



FISHER COLLEGE OF BUSINESS

**BUSOBA 6221: DATA ANALYSIS IN FINANCE  
AUTUMN 2023**

<b>INSTRUCTOR:</b>	<i>Dr. Pirim</i>
<b>OFFICE:</b>	<i>244 Fisher Hall</i>
<b>PHONE:</b>	(614) 688-1045
<b>FAX:</b>	(614) 292-2418
<b>E-MAIL:</b>	pirim.2@osu.edu ( <i>Please allow 24 hours to respond</i> )
<b>WEB PAGE:</b>	Carmen
<b>CLASS TIME &amp; ROOM:</b>	Mon/Wed 9:45 am - 11:15 am, Gerlach Hall 305
<b>OFFICE HOURS:</b>	<i>Tuesdays 9:30 am – 10:50 am OR by appointment, please email with a subject “BUSFIN 6221”</i>
<b>TEXTBOOK:</b>	DeFusco, R.; McLeavey D.; Pinto J.; Runkle D., “Quantitative Investment Analysis”, 3 <sup>rd</sup> Edition, WILEY ISBN-13: 978-1119104223 (Hardcopy)

**Course Description**

As advancements and changes in every field, the scope and content of finance especially investment have been fast evolving due to deregulation of financial markets, product innovations, and technological advancements, etc. As capital markets of the world are becoming more integrated, a solid understanding of finance quantitatively has become essential and critical for making astute financial decisions. Reflecting the growing importance of analytics as a discipline of finance, there is a sharp increase in the demand for analytical experts.

Hence, this course focuses on key tools that are needed for today’s professional investor. Besides we will cover advanced concepts such as correlation and regression that ultimately figure into the formation of hypotheses for purposes of testing. We will try to gain critical skills that challenge many professionals, including the ability to distinguish useful information from the overwhelming quantity of available data. Even though analytics is being applied and used in every aspect of finance, we will specifically concentrate on quantitative techniques with the investment practitioner in mind and is replete with examples, and practice problems that reinforce the learning outcomes and demonstrate real-world applicability.

The course is designed for graduate students in finance who have a good understanding of basic economics, accounting, and corporate finance. If you are shaky on basic finance knowledge such as discounted cash flows, net present value beside very basics of statistics, i.e. mean, variance, correlations, it is strongly recommended to get yourself up to speed with this material.

**Course Objectives**

By the end of this course, students should successfully be able to understand the framework for making investment decisions via using quantitative analysis. The students will learn a spectrum

of topics in the area of data analysis such as the most frequently used probability distributions in investment analysis, the challenges faced by analysts in appropriately using and interpreting financial data, how to define and test a hypothesis by using appropriate test statistic, the interpretation of results, how to analyze the relation between variables, how to construct the multiple linear regression model and what the violations of regression assumptions, and model specification are.

## **Course Materials**

### **Required Textbook**

Title: "Quantitative Investment Analysis", 3<sup>rd</sup> Edition, WILEY

Authors: DeFusco, R.; McLeavey D.; Pinto J.; Runkle D.

ISBN-13: 978-1119104223 (Hardcopy)

### **Required Financial Calculator**

TI BA-II (any version) or TI-80 series (Model 82, 83, 84, 85, 86, 89, etc.). Available at the OSU Bookstore, as well as Target, Wal-Mart, on-line, etc. Students who already have a TI-80 Series calculator are not required to purchase a BA-II model, but it will be up to you to learn how to translate BA-II notation into how to solve problems using your calculator.

