BUSI 410 Business Analytics Fall 2016

Meeting Days: Tuesday, Thursday
Meeting Time: SEC1: 9:30-10:45AM, SEC2: 11AM-12:15PM, SEC3: 12:30-1:45PM, SEC4: 2-3:15PM
Classroom: McColl 3600

Instructor: Wendell Gilland (SEC1, 2)
Office: McColl 4711
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Email: wendell_gilland@unc.edu (**preferred contact**)
Office Hours: M 10:30AM-12:30PM, Th 1:00PM-2:30PM, or by appointment, McColl 4711

Instructor: Bin Hu (SEC3, 4)
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Email: bin_hu@unc.edu (**preferred contact**)
Office Hours: MW 1:00PM-3:00PM or by appointment, McColl 4714

Course Objectives: Many challenges that companies and individuals face today are too complex to rely just on intuition to resolve. The goals of this course are to:

1) Demonstrate the wide range of situations in which quantitative analysis improves decision making and creates competitive advantages.
2) Develop students' analytical thinking skills.
3) Develop mastery of quantitative analysis using Microsoft Excel, and effective communication of results.

Course Structure: This course teaches analytical decision making in business applications in three parts. Parts I and II are covered in the first half of the semester. Part III is covered in the second half.

Part I: Decision Making under Constraints
Part II: Decision Making in the Presence of Uncertainty
Part III: Decision Making Utilizing Information from Data

Course Style: The students will learn each topic in three steps: one or two lectures in which the topic and its applications are introduced; one lab session in which students get hands-on exercise; and homework problem sets that reinforce and evaluate the learning.

Required:

1. *BUSI 410 Course Pack (GILLAND and HU).* Available from Student Stores.
2. *Business Statistics for Competitive Advantage with Excel 2010,* 2nd Edition, by Cynthia Fraser. Digitally available for free to all UNC students at http://search.lib.unc.edu/search?R=UNCb7061738
3. Laptop installed with *Microsoft Excel 2010* or later*.*

Course Website: https://kenan-flagler.instructure.com/ (*Canvas*). You will receive announcements, download materials, and submit assignments via Canvas.

Bring to Class: Bring the Course Pack for case discussions marked with CP in the Course Outline

below. After midterm, make the textbook available in every class. Bring your laptop to every lab session. Laptop is recommended but not required in lectures.

Attendance: This is a fast-paced course. Once you miss a class and fall behind, it is difficult to catch up. For your own benefit, attend every class and lab session. If you have to miss a class, you are expected to inform the instructor before the class.

Participation: You are expected to come to class thoroughly prepared of the assigned readings and cases, and actively participating in discussions. The pre-class preparation requirements are listed in the Course Outline below. Participation is very important for you and the entire class because:

- A discussion about a business problem is most fruitful when multiple perspectives are present.
- Articulating your thoughts out loud demands that you be clear and precise. This promotes deep thinking and maximizes your learning efficiency.
- Thinking on your feet and effectively communicating your thoughts are vital business skills. Classroom participation offers an excellent opportunity for you to practice such skills.

Electronics Policy: Non-class use of laptops, phones and tablets is strictly prohibited. Examples include Facebook, Twitter, MLB/NCAA score updates, games, web browsing, emailing and messaging. This is for your own good, but more importantly, because your head, hand and screen activities are very distracting for those beside and behind you. If you absolutely need to write emails, send messages or post social network updates during class time, please step out of the classroom to do so.

Other Classroom Policies: Please take the same seat and display your name card. Eating and drinking are allowed but please try not to distract your classmates.

Grading: All BSBA core courses, including BUSI 410, use curved grading. Your letter grade will be given solely based on the rank of your average score in the class. The average score is calculated as a weighted average of the following items:

Lab Practice Assignments and Class Participation	10%
Homework Assignments	20%
Group Case Project (**11/3, Th**)	10%
Midterm Exam (**10/4, Tu**)	30%
Final Exam (**12/12, M**)	30%

Lab Practice Assignments: There will be nine Lab Practice Assignments. They are simple, well-instructed exercises designed to acquaint you with the Excel functions needed in Lab Sessions. There is a Lab Practice Assignment due on Canvas prior to the start of each Lab Session. You should submit the documents as required in the assignments, using the "File Upload" method on Canvas. Lab Practice Assignments are individual assignments. They are graded for completion not for correctness.

Homework Assignments:

- There will be a total of five Homework Assignments.
- You may submit Homework Assignments individually, or in groups up to three students. Groups can be different for each Homework Assignment.
- You may not seek/receive help from individuals outside your group.

- Homework Assignments are <u>due on Canvas prior to the start of the class sessions on their due dates</u>. You should submit <u>a single Word or PDF document, containing only the required parts, using the "File Upload" method on Canvas</u>. "Comments" will not be considered when grading.
- If you work in a group, <u>only one</u> member needs to make the submission on Canvas. Please be sure to list all group members' names <u>in the submitted file itself</u>.
- A grader will grade your submissions and post grades on Canvas, typically within one week. If you want to appeal a grade, <u>contact me</u>, not the grader.

Late Submission Penalty: If you miss the submission deadline for either a Lab Practice or Homework Assignment, you can still make late submissions on Canvas. Late submissions are accepted <u>until midnight on the due date, at a 20% penalty</u>. All later submissions are <u>not credited</u>. Please note that if you make changes and re-submit your assignment, the submission time will be updated. Your latest submission time will be used to determine the late penalty.

Group Case Project: You need to form groups of <u>four or five students from the same section</u> for the group case project. The project will offer you an opportunity to work on a real-life business case. The final deliverables are an executive memo and an accompanying printout. You will be graded not only on the technical accuracy of your analysis, but also on its presentation. Members in each group will also submit their anonymous self- and peer-evaluations of the group members' contributions, which may affect grades. Details will be announced later.

Midterm and Final Exams:

- Midterm and final exams are open note, open book, open laptop, but <u>no communication of any kind is allowed</u>, either verbal, written, electronic, or internet. The wireless connectivity of your laptop must be <u>disabled</u>. Cell phones must be <u>turned off and stowed away</u>.
- If you will have a conflict for the midterm or the final exam, you must notify the instructor <u>at least one week before</u> the exam, with documented proof. For legitimate conflicts, a <u>late</u> make-up exam will be scheduled. There will <u>not</u> be early make-up exams. Absence from an exam without prior notification is excused only in cases of emergency.
- Both exams will be written exams. Laptop/Excel will <u>not</u> be required.

Honor Code: Please carefully read the Honor Code (http://instrument.unc.edu/) and the BSBA Student Code of Conduct (http://www.kenan-flagler.unc.edu/assets/documents/BSBACodeofConduct.pdf). The school and I take the Honor Code very seriously, and provable violations of the Honor Code will be <u>penalized to the fullest extent</u>.

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The Course Outline below lists all lectures of this course. The preparations and dues for each lecture are indicated.

Course Outline

(CP refers to the Course Pack, and T refers to the Textbook.)

1 Date: August 23   Lecture

    Subjects: Introduction
                   Course Logistics
                   Examples of Business Analytics

BRING COURSE PACK TO CASE DISCUSSIONS MARKED WITH CP

Part I: Decision Making under Constraints

2 Date: August 25   Lecture

    Subject: Linear Programming

    Read: Note on Linear Programming, pp. 1-6 (CP)
             Using Excel to Solve a Linear Programming Problem (CP)

3 Date: August 30   Lecture

    Subject: Sensitivity Analysis

    Read: Note on Linear Programming, pp. 7-12 (CP), except
             "Shadow Prices and Resource Pricing"

4 Date: September 1   LAB Session 1

    Subject: Decision Making under Constraints using Excel

    Due: **Lab Practice 1**

5 Date: September 6   Lecture

    Subjects: Production and Inventory Management
                   Revenue Management

6 Date: September 8   Lecture/Case Discussion

    Subjects: Design of Transportation Networks
                   Retail Price Optimization

    Prepare case: **Retailer: A Retail Pricing Simulation Exercise (CP)**

7 Date: September 13 LAB Session 2

    Subject: Excel Solver Output and Sensitivity Analysis

    Due: **Lab Practice 2**

Part II: Decision Making in the Presence of Uncertainty

8 Date: September 15   Lecture

    Subjects: Introduction to Simulation, Hotel Revenue Management

    Read: A Primer on Simulation Using Crystal Ball (CP)

    Due: **Homework 1**

9 Date: September 20   LAB Session 3

    Subject: Airline Revenue Management using Excel and Crystal Ball

    Due: **Lab Practice 3**

10 Date: September 22   Lecture/Case Discussion

    Subjects: Project Portfolio Management, Inventory Management

    Prepare case: **Assembly Line (A) (CP)**

11 Date: September 27   LAB Session 4

    Subject: Inventory Management using Excel and Crystal Ball

    Due: **Lab Practice 4**

12 Date: September 29   Lecture

    Subject: Midterm Review

    Read: All materials covered in Parts I & II

    Due: **Homework 2**

    Date: **October 4**   **MIDTERM EXAM 7-9 PM, rooms TBA**

Part III: Decision Making Utilizing Information from Data

                   FROM NOW ON MAKE TEXTBOOK AVAILABLE IN EVERY CLASS

13 Date: October 6   Lecture

    Subjects: Statistics for Decision Making and Competitive Advantage
                            Describing Data

    Read: Chapters 1 & 2 (T)

14 Date: October 11   LAB Session 5

    Subject: Describing Data using Excel

    Due: **Lab Practice 5**

  (Date: October 13   **No class, University Day)**

15 Date: October 18   Lecture

     Subjects: Hypothesis Test

     Read: Chapter 3.1, 3.2, 3.8, 3.14 (T)

  (Date: October 20   Fall break, no class)

16 Date: October 25   Lecture

     Subjects: Confidence Interval

     Read: Chapter 3.3, 3.4, 3.5, 3.9, 3.13, 3.14 (T)

17 Date: October 27   LAB Session 6

     Subject: Inference using Excel and Crystal Ball

     Due: Lab Practice 6

18 Date: November 1   Lecture

     Subject: Identifying Drivers of Business Outcomes

     Read: Chapter 4 (T)

     Due: Homework 3

19 Date: November 3   Lecture

     Subject: Building Multiple Regression Models

     Read: Chapter 8 (T)

     Due: Case Report

20 Date: November 8   LAB Session 7

     Subject: Building Multiple Regression Models using Excel

     Due: Lab Practice 7

21 Date: November 10   Lecture

     Subject: Model Building & Forecasting with Time Series Data

     Read: Chapter 9 (T)

     Due: Homework 4

  (Date: November 15   No class)

22 Date: November 17   LAB Session 8

     Subject: Model Building & Forecasting with Time Series Data using Excel

	Due:	**Lab Practice 8**

23 Date: November 22   Lecture

Subject: Using Indicator Variables for Segment Differences, Structural Changes, and Shocks

Read: Chapter 10 (T)

(Date: November 24   Thanksgiving, no class)

24 Date: November 29   LAB Session 9

Subject: Incorporating Indicator Variables into your Model

Due: **Lab Practice 9**

25 Date: December 1   Case Discussion

Subject: Managing Employee Retention

Prepare case: **Store 24 (A): Managing Employee Retention (CP)**

26 Date: December 6   Lecture

Subject: Final Review, Course Evaluation

Read: All materials covered in Parts III

Due: **Homework 5**

Date: December 12   FINAL EXAM 4:00-7:00 PM, rooms TBA