

## BUS 735: Business Decision Making and Research

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### Instructor Information

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James Murray, Ph.D.  
Office: 403T Wimberly Hall  
Email: jmurray@uwlax.edu  
Office Phone: 608-785-5140

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### Meeting Time / Location

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Wednesdays 5:30pm - 9:15pm, Room 006 Wing Technology Center.  
No class Wednesday, November 23 (Special day: Friday meet on this day)

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### Course Description (From Graduate Catalog)

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This course introduces a variety of quantitative and qualitative methods that support business decision-making and research. These methods range from quantitative approaches like multivariate analysis, simulation and linear programming to qualitative approaches that use unstructured forms of data collection, both by interviewing and observation. Students will achieve conceptual understanding of the research methods covered in the course and acquire hands-on experience in applying these methods to practical business situations and business research while using computer-based tools. Prerequisite: successful completion of the foundation requirements.

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### Course Learning Objectives

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For successful learning, it is important that you understand why we do the reading, lectures, assignments, etc, we do. Everything we do in this class is meant to achieve the learning objectives below. It would be useful for you to pay careful attention to what learning objectives the lectures and assignments are meant to achieve.

1. Construct and test hypotheses using a variety of bivariate statistical methods to compare characteristics between two populations.
  2. Construct and use advanced multivariate models to identify complex relationships among multiple variables; including regression models, limited dependent variable models, and analysis of variance and covariance models.
  3. Construct and solve linear programming models to answer business optimization problems.
  4. Use stochastic operations research models to answer business questions that involve uncertainty.
  5. Be able to use computer packages such as R and Excel to conduct the quantitative analyses described in the learning objectives above.
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### MBA Learning Outcomes

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The above learning objectives contribute to the larger learning goals for the entire MBA program, which are the following,

1. Business Analysis\*: Graduates will be able to integrate functional knowledge to analyze business problems and to propose plausible solutions.
2. Global Perspectives: Graduates will be able to apply a global perspective when analyzing business contexts.
3. Technology: Graduates will be able to explain the effects of technology on business contexts.
4. Social Responsibility: Graduates will be able to demonstrate understanding of how social responsibility affects business contexts.
5. Leadership: Graduates will be able to demonstrate how organizational behaviors, including leadership, influence business contexts.
6. Communication\*: Graduates will be able to communicate effectively

\* The learning activities in this class are especially designed to further these MBA learning outcomes.

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## Course Resources

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Statistics textbook: (FMF) Field, A., Miles, J., and Field, Z. (2013). *Discovering Statistics Using R*.

Management science textbook: (HH) Hillier, F. S. and Hillier, M. S. *Introduction to Management Science: A modeling and Case Studies Approach with Spreadsheets*.

Class website: <http://www.murraylax.org/bus735/fall2016/>. All material handed out in class will be posted on the class website.

Desire2Learn (D2L): Grades will be posted on D2L, and some quizzes may be administered on D2L. Most of the class material will be posted on the class website.

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## Office Hours

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I am available for office hours **by appointment with a minimum of only one hour notice**. You may schedule a 15 minute appointment by visiting <https://murraylax.youcanbook.me>. The blocks of time that I am available each week vary and are kept up to the minute on the YouCanBook.Me online scheduler. Additional walk-in office hours will be added as necessary, especially during exam weeks and weeks with significant homework deadlines. My typical weekly availability is given below.

8:30 AM - 10:30 AM    Monday, Wednesday, Friday  
1:30 PM - 2:30 PM    Monday and Wednesday  
2:30 PM - 4:00 PM    Tuesday and Thursday

Scan code or visit  
<https://murraylax.youcanbook.me>  
to make an office hours appointment.



Office hours are not a substitute for attending class. Except when missing class for very extreme circumstances that were promptly discussed with me, it is not acceptable to use office hours to ask questions about material you missed while not in attendance.

