MCPHS UNIVERSITY School of Healthcare Business

Course Syllabus
HCM.722 – Business Statistics
Fall 2021

Faculty Information:

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Course Information

HCM.722 – Business Statistics Credits: 3
This is an online course. Students may review each weekly lesson at a time convenient to their individual schedules within the week, but must remain current by completing each lesson and/or assignment within the timeframe indicated in this document.

Course Description:
The collection, evaluation, and summation business data will be explored. The course focuses on applied statistical analysis, interpretation, and representation using standard statistical methods, including descriptive statistics, probability distributions, and random variables. The testing of hypotheses, estimation, regression, and correlation analyses are carried out in the context of managerial and informed decision-making.

Text/Primary Course Materials:
Required Text:

1. Sharpe, N., Veaux, R. & Velleman, P. (2015). *Business statistics*. Pearson.
   Third Edition!
2. Supplemental articles and readings as assigned

Recommended Text:

1. American Psychological Association. (2019). *Publication manual of the American Psychological Association* (7th ed.). American Psychological Association.

Other Resources:

1. Useful website for APA style guidelines from the Purdue Online Writing Lab

Course Objectives:

1. Use statistics to understand the importance of data-driven business decisions,
2. Describe the basic role of probability in business decision making,
3. Describe the basics of business decision-analysis,
4. Analyze and summarize business data numerically and graphically,
5. Describe the basics of beginning predictive business modeling,
6. Use different business sampling methods to collect and analyze data,
7. Identify different probability distributions common in business and the relationships between sampling, probability, and uncertainty in business decision making, and
8. Use model-based estimation and prediction methods with business applications.

Assessment of Student Learning and Teaching Effectiveness

This course will be offered online using Blackboard as the course learning management system. Narrated PowerPoint slides will be posted to Blackboard weekly to present each topic. Students will read the assigned Readings outlined in the course calendar for each topic prior to viewing the PowerPoint presentation for that topic. After reviewing the PowerPoint presentation(s), students will participate in associated discussion board activities to promote learning via reflection. A final research paper as well as various other assignments will be used to assess the course objectives.

Course Requirements:

1. **Weekly Assignments: 40%**
   Each assignment reflects topics and information from the week's assigned text chapters, supplemental readings or videos, and recorded lectures.

2. **Midsemester Evaluation 25%**

3. **Final Assignment: 25%**

4. **Participation/Course Journal: 10%**
   - Active learning is essential. Students will participate via *Blackboard* in all posted discussion topics. Participation is mandatory with a minimal requirement of 2 postings per week to the discussion board. Students are required to post twice each week, once by Thursday of the week stating their views and once, by Sunday of the week, with a thoughtful reflection commentary after reading the views of classmates.
   - Weekly lessons and assigned readings will be the source of the discussion topics. Questions will be posed at the beginning of each week to initiate discussion
   - Each discussion, unless otherwise stated, will be open for one (1) week with no contributions to the topic accepted thereafter. (This means postings must be completed by 12 midnight EST Sunday of each week; if both postings are not done, a grade of zero is assigned).
   - The faculty member will not comment on each posting, but may comment to provide direction to the discussion as postings accumulate.
   - "Chatter" in the discussion sessions should be avoided; responses to colleagues should advance the conversation and not simply provide praise.

Assignments and Grading

All assignments are to be turned in on the due date indicated by 11:59 p.m. EST via the Blackboard learning management system (see the assignment for the specific method). Unless prior approval has been granted from your instructor, two percent (2%) will be deducted for each calendar day late past due date. Faculty reserves the right to not accept any assignments submitted more than three (3) calendar days after the due date.

Grading:

Grades for the course assignments/requirements listed above will be posted via the Blackboard Grade Center. Students are strongly encouraged to maintain copies all assignments, projects, proposals, and discussion posts submitted for your own records and so your work can be resubmitted if there is a posting or transmission error.

Grading Scale:
Please note that the graduate grade scheme does not include the grades that are Bolded. Students receiving below a passing grade in graduate level courses will be graded with an F, regardless of the letter grade. Check the grading policies for your program in the University Catalog.

Doctorate students must pass the course with a minimal grade of 83%/B
Masters students must pass the course with a minimal grade of 80%/B-

A	100-93	***C+***	***79-78***
A-	92-90	***C***	***77-73***
B+	89-88	***C-***	***72-70***
B	87-83	**D**	**69-60**
B-	82-80	F	<60

Citations:
All assignments, papers, discussion boards and otherwise will follow American Psychological Association (APA) style guidelines. **There are no exceptions.**

Plagiarism and Similarity Checking:
Students are expected to abide by the University Academic Honesty Policy as explained in the Student Handbook and University Catalog. Plagiarism is considered a violation of this policy. Plagiarism is defined as submitting another person's work as one's own without proper acknowledgment or using the words or ideas of others without crediting the source of those words or ideas. To deter plagiarism and ensure appropriate use of resources in student research and learning, the University subscribes to verification services like Turnitin. Students must submit their written work via Blackboard where similarity checking is carried out and authenticity verified.