[http://www.amazon.com/Texas-Instruments-Plus-Financial-Calculator/dp/B00000JZKB/ref=pd\\_sim\\_b\\_1](http://www.amazon.com/Texas-Instruments-Plus-Financial-Calculator/dp/B00000JZKB/ref=pd_sim_b_1)

Here is a link to some tutorials using the TI BA-II and TI-83:

TI BA-II: [http://movies.atomiclearning.com/k12/ti\\_ba2](http://movies.atomiclearning.com/k12/ti_ba2)

TI-83: <http://educ.jmu.edu/~drakepp/general/calculator/ti83.html>

### **Lecture Materials**

There will be lecture materials for each week. Each week, copies of these lecture materials will be available on course web site. Lecture notes and any other reading materials will be posted in the form of MS Word, Power Point and/or Adobe Acrobat files. It is your responsibility to print them out before/after the class.

### **Suggested End-of-Chapter Problems (Optional)**

The course textbook has a set of problems at the end of each chapter. These questions are designed to help students assess their understanding of chapter topics. Some of these problems/questions will be selected from each chapter and will be posted on Carmen (unless appears on the following *Course Schedule*). Students should try to answer these problems after they finish reading a chapter to check their understanding of the topics covered. Suggested Readings (Optional)

Wall Street Journal: [www.wsj.com](http://www.wsj.com)

Financial Times: <http://www.ft.com/home/us>

Bloomberg: [www.bloomberg.com](http://www.bloomberg.com)

Yahoo! Finance: <http://finance.yahoo.com/>

Freakonomics: <http://freakonomics.blogs.nytimes.com/>

Baseline Scenario: <http://baselinescenario.com/>  
Real Time Economics (WSJ): <http://blogs.wsj.com/economics/>  
Calculated Risk: <http://www.calculatedriskblog.com/>  
Economy and Economics of Everyday Life: <http://economix.blogs.nytimes.com/>

## Course Website

The course website is located on Carmen (<https://carmen.osu.edu>). A student must be registered for the course to access the course web site.

Important Resources on the Course Website:

- Course syllabus
- Supplemental course material used (or mentioned) in class
- Lecture notes (PowerPoint slides)
- Course announcements
- Optional Problem sets and solutions
- Detailed solutions for all suggested end-of-chapter problems in the course text
- Posted exam scores (privately for each student)
- Exam formulas
- **Logging in Carmen:** Be sure you are logging in to the course in Carmen each week, including weeks with holidays or weeks with minimal online course activity. (During most weeks you will probably log in many times.) If you have a situation that might cause you to miss an entire week of class, discuss it with me *as soon as possible*.

## Course Technology:

Baseline technical skills necessary for this course

- Basic computer and web-browsing skills
- Navigating Carmen
- Working within a Publisher's website

### Technology Support for Carmen

As instructor, my responsibility is the course content and evaluating performance. Please contact me about any concerns in these areas. However, I am generally not able to assist in matters relating to technology, connectivity or Carmen access. Such issues may be addressed directly to either Carmen Technical support or Help desk.

Hence sources of help are available from [helpdesk@osu.edu](mailto:helpdesk@osu.edu) (or by phone at 292-8976) and [Carmen@osu.edu](mailto:Carmen@osu.edu) or 614-688-HELP at any time.

## Course Requirements and Policies:

### Safety and health requirements:

All teaching staff and students are required to comply with and stay up to date on all [University safety and health guidance](#), which includes wearing a face mask in any indoor

space and maintaining a safe physical distance at all times. Non-compliance will be warned first and disciplinary actions will be taken for repeated offenses.

### **Attendance and Participation:**

Attendance will be checked occasionally. You are responsible for all information covered in class. If you miss class, obtain the information missed. To enhance your understanding, **you should read the assigned material beforehand**. As a matter of professional courtesy, I expect an email or phone message, if you are unable to attend class.

Etiquette guidelines and professionalism will be followed in class. It is expected that students treat others, their ideas, and their time with respect by arriving class on time. Please mute phones, laptops, tablets and any other electronic devices. Laptops and tablets are permitted in class to be used **ONLY** for note taking and in-class assignments.

You are strongly encouraged to participate in this class. I encourage you to ask questions and participate in discussions. This makes classes more interesting. I also encourage you to give me any suggestions that you have about improving the course.

### **Assignments:**

Each group assignment has specific purposes to build and develop essential skills to be a successful professional. Guidelines will be given for each assignment. It is the student's responsibility to seek out additional information for each assignment.

Assignments are due on the day specified by the instructor, please see the table in *Course Grading Policy* section for due dates. The late submission penalties are 15% reduction within 1 day, 20% reduction within 2 days and 30% reduction within 3 days. No assignments will be accepted after 3 days.

### **Exams:**

There will be one midterm exam and one **COMPREHENSIVE** final exam. The midterm and final questions might be drawn from the same pool of questions. All exams are closed-book and closed-notes. Each midterm exam will cover certain topics in the course. The topics and related textbook chapters covered by each exam can be found in the **Course Schedule**. The midterm and final exams will be 100 points each. The questions will involve both conceptual and calculation questions, based on material covered in class and from the suggested problems at the back of each chapter as well as suggested problems posted on Carmen, if any posted.

The suggested problems are intended to give students an idea of how actual exam questions will look and also an opportunity to check their understanding of quantitative concepts and techniques in finance. Each set of questions includes an answer key.

Students will be provided with a Formula Sheet for use in each exam. By giving students formula sheets at exams, students will not waste time in memorizing mathematical expressions hence they will concentrate to understand important analytical concepts.

Students should bring to each exam:

1. A financial calculator
2. A valid picture ID. You will not be permitted to take an exam without presenting a **valid photo ID**.

3. Several #2 pencils, which you will need for the “bubble sheet”

All exams are “closed book/notes.” Except for a Formula Sheet provided by the proctor, students may not use any reference material to help them answer exam questions. Students will be given scrap paper at the exam. No student is permitted to use his or her own scrap paper.

#### **Exam rules:**

You should be in your seat 5 minutes before the exam starts. All electronic devices other than your calculator must be turned off and put away during exams. All other course materials must be out of sight. All hats and hoods must be off your head. Your exam grades will be posted on Carmen. Exams are NOT returned to the students, but you may view your exam during office hours.

#### **Make-up Exams:**

**As a general rule, make-up exams are NOT given in this course.** However, a student may be allowed to take a make-up exam, if in the opinion of the instructor, there are special or extenuating circumstances such as illness. If you are unable to take an exam because you are sick, you must provide me a doctor’s confirmation in which it states that you are not in a condition to take an exam.

Without permission to take a make-up exam, failure to take an exam will result in grade of zero on the exam in question. Every effort should be made (e.g. email, voicemail, message with the Finance Department Office) to notify the instructor at least 24 hours in advance. The date/time of the make-up exam will be scheduled according to the instructor’s schedule by the instructor.

*Under no circumstances will a student be excused from an exam.*

#### **Course Grading Policy:**

Your final course grade will be based on assignments, midterm and comprehensive final exam as shown in table below.

Assignment/Category	Due Date and Time	Points	Percentage of total grade
Assignment 1	September 7 <sup>th</sup>	100 pts	10%
Assignment 2	September 15 <sup>th</sup>	100 pts	10%
Assignment 3	September 25 <sup>th</sup>	100 pts	10%
Assignment 4	October 6 <sup>th</sup>	100 pts	10%
Midterm Exam	September 18 <sup>th</sup>	100 pts	25%
Final Exam	TBD	100 pts	35%

**Total Course Grade = 0.40 x (Final Exam Grade) + 0.30 x (Midterm Exam Grade) + 0.10 x (Assignment 1 Grade) + 0.10 x (Assignment 2 Grade) + 0.10 x (Assignment 3 Grade) + 0.10 x (Assignment 4 Grade)**

After the total course grade has been calculated for all students, the average for the class is calculated. If the course class average is below 75%, a curve adjustment is applied. The curve adjustment equals 75% minus the course class average. If the course class average is equal or above 75%, a curve adjustment is not applied (that is curve adjustment is zero). **There will be NO extra credit work available in this course.**

The course grade will be converted to a letter grade for the course using the following grading scale:

**Grading scale:**

A	93 – 100	B+	87–89.9	C+	77–79.9	D+	67 –69.9	E	Below 60
A-	90 – 92.9	B	83–86.9	C	73–76.9	D	60 –66.9		
		B-	80–82.9	C-	70 –72.9				

Prof. Pirim reserves the right to correct grades recorded on the course website, should he determine such entries were posted incompletely or incorrectly.

**Academic Integrity Policy:**

Academic integrity is essential to maintaining an environment that fosters excellence in teaching, research, and other educational and scholarly activities. Thus, The Ohio State University and the Committee on Academic Misconduct (COAM) expect that all students have read and understand the University's Code of Student Conduct, and that all students will complete all academic and scholarly assignments with fairness and honesty. Students must recognize that failure to follow the rules and guidelines established in the University's Code of Student Conduct (<https://trustees.osu.edu/bylaws-and-rules/code>) and this syllabus may constitute Academic Misconduct (<https://oaa.osu.edu/academic-integrity-and-misconduct>)

The Ohio State University's *Code of Student Conduct* (Section 3335-23-04) defines academic misconduct as: "Any activity that tends to compromise the academic integrity of the University or subvert the educational process." Examples of academic misconduct include (but are not limited to) plagiarism, collusion (unauthorized collaboration), copying the work of another student, and possession of unauthorized materials during an examination. Ignorance of the University's *Code of Student Conduct* is never considered an "excuse" for academic misconduct, so I recommend that you review the *Code of Student Conduct* and, specifically, the sections dealing with academic misconduct.

**If I suspect that a student has committed academic misconduct in this course, I am obligated by University Rules to report my suspicions to the Committee on Academic Misconduct.** If COAM determines that you have violated the University's *Code of Student Conduct* (i.e., committed academic misconduct), the sanctions for the misconduct could include a failing grade in this course and suspension or dismissal from the University.

If you have any questions about the above policy or what constitutes academic misconduct in this course, please contact me.

## Statement on Title IX

Title IX makes it clear that violence and harassment based on sex and gender are Civil Rights offenses subject to the same kinds of accountability and the same kinds of support applied to offenses against other protected categories (e.g., race). If you or someone you know has been sexually harassed or assaulted, you may find the appropriate resources at <http://titleix.osu.edu> or by contacting the Ohio State Title IX Coordinator, Melissa Mayhan, at [titleix@osu.edu](mailto:titleix@osu.edu)

## Mental health

A recent American College Health Survey found stress, sleep problems, anxiety, depression, interpersonal concerns, death of a significant other, and alcohol use among the top ten health impediments to academic performance. Students experiencing personal problems or situational crises during the semester are encouraged to contact Ohio State University Counseling and Consultation Service (614-292-5766; [www.ccs.osu.edu](http://www.ccs.osu.edu)) for assistance, support and advocacy. This service is free and confidential.

## Accommodations for Accessibility:

### Student COVID-related Accommodation Process

The university strives to make all learning experiences as accessible as possible. In light of the current pandemic, students seeking to request COVID-related accommodations may do so through the university's request process ([slds.osu.edu/covid-19-info/covid-related-accommodation-requests/](https://slds.osu.edu/covid-19-info/covid-related-accommodation-requests/)), managed by Student Life Disability Services.

### SLDS Requesting Accommodations

If you would like to request academic accommodations based on the impact of a disability qualified under the Americans with Disabilities Act and Section 504 of the Rehabilitation Act of 1973, contact your instructor privately as soon as possible to discuss your specific needs. The discussions are confidential.

To establish reasonable accommodations, I request that you register with Student Life Disability Services. After registration, make needed arrangements with me as soon as possible to discuss your accommodations so that they may be implemented in a timely fashion. Students registered with Student Life Disability Services should work directly with their [Assigned Access Specialist](#) to modify their accommodations or make additional COVID-based accommodation requests.