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## Assessment

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Learning will be assessed with the following assignments:

1. Homework / Quizzes / In-class exercises
2. In-class Exam 1
3. Take-home Exam 1
4. In-class Exam 2
5. Take-home Exam 2
6. Final Project

The weights for each category will be different for each individual student and *chosen to maximize each individual student's grade in the class*, subject to the restriction that the each category cannot exceed 150% the weight of any other category.

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## Optimal Grade Weights:

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Let  $x_j$  denote an individual's score on category  $j$  (one of the six categories above) and let  $w_j$  denote the weight towards the final grade for category  $j$ . The weights will be chosen to solve:

$$\max_{w_j} \sum_{j=1}^6 w_j x_j \quad \text{Subject to: } (1) \sum_{j=1}^6 w_j = 1 \quad (2) w_j \leq 1.5w_k \quad \forall j \neq k$$

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## Grade Breakdown

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94-100	A	77-81	BC
89-93	AB	70-76	C
82-88	B	0-69	F

I reserve the right to scale every person's grade up by the same amount on any graded item in the event that much of the class falls short of the scale above. However, even if the grades are significantly low, there is no guarantee that I will ever do this.

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## Graded Coursework Response Time

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I will return all graded work to you within two weeks of the due date, or before the next exam date if the work is relevant practice for the exam. Work that is turned in late may not be accepted, but if so, I may not be able to grade the work within the two-week time frame. Grades will be posted on the D2L gradebook on or before the date I return the graded work to the class. I will return graded coursework in compliance with FERPA regulations, such as in class or during my office hours. I will bring your graded coursework to class only once. If you are not in attendance when coursework is returned, it is your responsibility to make arrangements to pick your work.

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## Homework Assignments / Quizzes / In-class Exercises

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There will be several graded homework assignments throughout the semester which are weighted equally to in-class exercises and quizzes. Points for the assignments are awarded primarily on effort. I will provide in-class assistance and feedback for any homework assignment problems that you bring up in class. I will begin every class with asking for any questions on the homework assignment, and I am happy to answer the questions before you submit your work. I will assume you understand the assigned problems after I have addressed all of your questions adequately and you have submitted your work.

In-class exercises will involve problems similar to your homework assignments, and will most often be your first exposure to using the techniques we learn in the class. They will often, but perhaps not always, be done in groups. In most circumstances, you will be allowed to use your textbooks and notes for the in-class exercises.

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## Exams

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There will be two exams that will include quantitative analysis / problem solving questions similar to your homework assignments and in-class exercises. The exams will have two portions, an in-class portion which will be completed during 2 hours of class time; and a take-home portion, which will be distributed one week before the due date. Plan to spend between 5 to 10 hours working on the take-home exams (this should not be interpreted as a guaranteed time to completion). *All written answers for the take home exam must be word-processed. Handwritten answers or stand-alone R code, computer output, or Excel sheets will not be accepted.* Exams must be turned in electronically via the D2L dropbox for this class. The exams are due on the following dates:

- In-class Exam 1 is on **Wednesday, October 19.**
- Take-home Exam 1 is due at or before 5:30 PM on **Wednesday, October 26.**
- In-class Exam 2 is on **Wednesday, December 14**
- Take Home Exam 2 is due at or before 9:00 PM on **Friday, December 16.**

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## Project

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Over the course of the semester you will work on an empirical project that will culminate in an in-class presentation and a short written report. The projects will involve identifying a business or research question to answer, finding or collecting data, and using the quantitative methods learned in this class to answer the question.

The written and oral presentations should include (1) an introduction which describes the research question, motivates it, and provides relevant background information; (2) a description of your methodology, including a description of the data and the statistical analysis; (3) a discussion of results; and (4) conclusions based on your results.

The oral presentations should include all group members, must be no more than 25 minutes, and include visual aids of some kind.

