

**QMB 5305**  
**Advanced Managerial Statistics**

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**COURSE OVERVIEW AND OBJECTIVES**

The quality of a manager's decisions depends to a large extent on his/her ability to integrate and interpret information. These decisions are more difficult when the information is either uncertain or incomplete. This class is designed as a problem solving class focused on decision-making under uncertainty that relies on widely available statistical tools. The course covers a broad spectrum of concepts and tools ranging from simple and multiple regression analyses, model building to nonparametric statistics. Since the course has a managerial focus, the coverage of the field is applied and from the perspective of the individual manager. The primary objective is to expose you to statistical concepts and procedures that are useful in making better business decisions. The emphasis is on *application* of statistical techniques to business problems and *interpreting* the results of such applications. While the formula and numbers are important for generating the results, they will simply serve as a means to an end. The emphasis is on translating them into clear and simple insights that will aid managerial decision making. As always, you will get the most out of this class through active involvement. My role is to facilitate your learning; real learning will require effort by each one of you applying and extending the ideas introduced through the class material.

**COURSE ORGANIZATION**

We will use a combination of lectures, cases, team assignments, and in-class exercises and discussions to achieve the course objectives. Rather than merely repeating concepts described in the text, class sessions will be devoted to probing and applying the material. In describing various statistical techniques, we will use IBM SPSS Statistics, a contemporary based software for managing data and doing statistical analysis. The team assignments consist of analysis and interpretation of data using realistic problems and cases from the text or from other sources. Questions for the team assignments will be posted on the course website (i.e., on the e-learning site) and they will be submitted through e-learning as well. Two practice assignments will be posted on Canvas with solutions posted a day before each exam. You are encouraged to attempt the assignments as a way to better prepare for the exams. The midterm is an in-class exam and the final exam will be held during finals week and it will selectively comprehensive. Both exams are open-notes/book. They focus is on application and interpretation of the concepts and tools studied as opposed to number-crunching and rote use of formulas.

**COURSE MATERIALS**

1. Selected Chapters and sections from *Statistics for Management and Economics* by Gerald Keller, 10<sup>th</sup> edition, Cengage Learning Publishing, 2015, various options available (loose leaf, rental, e-book, e-chapters) at <http://www.cengagebrain.com/shop/search/9781285425450>  
If you purchase individual e-chapters you will need Chapters 15-19.

2. Course Packet: Includes slides and cases, available at Target Copy Center, 1412 W University Ave (376-3826). PDF versions of the slides are posted on e-learning in case you prefer to just download the files yourself. If you download the slides you will need to purchase three cases separately: LanCo Catalogue Sales (<https://www.iveycases.com/ProductView.aspx?id=25752> ), The Professor Proposes (<https://www.iveycases.com/ProductView.aspx?id=47629> ).
3. IBM SPSS Statistics Standard (no need for Premium version) Grad Pack 24 is available for Mac and Windows for a 6 month Rental at <http://www.onthehub.com/spss/> (about \$60) - it is the one that includes Advanced Statistics and Regression. SPSS is also available for free at UFApps: <http://info.apps.ufl.edu/> (you will need to download the Citrix Receiver and then use your Gatorlink login information- see directions in the FAQ). Also, it would be helpful to sign up to access SPSS guides at <https://statistics.laerd.com/> (for 1 or 3 months).

### **GRADING AND EVALUATION**

1.	Two Team Assignments	20%
2.	Midterm Exam	35%
3.	Final Exam	45%

### **ACADEMIC HONESTY**

Please review the content at <https://www.dso.ufl.edu/sccr> so that you are familiar with UF policies regarding standard of ethical conduct, student honor code, academic honesty guidelines, and accountability to academic honesty. For any academic class activity, students must follow the University of Florida Student Honor Code. Any violation of the honor code will automatically result in a grade of E (Fail) for this course and further sanctions that may include a suspension or expulsion from the University through the Dean of Students Office. All incidents will be reported to Student Conduct and Conflict Resolution at the University of Florida.

### **ASSURANCE OF LEARNING**

Each program at the Warrington College of Business Administration has developed goals and objectives that express the most valued skills and knowledge that students should be able to demonstrate upon completion of the total learning experiences in a particular program. The goals and objectives that apply to QMB5305 are as follows:

1. Demonstrate competency across business disciplines. Specifically, apply the essential elements of core business principles to analyze and evaluate problems and to construct and implement solutions in the business environment.
2. Demonstrate critical thinking. Specifically employ appropriate analytical models and apply critical reasoning processes to evaluate evidence, select among alternatives, and generate creative options in furtherance of effective decision making.