Please visit <http://ods.osu.edu> for more information.

SLDS contact information: [slds@osu.edu](mailto:slds@osu.edu); 614-292-3307; 098 Baker Hall, 113 W. 12th Avenue.

## Tentative Course Schedule

The following describes the tentative class schedule. The topics covered on each proposed day may change as the semester progresses, but the general order will not vary. **Students are required to read the appropriate chapters BEFORE the lecture to learn more during the lectures. This will help your understanding of the concepts as they are discussed. Please also re-read the material after class.**



Dates	Topics, Readings, Assignments, Deadlines
<b>Week 1:</b> August 23	Week 1: Course Introduction/Syllabus & Brief Review of Probability Concepts (Chapter 4) Reading: Chapter 4 Assignment for this week: <ol style="list-style-type: none"> <li>1. Read chapter 4</li> <li>2. Download slides for chapter 4</li> <li>3. Review chapter 4 slides</li> </ol>
<b>Week 2:</b> August 28 & 30	Week 2: Probability Concepts (Chapter 4) & Common Prob. Distribution (Chapter 5) Reading: Chapters 5 Assignment for this week: <ol style="list-style-type: none"> <li>1. Read chapter 5</li> <li>2. Download slides for chapter 5</li> <li>3. Review chapter 5 slides</li> </ol>
<b>Week 3</b> September 6 <b>Labor Day - Sep 4</b>	Week 3: <i>Continued</i> Common Prob. Distribution (Chapter 5) & Sampling and Estimation (Chapter 6) Reading: Chapter 6 Assignment for this week: <ol style="list-style-type: none"> <li>1. Read Chapter 6</li> <li>2. Download slides for Chapter 6</li> <li>3. Review Chapter 6 slides before class</li> </ol>
<b>Week 4</b> September 11 & 13	Week 4: <i>Continued</i> Sampling and Estimation (Chapter 6) and Hypothesis Testing (Chapter 7) Reading: Chapter 7 Assignment for this week: <ol style="list-style-type: none"> <li>1. Read Chapter 7</li> <li>2. Download slides for Chapter 7</li> <li>3. Review Chapter 7 slides before class</li> </ol>



Dates	Topics, Readings, Assignments, Deadlines
<b>Week 5</b> <b>September 18</b> <b>Midterm Exam</b>  September 20	Week 5: Midterm Exam and <i>Continued</i> Hypothesis Testing (Chapter 7) <b>MIDTERM Exam:</b> Material Covered to date in Chapters 5, 6, and 7. Photo ID required. Remember to bring your financial calculator and several number 2 pencils.  & <i>Continued</i> Hypothesis Testing (Chapter 7)
<b>Week 6</b> September 25 & 27	Week 6: Correlation and Regression (Chapter 8)  Correlation and Regression (Chapter 8) Reading: Chapter 8 Assignment for this week: <ol style="list-style-type: none"> <li>1. Read Chapter 8</li> <li>2. Download slides for Chapter 8</li> <li>3. Review Chapter 8 slides before class</li> </ol>
<b>Week 7</b> October 2 & 4	Week 7: <i>Continued</i> Correlation and Regression (Chapter 8) Reading: Chapter 8 Assignment for this week: <ol style="list-style-type: none"> <li>1. Read Chapter 8</li> <li>2. Download slides for Chapter 8</li> <li>3. Review Chapter 8 slides before class</li> </ol>
<b>Final Exam Week</b>  October 9  Final Exam Date/Time*: TBD	Week 8: General Review and Final Exam  General Review  <b>COMPREHENSIVE FINAL EXAM:</b> Material Covered to date from the beginning of the semester. Photo ID required. Remember to bring your financial calculator and several number 2 pencils.

*Good Luck.*