# School of Healthcare Business

**Course Syllabus**
**HCM.722 – Business Statistics**
**Summer 2022**

**Faculty Information:**

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| **Office:** | **Boston Campus** |
| **Office Hours**: | **Online (via Zoom), by scheduled appointment** |

**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.). Washington, DC: American Psychological Association.

***Other Resources:***
1. Useful website for APA style guidelines from the Purdue Online Writing Lab

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**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: (Fill in each category below)**
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:                                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

**Citations** - All assignments, papers, discussion boards, or otherwise will follow American Psychological Association (APA) style guidelines 7th edition. **There are no exceptions.** The APA Guidelines set forth the standards for writing style as well as recognition of sources, evidence, etc.

**Plagiarism Software and Review** - 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. To deter plagiarism and ensure the appropriate use of resources, 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. **Note:** When the submission is complete, a confirmation email is automatically sent to your MCPHS email.

**Assignment Due Dates**

- All assignments must be submitted on the due date indicated.
- Submissions are required by 11:59 p.m. EST by default unless your instructor indicated an alternative date/time.
- Assignments are submitted via Blackboard (see the assignment for the specific method).

If you experience an illness or other excusable absence, contact your instructor immediately. Your instructor will provide guidance. **Please note**: to receive a Documented Absence it must be submitted within 5 days of the first absence (see Documented Absence Policy). Without proper documentation from the Dean of Students, or exception granted by your instructor, no exceptions will be made for late assignments.

**Please note:**

- If you have questions or concerns about an assignment, contact your instructor **prior** to the due date.
- You are encouraged to maintain copies of all assignments, projects, proposals, and discussion posts submitted for your own records. Courses may not be available to you after the semester concludes.
- After you submit your assignment, you are encouraged to double-check to make sure that it has been received/recorded.
- Writing assignments are submitted via Turnitin. When the submission is complete, a confirmation email is automatically sent to your MCPHS email.

**Late Assignments**

A late assignment is any assignment submitted after the stated due date without a documented absence granted by the Dean of Students Office, or confirmation of an exception granted by your instructor. Late assignments without documented absence, or granted exception will be graded according to the following scale:

- Submitted within 1 day / 24 hours – 20% penalty
- Submitted within 2 days / 48 hours – 35% penalty
- Submitted within 3 days / 72 hours – 50% penalty
- After 72 hours, assignments will not be accepted and marked as a 0

**Assignment Grading**

- Grades for the course assignments/requirements will be posted via the Blackboard Grade Center.
- Any questions about grades should first be sent to your instructor in writing from your MCPHS email address.
- Any exception to the due dates or late submissions (see above) must be discussed with your instructor and confirmed in writing.

**Academic Honesty and Plagiarism**

The School of Healthcare Business faculty believes in honesty and integrity in all educational pursuits. We are steadfast in our commitment to academic integrity and the standards identified in the Student Handbook and University Catalog. All students are expected to abide by these policies. Students must uphold the highest standards of academic integrity, including presenting all work, writing assignments, discussion posts, etc., without any instance of plagiarism, intentional or otherwise. 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. If an incident of plagiarism is identified it will be addressed as follows:

**The First Incidence of Plagiarism/Academic Dishonesty -** Students will be notified via their MCPHS email of the identified offense and required to discuss the situation with the instructor, program director, or Dean. To receive credit, a revised submission is required within seven (7) days, or no points will be awarded.

- A penalty of 20% will be applied to the revision.
- Any further plagiarism or academic dishonesty in the revised submission will constitute the second incidence of plagiarism (see below).

- Student Affairs will be notified of the first incident and the academic penalty that has been imposed. Please note - The DOS/Student Affairs may impose additional penalties.

**The Second Incidence of Plagiarism/Academic Dishonesty** Students will be notified via their MCPHS Email of the identified offense and required to discuss the situation with the instructor, program director, or Dean. To receive credit, a revised submission is required within seven (7) days, or no points will be awarded.

- A penalty of 40% will be applied to the revision.
- Any further plagiarism or academic dishonesty in the revised submission will constitute the third incidence of plagiarism (see below).
- Student Affairs will be notified of the second incident and the academic penalty that has been imposed. Please note - The DOS/Student Affairs may impose additional penalties.

**The Third Incidence of Plagiarism/Academic Dishonesty -** Students will be notified via their MCPHS Email of the identified offense and required to discuss the situation with the instructor, program director, or the Dean.

- No revisions are accepted.
- The assignment will be automatically graded with a 0 (zero).
- Students may be required to repeat the course (see grading section)
- The DOS/Student Affairs will be notified of the incident and the academic penalty that has been imposed. Please note – The DOS/Student Affairs may impose additional penalties.

**Please note:**

- Each incidence of plagiarism or academic dishonesty, is <u>cumulative</u> while enrolled as a student in the School of Healthcare Business.
- All incidences of plagiarism or academic dishonesty, either intentional or unintentional, will be reported to the DOS/Student Affairs as outlined above.
- University level consequences related to plagiarism may be applied to each incidence as determined by the DOS/Student Affairs.
- After three incidences the DOS/Student Affairs will be notified by the Dean with a recommendation for dismissal.

**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.

Students enrolled in the DHA and DScPAS programs must pass the course with a minimal grade of 83%/B
Students in the MBA and MSCM programs must pass the course with a minimal grade of 80%/B-

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|------|--------|--------|--------|
| 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** |

**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.

**Reuse of Your Own Work: Self-Plagiarism**

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

**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.*

**Center for Academic Success & Enrichment (CASE) - WOR/MAN/Graduate/Online Programs**
The Center for Academic Success and Enrichment (CASE) supports students through providing a number of academic support services introducing them to the strategies that will enhance performance in their academic programs and ultimately contribute to their professional lives.
The CASE staff are available to meet with students on an appointment basis Monday – Friday 9:00 a.m. to 4:00 p.m. EST. To schedule an appointment with a CASE staff member, visit the following link: mywconline.com/casewm and select your schedule and program to bring you to the correct availability.

Questions related to CASE services can be directed to case.wm@mcphs.edu.

**University Learning Network (ULN)**
The ULN is intended to support students to meet the challenges of our health science based programs with our resources consisting of: Enrichment/Professional Tutoring, English Language Resource Center, Writing Center, and TutorMe.

Students can utilize the ULN's appointment-based services (Enrichment/Professional Tutoring, English Language Resource Center, & Writing Center) by visiting www.mywco.com/uln. TutorMe can be accessed through the Tools section of the course's Blackboard page.

Questions related to University Learning Network services can be directed to ULN@mcphs.edu.

**Course Overview**

(starts on next page)

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| Unit 1 | Unit 1 Dates: 05/16 – 05/22 | **Unit 1 Title:**<br>Course Introduction<br><br>**Unit 1 Objectives:**<br>• Introduce HCM.722 – Business Statistics and semester goals<br>• AHRQ HCUP Data Use Agreement | **Unit 1 Reading/Viewing:**<br>• None |
|---|---|---|---|
| Unit 2 | Unit 2 Dates: 05/23 – 05/29 | **Unit 2 Title:**<br>Displaying and Describing Different Types of Data<br><br>**Unit 2 Objectives:**<br>• Summarize data visually and numerically<br>• Create a codebook.<br>• Use measures of central tendency and spread to describe numerical data.<br>• Identify different types of variables. | **Unit 2 Reading/Viewing:**<br>• Sharpe, Chs. 1, 2, and 3 |
| Unit 3 | Unit 3 Dates: 05/30 – 06/05 | **Unit 3 Title:**<br>Randomness and Probability<br><br>**Unit 3 Objectives:**<br>• Describe each probability rules listed in the textbook.<br>• Calculate basic probabilities using SPSS.<br>• Use contingency tables to determine conditional probabilities.<br>• Understand and apply the difference between disjointed and independence to different problems.<br>• Calculate expected values and interpret the results.<br>• Describe the specific role of probabilities in distributions. | **Unit 3 Reading/Viewing:**<br>• Sharpe, Chs. 5 and 6 |

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| Unit 4 | Unit 4 Dates:<br>06/06 – 06/12 | **Unit 4 Title:**<br>Normal and Binomial Distributions<br><br>**Unit 4 Objectives:**<br>• Recognize normally distributed data<br>• Discuss how to use the normal distribution to identify outliers<br>• Use SPSS to find the value of a randomly selected variable/case.<br>• Explain how the binomial distribution is related to the normal distribution. | **Unit 4 Reading/Viewing:**<br>1. Sharpe, Ch. 7 |
|---|---|---|---|
| Unit 5 | Unit 5 Dates:<br>06/13 – 06/19 | **Unit 5 Title:**<br>Central Limit Theorem and Measures of Central Tendency<br><br>**Unit 5 Objectives:**<br>• Know the sampling distribution of the mean<br>• Find t values using SPSS<br>• Check the assumptions and conditions of any sampling distribution.<br>• Write a summary and interpret the confidence interval for the mean. | **Unit 5 Reading/Viewing:**<br>1. Sharpe, Ch. 11 |
| Unit 6 | Unit 6 Dates:<br>06/20 – 06/26 | **Unit 6 Title:**<br>Hypothesis Testing<br><br>**Unit 6 Objectives:**<br>• Formulate a null hypothesis and alternative hypothesis for a question of interest.<br>• Perform a hypothesis test for a mean.<br>• Write a summary and interpret the hypothesis test outcome.<br>• Explain the logic of a hypothesis test.<br>• Choose correctly a one or two-sided test and justify your decision. | **Unit 6 Reading/Viewing:**<br>1. Sharpe, Ch. 10 |
| Unit 7 | Unit 7 Dates:<br>07/11 – 07/17 | **Midsemester Evaluation** | |

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| Unit 8 | Unit 8 Dates: 06/27 – 07/03 | Unit 8 Title: Testing Differences in Means<br><br>Unit 8 Objectives:<br>• Compare p-values at a predetermined alpha and decide whether to accept or reject.<br>• Identify types of errors.<br>• Discuss the concept of power and how it applies to choose a sample size.<br>• Test the difference of means between two independent groups.<br>• Recognize when you should use a paired sample test. | Unit 8 Reading/Viewing: 1. Sharpe, Chs. 12, 13 |
|---|---|---|---|
| Unit 9 | Unit 9 Dates: 07/04 – 07/10 | Unit 9 Title: Hypothesis Testing with Non-Parametric Methods<br><br>Unit 9 Objectives:<br>• Compare chi-square p-values and determine if the null hypothesis should be rejected.<br>• Identify situations in which nonparametric methods should be used<br>• Discuss the concept of power and how it applies to choose a sample size with nonparametric methods. | Unit 9 Reading/Viewing: 1. Sharpe, Chs. 14, 22 |
| Unit 10 | Unit 10 Dates: 07/18 – 07/24 | Unit 10 Title: Correlation and Regression<br><br>Unit 10 Objectives:<br>• Create a scatterplot to display the relationship between two variables<br>• Summarize the strength and direction of a linear relationship using correlation.<br>• Model a linear relationship with a least square regression.<br>• Examine and interpret the residuals from a regression model | Unit 10 Reading/Viewing: 1. Sharpe, Chs. 4, 15 |

| Unit 11 | Unit 11 Dates: 07/25 – 07/31 | **Unit 11 Title:** