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| **CIS 444-50-4182: Data Analytics** |
| **Spring 2018** |

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| **Instructor** | Dr. Sandeep Goyal |
| **Contact information** | Office: 301 College of Business  Telephone: 502-852-4780  Fax: 502-852-4799  Email: Sandeep.Goyal@louisville.edu |
| **Office hours** | Wednesday: 2:00pm – 4:00pm;  and by appointment. |

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| **II. Course Information** | |
| **Class time / Room** | Fully Online class |
| **Required texts** | *Statistics for Management and Economics* by Gerald Keller  You may get either the 11th edition (ISBN-10: 1337093459), 10th edition (ISBN-10: 1285425456), or the 9th edition (ISBN-10: 0538477490) of the textbook.  Used textbooks are okay. You do not need any access code to work on exercises or homework problems.  Other resources to be provided by the instructor such as data files and additional problems/cases. |
| **Course description** | **This is a fully online class**. That means you are required to have reliable technology (see list below) to complete all course requirements or be willing to travel to campus to use an open lab. *This class is not self-paced*. There are weekly assignments with deadline dates and times. This class has the same amount of work as the on campus section. Please make sure you set aside enough time for this course. While we will not “meet” you will still need to fulfill all of the course requirements as spelled out in this syllabus.  Organizations and individuals create and collect massive amounts of data with relative ease. Much of this data are usually meaningless until they are analyzed for trends, patterns, relationships, and other useful information. Therefore, organizations are increasingly interested in employees that have the knowledge, skill, and experience in systematically analyzing a wide-variety of data using advanced statistical tools to improve decision-making. This course provides a hands-on learning experience using powerful statistical tools that can be leveraged to work with structured data and generate business knowledge. This course covers basic principles, such as working with different types of data, to more sophisticated techniques, such as predictive modeling, time-series analysis, and growth modeling. A review of necessary statistical concepts will be provided as needed. Extensive use of a leading statistical tool such as SAS or SPSS is expected. A review of necessary statistical concepts will be provided as needed. Other than the prerequisite MBA 602 (Decision Analysis), no prior statistical or technical knowledge is required for this course. |
| **Prerequisites** | BASTA 201 |
| **Learning objectives** | * Coverage of a wide range of statistical procedures * Review of descriptive statistics * Review of correlation and simple regression * Working with interval and categorical data * Comparing samples and populations * Comparing variance across samples and populations * One-way chi-squares * Data transformations * Multiple regression * Logistic regression * Analysis of variance * Time series analysis * Working with two-way interactions * Working with three-way interactions * Dealing with problems of multicollinearity and autocorrelations |
| **Learning Outcomes** | * Solve common analytical business problems * Think systematically if and how data can help make better-informed decisions * Use business analytical tools; and * Have had hands-on experience mining and analyzing data. |
| **Final drop date** | See: <http://louisville.edu/calendars/academic/undergrad-grad.html> |
| **Required software** | Microsoft Excel  SPSS (your instructor will provide access to SPSS) |
| **Other utilities** | You would be required to use a Windows or a Mac laptop to watch video recordings in Panopto. Panopto recordings are available via blackboard and do not require anything other than a web browser and access to high-speed internet. |