## DETAILED OUTLINE OF SESSIONS

- Week 1**      **Tuesday, January 3<sup>rd</sup> – Thursday January 5<sup>th</sup>**
- Topic:** Introduction and Review of Managerial Statistics  
Introduction to SPSS
- Read:** Slides posted online
- SPSS:** <http://bolt.mph.ufl.edu/2015/01/20/topic-0-a-introduction-to-spss/>
- Week 2**      **Tuesday, January 10<sup>th</sup> - Thursday, January 12<sup>th</sup>**
- Topics:** Introduction  
Simple Regression Model  
Using SPSS
- Read:** Text: Chapter 16: Sections 16:1-16:3  
Course Packet: Section 1
- Applications:** Problems 16.6, 16.7, 16.18, 16.120
- SPSS:** <https://statistics.laerd.com/premium/spss/lr/linear-regression-in-spss-10.php>  
<https://statistics.laerd.com/premium/spss/pc/pearson-correlation-in-spss-13.php>
- Week 3:**      **Tuesday January 17<sup>th</sup> - Thursday January 19<sup>th</sup>**
- Topics:** Correlation Analysis (Pearson's  $r$ )  
Residual Analysis  
Using SPSS
- Read:** Text: Chapter 16: Sections 16:4-16:6  
Course Packet: Section 1
- Applications:** Problems A16-10, A16-15, 16-123
- Assignment:** Team Assignment 1 due on Friday, January 20<sup>th</sup>  
Details will be available on Canvas
- Week 4:**      **Tuesday, January 24<sup>th</sup> - Thursday, January 26<sup>th</sup>**
- Topics:** Multiple Regression Model  
Nominal Independent Variables  
Multicollinearity
- Case:** Professor Proposes
- Read:** Text: Chapter 17: Sections 17.1 -17.3, Chapter 18: Section 18.2  
Course Packet: Section 2
- Applications:** 17.1, 17.10/18.16 (Nominal), 17.5/17.28 (Multicollinearity), Real Estate (Nominal), Alumni Giving
- Assignment:** Practice Assignment posted on Canvas – Solution available on Monday, January 30<sup>th</sup>
- Week 5:**      **Tuesday, January 31<sup>st</sup> (Thursday, February 2<sup>nd</sup> –no class)**
- Midterm:** Tuesday, January 31<sup>st</sup>. An open-book/note containing application-oriented questions based on the text, class notes, assignments, and application problems.

**Week 6:            Tuesday, February 7<sup>th</sup> – Thursday, February 9<sup>th</sup>**

**Topics:**            NonParametric Statistics  
Chi-Squared Goodness of Fit Test  
Chi-Squared Tests for a Contingency Table

**Case:**             Lanco Catalog Sales

**Applications:**   Problems 15.12, 15.14, 15.15, (Goodness of Fit)  
15.31, 15.32, 15.34, 15.37 (Contingency Table)

**Read:**             Text: Chapter 15, Section 15.1, 15.2,  
Course Packet: Section 3

**Assignment:**    Team Assignment 2 due on Friday, February 10<sup>th</sup>  
Details will be available on Canvas

**SPSS:**            <https://statistics.laerd.com/premium/spss/cstoirxc/chi-square-test-of-independence-rxc-in-spss-10.php>

**Week 7:            Tuesday, February 14<sup>th</sup> – Thursday, February 16<sup>th</sup>**

**Topics:**            Wilcoxon Rank Sum Test  
Sign Test  
Wilcoxon Signed Rank Sum Test  
Kruskall-Wallis Test  
Spearman Rank Correlation Coefficient (if time permits)

**Read:**             Text: Chapter 19: Sections 19.1, 19.2, 19.3, 19.5  
Course Packet: Section 4

**Applications:**   Problems: 19.129, 19.133 (Wilcoxon Rank Sum)  
Problems: 19.122, 19.127 (Sign Test)  
Problems: 19.48, 19.53, (Wilcoxon Signed Rank Sum)  
Problems: 19.126, 19.136 (Kruskall Wallis)  
Problems: 19.99, 19.105, 19.106 (Spearman Rank Correlation)

**Assignment:**    Practice Assignment posted on Canvas – Solution available on Monday, February 20<sup>th</sup>  
Peer Evaluation Form (available on Canvas) due by Friday, February 17<sup>th</sup>  
If the form is not submitted equal points will be assigned

**SPSS:**            <https://statistics.laerd.com/premium/spss/mwut/mann-whitney-test-in-spss-11.php>  
<https://statistics.laerd.com/premium/spss/st/sign-test-in-spss-8.php>  
<https://statistics.laerd.com/premium/spss/wsr/wilcoxon-signed-rank-test-in-spss-11.php>  
<https://statistics.laerd.com/premium/spss/kwht/kruskal-wallis-test-in-spss-18.php>  
<https://statistics.laerd.com/premium/spss/sroc/spearman-rank-order-correlation-in-spss-10.php>

**Final Exam:**    **Tuesday, February 21<sup>st</sup> (HGS 250).** An open-book/note selectively cumulative exam containing application-oriented questions based on the text, class notes, cases listed above, assignments, and application problems.