabus may change based on the judgment from the professor. This means that if at any moment the professor feels it is necessary to change:

- The Course Outline Below
- The Grade Distribution Laid out Above
- The Structure of the lessons
- Any other aspect of this course

in order to maintain the integrity of the course and your ability to learn and complete the work, then by being enrolled in this course you are implicitly agreeing to any changes made. Changes typically ONLY occur in extreme cases for various reasons such as:

- Class cancellations
- Not enough time to cover certain material due to excessive time dedicated to discussion or question.
- Overload of work felt by a majority (2/3 majority) of students
- Any other reason that may impede the structure of this course.

Sometimes, changes mean changes to the grade distribution. If this happens, I will ask students PRESENT in the class what they feel the best adjustment may be and I will take this into consideration. By being enrolled in this class, you agree to any changes made by the professor at the possible suggestion of other students. If you wish to have your voice heard in these matters, then be sure to attend classes. These matters will ONLY be discussed in class and NOT online. Please also be mindful that suggestions (even by majority of students) given to this professor are not 100% guaranteed to be incorporated into this course. I am the final decision maker and if I feel that a particular idea is a bad one in regards to the integrity, honesty and progression of this course, then I hold the right to refuse implementation of any majority student-backed idea.

You also agree that this is a summer course and that the phrase "Summer Course" does not equate to "reduction in material". We cover the same level of material that a normal Fall/Spring semester covers. You agree that you are aware of this and that no other summer courses or work will interfere with your ability to complete this course. You also agree that special treatment in such situations will NOT be honored to you.

Last, this list is not comprehensive and entirely enumerated. Rules and boundaries discussed in this syllabus should not be taken to be understood that there are not other rules and boundaries set into place for this course if needed. Such rules and boundaries are to be discussed in class if the need arises and this professor reserves his right to implement any new rule or boundary, with good reason, for the sole purpose of maintaining the integrity and dignity of this

course with ample notice (usually within 1 week) given to students ahead of time via the communication methods discussed above.

By signing below, you agree that you have fully read every page and section of this syllabus, understand the structure and policies and if the need arises upon any dispute with this professor that your signature will be presented to you in the event you claim to have not read this syllabus.

Name (Print): \_\_\_\_\_

Signature: \_\_\_\_\_

Date: \_\_\_\_\_