| **Course Expectations** | Check Blackboard Announcements every day for important communications. Even better-subscribe to them. Instructions are posted on Blackboard.  Review the Course Schedule frequently to ensure that you are aware of what topics will be covered each week and when assignments are due.  Read and complete assigned material.  Collaborate with other students (when appropriate) to enhance your understanding of the material but do not plagiarize on assignments or exams.  Do not plagiarize or otherwise misrepresent your work. Cases of plagiarism are reported to the Dean’s office in the College of Business without prejudice and all students involved will face the consequences of their actions.  Do not procrastinate! Keep up with the flow of all course-related activities and assignments or your final grade will indeed suffer.  Plan your time wisely - get course work done ahead of schedule and submit all assignments well before the scheduled due date and time.  Since this is an online course, you are responsible for managing your time wisely. I would strongly recommend you devote at least an hour at the same time of day, several days a week just as if you were in a traditional classroom to engage in the online course.  I will not accept assignments as “late” or permit “make-up” tests unless a notable extenuating circumstance occurs and you provide me with sufficient documented proof of the extenuating circumstance preferably before the due date, but no later than two days later. Documented proof includes, but is not limited to, an Athletic Department Excused Absence memo, physician’s note on the practice’s letterhead, hospital discharge paperwork, obituary notice (for a family member), etc. Written documentation must include the phone number of a person who can verify the situation and reason for your tardiness. Prior notification is expected, except in the case of an emergency - please e-mail me as soon as you are aware of any type of extenuating circumstance developing. Remember that an unexpected situation does not excuse you from the responsibility and requirement of assigned work, regardless of course activity type (homework, quiz, test, etc.).  Work hard. Play harder. And, have a whole bunch of fun while learning a Data Analytics! |
| **Weekly assignments** | Unless I notify you otherwise, every has a class exercise (open ended; not timed) and quiz (multiple choice; timed) due. All assigned work is due on the dates noted in the weekly plan posted on blackboard (usually by 5pm on Friday of every week). Assignments not submitted by the due date and time will not be accepted unless proof of an extenuating circumstance (as previously noted) is provided. I do not consider technology-related issues a sufficient justification for submitting assignments late. There are no make-up opportunities available for weekly assignments.  If technical issues preclude you from posting a completed assignment into the ***Assignments > Submit Work Here*** folder in Blackboard, you should log out, close your browser, and repeat the process again. If further efforts fail or the specific assignment is no longer available in Blackboard, **contact the UofL IT Help Desk at (502) 852-7997** to report any issue you are having. If the Help Desk is unable to assist you or resolve your issue in a timely manner, then you should e-mail me the assignment file(s) with an appropriate explanation and the Help Desk ticket number **PRIOR** to the due date/time published in the Course Schedule.  Do **NOT** wait until the last minute, as assignment items may automatically close *shortly after* the due date and time. |
| **Tests** | Test weeks are noted on the **Course Schedule**. The exam would be available from 8:00am on Tuesday to 8:00am on Thursday of the week. If you cannot take a test for a **valid** reason, you must notify me **PRIOR** to the date of the test. I will only offer a make-up test for unusual and extenuating circumstances and the student is responsible for making arrangements **PRIOR** to the scheduled test week; otherwise, there will be **NO** alternate test dates. Failure to take any test will result in you earning a grade of **zero** for that test unless I have given you **PRIOR** permission to take it late. |
| **Email Policy** | Barring server reliability, availability, performance, and several other factors, I strive to reply to every email within 24 hours or less.  I reply to **EVERY** email.  E-mail, by its very nature, is not guaranteed deliverable.  If you have not received a reply to your email for 48 hours, please assume I did not get it and resend your email.  You should always include your course name “Data Analytics” along with a meaningful text topic in the subject line of each message. I get a large number of emails every day from students. Messages without a properly formatted subject line makes it difficult for me to prioritize your email over other emails.  Most e-mail services are not secure, so it should not be used for transmitting any type of sensitive, confidential, proprietary, or personal information. |