The written report can be in any length, style, and format you find convenient as long as you include the required components above. Keep in mind a style that would work effectively in a business environment, a style and format that your boss or clients would want to read. The following are some suggestions for style that you may want to consider:

- Keep it as short as possible, while still including the required components of the assignment.
- Single spaced
- Divide the report into sections and possibly subsections, so that it is easy for readers to skim the report and find the information they need.
- Bold, italics, or otherwise emphasize key sentences. Be careful not to over-use this strategy, though.
- Use visual aids in the report to describe motivational statistics (perhaps obtained from your literature review), your descriptive statistics, and your key statistical results.
- Ask yourself the following questions: (1) Is it easy to read? (2) Is it easy to skim? (3) What do you want your reader remembering? Is that standing out? (4) At any point in the paper, will your reader be motivated to continue reading?

## Project Deadlines

1. Wednesday, September 14: Choose groups / assigned to groups.
2. Wednesday, September 28: Select one idea for your project (provide a title and one-sentence purpose / thesis statement) and turn in a description for where you can obtain the data necessary to answer your research question.
3. Wednesday, October 12: Turn in your full dataset and a written description of your dataset. Your written description should include all the information about your dataset so that it would be unnecessary for the reader to actually open the dataset to know what you have. At a minimum, this should include the source of the dataset, a description of your population, names and descriptions of all variables, and the sample size.
4. Wednesday, November 2: Annotated bibliography including at least 6 sources.
5. Wednesday, November 16: *Short written description your methodology and a copy of some output from your statistical analysis.*
6. Wednesday, December 7: Oral presentations
7. Wednesday, December 21 by 9:00 PM: Written report

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## Attendance

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Attendance is expected to receive credit for quizzes, in-class exercises, and exams. However, if you need to miss a class day or exam day because of an illness, an emergency, or an unavoidable work-related responsibility that you promptly discuss with me, you can be excused and arrangements can be made for you to make up missed work.

Please keep in mind that this class because designed for a face-to-face delivery, so it can be challenging to make up missed classes on your own time. We depend on both the textbooks and in-class handouts that complement class-delivered material, and this material is not packaged and organized conveniently and concisely though to be delivered solely online or as an independent study.

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## Eagle Alert System

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This class will be participating in the UW-L Eagle Alert system through WINGS. The Early Alert system is designed to promote student success. If I notice that you are experiencing difficulties early in the semester (e.g., low assignment scores, poor attendance, minimal engagement in the classroom), I may enter feedback into the program and you will receive an email indicating that feedback has been left. I may also enter positive feedback encouraging you to think about additional opportunities. You will be able to access the feedback through your student center in WINGS. I encourage you to meet with me and use one or more of several helpful campus resources listed here <http://www.uwlax.edu/studentsuccess/>.

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## Online Student Evaluation of Instruction (SEI)

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The university conducts student evaluations electronically. Approximately 2 weeks prior to the conclusion of a course, you will receive an email at your UW-L email address directing you to complete an evaluation for each of your courses. In-class time will be provided for students to complete the evaluation in class. Electronic reminders will be sent if you do not complete the evaluation. The evaluation will include numerical ratings and, depending on the department, may provide options for comments. The university takes student feedback very seriously and the information gathered from student evaluations is more valuable when a larger percentage of students complete the evaluation. Please be especially mindful to complete the surveys.

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## Veterans and Active Military Personnel

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Veterans and active military personnel with special circumstances (e.g., upcoming deployments, drill requirements, disabilities) are welcome and encouraged to communicate these, in advance if possible, to me. For additional information and assistance, contact the Veterans Services Office (<http://www.uwlax.edu/veteran-services/>). Students who need to withdraw from class or from the university due to military orders should be aware of the military duty withdrawal policy (<http://catalog.uwlax.edu/undergraduate/academicpolicies/withdrawal/#military-duty-withdrawal-university>).

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## Mandatory reporter statement

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As a faculty member of the University of Wisconsin-La Crosse, I am a mandated reporter of sexual harassment (including sexual violence). This means that faculty are obligated to disclose any detailed or specific information we receive about such incidents involving a member of this campus while that person is a member of this campus, regardless of whether the incident takes place on campus or off. If you believe you or another member on campus may be a victim or witness of sexual harassment, you should know your options under the Title IX guidelines. There are confidential reporters for UW-L students where you can have this discussion. The contact in Student Life is Ingrid Peterson, Violence Prevention Specialist, at (608) 785-8062 or [ipeterson@uwlax.edu](mailto:ipeterson@uwlax.edu). I am also happy to help you find counseling and support services. Simply ask me to assist you in locating a confidential reporter and I will do so.

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## E-mail Guidelines

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I insist on the following e-mail etiquette rules (many of these are also recommended by the College of Business Administration). Failure to adhere to these guidelines will result in a reply with a friendly reminder to follow these e-mail guidelines.

- Allow one business day to elapse before expecting a reply.
- Questions sent by e-mail should be able to be answered with only a few words, such as 'yes' or 'no' questions. Questions whose answers involve explaining class material are not appropriate over e-mail. For answers to these questions you should come to office hours.
- Always include a subject that is brief but still has sufficient detail, *including the class you are in (BUS 735)*.
- Look at your class notes and syllabus before sending an e-mail. Do not ask a question whose answer is on the syllabus or announced in class (unless you missed class for a legitimate reason).
- Always spell check, grammar check, and re-read your e-mail before sending it.

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## Students with Disabilities

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Any student with a documented disability (e.g. ADHD, Autism Spectrum Disorder, Acquired Brain Injury, PTSD, Physical, Sensory, Psychological, or Learning Disability) who needs to arrange academic accommodations should contact The ACCESS Center (165 Murphy Library, 608-785-6900, [ACCESSCenter@uwlax.edu](mailto:ACCESSCenter@uwlax.edu)) and meet with an adviser to register and develop an accommodation plan. In addition to registering with The ACCESS Center, it is the student's responsibility to discuss their academic needs with their instructors. You can find out more about services available to students with disabilities at The ACCESS Center website: <http://www.uwlax.edu/access-center>.

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## Academic Misconduct

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Academic misconduct is a violation of the UW-L Student Honor Code and is unacceptable. I expect you to submit your own original work and participate in the course with integrity and high standards of academic honesty. The UW-L Student Honor Code can be found online at <http://catalog.uwlax.edu/undergraduate/academicpolicies/studentconduct/>. In the event a student is caught committing academic misconduct, I will pursue the harshest penalties allowed according to the UWS 14 Student Academic Disciplinary Procedures, which can be found here <http://www.uwlax.edu/Student-Life/Student-handbook/#14>.

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## Topics Schedule

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Below is a list of topics and readings for this class. This is a preliminary schedule; depending on time constraints and the topics the class finds most interesting, we may choose to not cover some of the items below, cover items that are not shown below, or re-arrange the schedule.

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### Module 1: Statistical Analysis using R / Elementary Statistical Methods

1. Introduction to R. **Reading:** FMF, Chapter 3
2. Bivariate statistics. **Reading:** FMF, Chapter 2 and 9
3. Correlation **Reading:** FMF, Chapters 6

### Module 2: Multivariate Analysis

1. Multiple Regression **Reading:** FMF, Chapters 7
2. Logistic Regression **Reading:** FMF, Chapter 8
3. One-Way Analysis of Variance (ANOVA) **Required reading:** FMF, Chapter 10
4. Analysis of Covariance **Reading:** FMF, Chapter 11
5. Factorial ANOVA **Reading:** FMF, Chapter 12
6. Repeated Measures ANOVA **Required reading:** FMF, Chapters 13-14

### Module 3: Optimization Problems

1. Linear Programming **Reading:** HH, Chapter 2.
2. Linear Programming Applications, Transportation / Assignment models. **Reading:** HH Chapter 3
3. Sensitivity Analysis: **Reading:** HH, Chapter 5
4. Queuing Models **Reading:** HH, Chapter 11
5. Simulation **Reading:** HH, Chapter 12

### Module 3: Decision Making with Uncertainty

1. Decision Analysis. **Reading:** HH, Chapter 9
2. Forecasting **Required reading:** HH, Chapter 10