All incidents of plagiarism either intentional or unintentional will be reported to the Dean of Students as outlined in the Student Handbook.
Please note the following consequences for occurrences of plagiarism:

- 1st offense - resubmission of revised assignment with grade deduction of 10% of grade for second submission.
- 2nd offense - resubmission of revised assignment with grade deduction of 20% of grade for second submission.
- 3rd offense - failing grade for assignment with a grade of 0%.

Any student who does not resubmit their work within 7 calendar days as outlined above will receive a 0% for the assignment. Plagiarism offenses are accumulative throughout a student's academic tenure.

Reuse of Your Own Work: Self-Plagiarism:
Plagiarism includes submitting the same work for assignments in more than one class (copying from oneself) without permission from the instructor and/or appropriate citation, the same or subsequent semesters. If you are retaking a course in a subsequent semester, you must seek approval from your current course instructor about the reuse of materials submitted previously for class assignments and discussions. Your instructor reserves the right to deny this request. If you previously submitted an assignment via Turnitin and you submit the same work for another course or a retake, it will show up on the similarity report as possible plagiarism.

Access to Coursework after the Semester:
You will not be able to access course materials or assignments after Blackboard access for the semester has ended. If you think you might need to reference your work at a later date, be sure you have saved a separate copy of your assignments, papers, and discussions. Faculty cannot provide access to courses after the semester has ended.

Course Policies

Any issues arising from the syllabus or course requirements should be addressed to the course faculty immediately. If changes to the syllabus are required the faculty member will notify students of the changes.

Documented Absence Process:
To be permitted to make up missed coursework MCPHS students must seek a documented absence from the Dean of Students office. In all cases, it is the student's responsibility to notify the Dean of Students. In the case of an absence (anticipated or urgent), every effort must be made to notify course faculty AND the Dean of Students office. Email notification is preferred.

Regardless of the reason for absence, a student must notify the Dean of Students office and their course faculty or preceptor of the absence. **Students must also complete the online form and upload supporting documentation within five (5) business days from the first date of absence to the Dean of Students office.** A documented absence does not always excuse a student from missing academic work. Students are expected to abide by the course syllabus and academic program's policy related to class absences. Reasons of work conflict, travel, and poor time management are not eligible for documented absence, and acceptance of late work is solely at the instructor's discretion. Permitted absences do not exclude the enforcement of the late submission policy with potential point deductions.

Email Statement:
All MCPHS students are required to open, utilize, and maintain the MCPHS email account they are assigned within limits set by Information Services. Official college communications and notices, including communications for this course are ONLY delivered to MCPHS email accounts. All students are responsible for regularly checking their MCPHS email and for information contained therein.

Guidelines for Faculty Email Communications and Questions:
You are strongly encouraged to use the Q&A section of the course to post course/assignment-specific questions as peers may either have the answer or benefit from the responses. When you need to contact the faculty by email, they will respond to email messages in a timely manner, generally within 24 hours. Note that weekends and other University holidays affect the timing of email responses from faculty. Students are expected to treat faculty, peers and group members with the same respect that they expect and deserve.

Office of Student Access and Accommodations (OSAA):
A student's right to equal education is protected under the Americans with Disabilities Act and Section 504 of the Rehabilitation Act. All students must abide by the Academic Policies and Procedures set forth in the MCPHS Academic Catalog. Questions regarding accommodations can be directed to the Office of Student Access and Accommodations.

Under the ADA/Section 504, students with documented disabilities/conditions, that impact their access to education, and wish to request reasonable accommodations can contact the Office of Student Access and Accommodations (OSAA). To initiate services, students can complete the Student Request for Services Form: https://mcphs-accommodate.symplicity.com/public_accommodation/

OSAA can be contacted via email at OSAA@mcphs.edu or via phone at 617-879-5995.

Course Outline

All assignment information is available and posted to the Blackboard course.

Unit 1	**Unit 1 Dates:** 09/02 – 09/05	**Unit 1 Title:** Course Introduction **Unit 1 Objectives:** • Introduce HCM.722 – Business Statistics and semester goals	**Unit 1 Reading/Viewing:** • None
Unit 2	**Unit 2 Dates:** 09/06 – 09/12	**Unit 2 Title:** Displaying and Describing Different Types of Data **Unit 2 Objectives:** • Summarize data visually and numerically • Create a codebook. • Use measures of central tendency and spread to describe numerical data. • Identify different types of variables.	**Unit 2 Reading/Viewing:** • Sharpe, Chs. 1, 2, and 3
Unit 3	**Unit 3 Dates:** 09/13 – 09/19	**Unit 3 Title:** Randomness and Probability **Unit 3 Objectives:** • Describe each probability rules listed in the textbook. • Calculate basic probabilities using SPSS. • Use contingency tables to determine conditional probabilities. • Understand and apply the difference between disjointed and independence to different problems. • Calculate expected values and interpret the results. • Describe the specific role of probabilities in distributions.	**Unit 3 Reading/Viewing:** • Sharpe, Chs. 5 and 6
Unit 4	**Unit 4 Dates:** 09/20 – 09/26	**Unit 4 Title:** Normal and Binomial Distributions **Unit 4 Objectives:** • Recognize normally distributed data • Discuss how to use the normal distribution to identify outliers • Use SPSS to find the value of a randomly selected variable/case. • Explain how the binomial distribution is related to the normal distribution.	**Unit 4 Reading/Viewing:** 1. Sharpe, Ch. 7

Unit 5	**Unit 5 Dates:** 09/27 – 10/03	**Unit 5 Title:** Central Limit Theorem and Measures of Central Tendency **Unit 5 Objectives:** • Know the sampling distribution of the mean • Find t values using SPSS • Check the assumptions and conditions of any sampling distribution. • Write a summary and interpret the confidence interval for the mean.	**Unit 5 Reading/Viewing:** 1. Sharpe, Ch. 11
Unit 6	**Unit 6 Dates:** 10/04 – 10/10	**Unit 6 Title:** Hypothesis Testing **Unit 6 Objectives:** • Formulate a null hypothesis and alternative hypothesis for a question of interest. • Perform a hypothesis test for a mean. • Write a summary and interpret the hypothesis test outcome. • Explain the logic of a hypothesis test. • Choose correctly a one or two-sided test and justify your decision.	**Unit 6 Reading/Viewing:** 1. Sharpe, Ch. 10
Unit 7	**Unit 7 Dates:** 10/11 – 10/17	**Unit 7 Title:** Testing Differences in Means **Unit 7 Objectives:** • Compare p-values at a predetermined alpha and decide whether to accept or reject. • Identify types of errors. • Discuss the concept of power and how it applies to choose a sample size. • Test the difference of means between two independent groups. • Recognize when you should use a paired sample test.	**Unit 7 Reading/Viewing:** 1. Sharpe, Chs. 12, 13

Unit 8	**Unit 8 Dates:** 10/18 – 10/24	**Unit 8 Title:** Hypothesis Testing with Non-Parametric Methods **Unit 8 Objectives:** • Compare chi-square p-values and determine if the null hypothesis should be rejected. • Identify situations in which nonparametric methods should be used • Discuss the concept of power and how it applies to choose a sample size with nonparametric methods.	**Unit 8 Reading/Viewing:** 1. Sharpe, Chs. 14, 22
Unit 9	**Unit 9 Dates:** 10/25 – 10/31	**Midsemester Evaluation**	
Unit 10	**Unit 10 Dates:** 11/01 – 11/07	**Unit 10 Title:** Correlation and Regression **Unit 10 Objectives:** • Create a scatterplot to display the relationship between two variables • Summarize the strength and direction of a linear relationship using correlation. • Model a linear relationship with a least square regression. • Examine and interpret the residuals from a regression model	**Unit 10 Reading/Viewing:** 1. Sharpe, Chs. 4, 15
Unit 11	**Unit 11 Dates:** 11/08 – 11/14	**Unit 11 Title:** Multiple Regression **Unit 11 Objectives:** • Use regression residuals to analyze linear relationships. • Describe the difference between simple and multiple regression • Interpret the outcome table for a multiple regression model. • Identify a dataset that meets the assumptions of multiple regression. • Describe the F statistic and R-squared in the context of a multiple regression model.	**Unit 11 Reading/Viewing:** 1. Sharpe, Chs. 16, 17

Unit 12	**Unit 12 Dates:** 11/15 – 11/21	**Unit 12 Title:** Building Multiple Regression Models **Unit 12 Objectives:** • Build multiple regression models with many variables available. • Recognize multicollinearity. • Recognize when one multiple regression model fits the data better than another. • Use statistics to choose a model of best fit. • Describe the F statistic and R-squared in the context of a multiple regression model.	**Unit 12 Reading/Viewing:** 1. Sharpe, Chs. 17, 18
Unit 13	**Unit 13 Dates:** 11/22 – 11/28	**Unit 13 Title:** Time Series **Unit 13 Objectives:** • Be able to recognize when data are in a time series format. • Recognize the four components of time series analysis. • Build a time series graph from a set of extracted statistical data.	**Unit 13 Reading/Viewing:** 1. Sharpe, Chs. 18, 19
Unit 14	**Unit 14 Dates:** 11/29 – 12/05	**Unit 14 Title:** Semester Review of Topics **Unit 14 Learning Objectives:** • Open question and answer week to have a student-guided review of any topic or statistical concept covered this semester.	**Unit 14 Reading/Viewing:** 1. None
Unit 15	**Unit 15 Dates:** 12/06 – 12/10	**Final Exam Week**	

Course Assignments/Rubrics
All course assignment rubrics and scoring sheets will be provided along with their associated assignment via Blackboard.

Students must abide by the Academic Policies and Procedures set forth in the MCPHS University Catalog and Student Handbook. *Important information regarding Description of Credit Hour Policy, Excused Absence Approval, Disability Support Services for students, Academic Honesty and Plagiarism and other academic policies is set forth in the Academic Policies and Procedures section of the MCPHS Catalog.*

MCPHS University Course Catalog
https://www.mcphs.edu/academics/university-course-catalog
MCPHS University Student Handbook
https://my.mcphs.edu/departments/student-affairs

Students must read, understand, and comply with all of these policies and procedures.