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| **III. Evaluation** | | |
| **Grading scale** | A >=93 Exceptional work  A- 91-92 Very good  B+ 87-90 Above average  B 83-86 Average  B- 80-82 Below Average  C+ 78-79 Barely Acceptable  F <78 Unacceptable | |
| **Grading scheme** | *Grading component* | *Weighted grading percentage* |
| Final exam | 150 points |
| Weekly Quizzes | 100 points |
| Homework exercises | 100 points |
| Mid-term exams (2X75 Points) | 150 points |
|  | **Total** | 500 points |

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| IV. Schedule Notes:   1. This course does not require a review of the mathematical calculations in the page numbers listed below. Primary focus is Excel and SPSS output and its interpretation 2. This schedule may change | | |
| **Week** | **Topic** | Session Activity Additional readings may be added for more information |
| 1 | Analytical Fundamentals Review | * Types of data   11th edition: Section 2.1; pages 13-18  10th edition: Section 2-1; pages 13-20  9th edition: Section 2.1; pages 13-20   * Graphical techniques to describe a set of interval data   11th edition: Section 2.3; pages 30-48  10th edition: Section 3-1; pages 44-57  9th edition: Section 3.1; pages 44-57   * Measures of central location   11th edition: Section 4.1; pages 97-105  10th edition: Section 4-1; pages 95-104  9th edition: Section 4.1; pages 98-107   * Measures of variability   11th edition: Section 4.2; pages 106-114  10th edition: Section 4-2; pages 105-111  9th edition: Section 4.2; pages 108-114   * Measure of linear relationship   11th edition: Section 4.4; pages 124-138  10th edition: Section 4-4; pages 123-127 and 4-4f; page 137  9th edition: Section 4.4; pages 126-130 |
| 2 | Sampling Distributions | * Normal distribution   11th edition: Section 8.2; pages 259-276  10th edition: Section 8-2; pages 266-277  9th edition: Section 8.2; pages 270-281   * Other continuous distributions   11th edition: Section 8.4; pages 281-294  10th edition: Section 8-4; pages 287-299  9th edition: Section 8.4; pages 291-304   * Sampling distribution of the mean   11th edition: Section 9.1; pages 296-308  10th edition: Section 9-1; pages 302-312  9th edition: Section 9.1; pages 308-320 |
| 3 | Estimation | * Concepts of estimation   11th edition: Sections 10.1 and 10.2; pages 322-338  10th edition: Section 10-1; pages 325-338  9th edition: Section 10.1; pages 336-349   * Hypotheses testing   11th edition: Sections 11.1 and 11.2; pages 345-367  10th edition: Section 11-1; pages 348-366   * 9th edition: Section 11.1; 361-379 * Inference about a population   11th edition: Section 12.1; pages 382-395  10th edition: Sections 12-1 and 12-2; pages 386-392 and 401-406  9th edition: Sections 12.1 and 12.2; pages 399-405 and 413-419 |
| 4 | Catch-up | Catch-up Week |
| 5 |  | Mid-term exam I |
| 6 | Comparing Populations | * Independent samples   11th edition: Section 13.1; pages 439-460  10th edition: Section 13-1; pages 438-452  9th edition: Section 13.1; pages 449-463   * Matched pairs   11th edition: Section 13.3; pages 464-476  10th edition: Section 13-3; pages 467-475  9th edition: Section 13.3; pages 475-483 |
| 7 | Introduction to SPSS  Working with Data | Introduction to SPSS GUI  Manipulating Data  -Importing data  -Selecting cases  -Computing variables  -Recoding variables   * -Missing values |
| 8 | Regression Analysis | * Regression Analysis   11th, 10th, and 9th edition: Chapters 16 and 17 |
| 9 | Catch-up | Catch-up Week |
| 10 |  | Mid-term exam 2 |
| 11 | Advanced Regression Analysis | Regression with categorical independent variables |
| 12 | Working with Time | Time-series analysis |
| 13 | Analytical decision making I | Logistic Regression |
| 14 | Analytical decision making I | Working with 2-way and 3-way interactions |
| 15 | Catch-up | Catch-up Week |
| 16 |  | Mid-term exam 2 |

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| **Changes in the syllabus** | Syllabus is subject to change. In particular the order of topics to be presented may change. |

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| **V1. Student Responsibilities / College and University Issues** | |
| **University of Louisville student**  **conduct and responsibilities** | This course will abide by University of Louisville student  conduct and responsibilities with regards to ethics and related issues:  <http://louisville.edu/dos/students/policies-procedures/student-handbook.html#codeofstudentconduct> |
| **College of Business student conduct and responsibilities** | This course will abide by College of Business student  conduct and responsibilities with regards to ethics and related issues:  <http://business.louisville.edu/students/college-of-business-academic-dishonesty-policy> |
| **Religious holiday conflict policy** | <http://louisville.edu/diversity/resources/work-restricted-holy-day-policies-calendar.html> |
| **University policy on equal access** | <http://louisville.edu/disability/policies-procedures> |
| **Title IX/Clery Act Notification** | Sexual misconduct (including sexual harassment, sexual assault, and any other nonconsensual behavior of a sexual nature) and sex discrimination violate University policies.  Students experiencing such behavior may obtain **confidential** supportfrom the PEACC Program (852-2663), Counseling Center (852-6585), and Campus Health Services (852-6479). To report sexual misconduct or sex discrimination, contact the Dean of Students (852-5787) or University of Louisville Police (852-6111).  Disclosure to University faculty or instructors of sexual misconduct, domestic violence, dating violence, or sex discrimination occurring on campus, in a University-sponsored program, or involving a campus visitor or University student or employee (whether current or former) is not confidential under Title IX. Faculty and instructors must forward such reports, including names and circumstances, to the University’s Title IX officer.  For more information, see the Sexual Misconduct Resource Guide  (<http://louisville.edu/hr/employeerelations/sexual-misconduct-brochure>). |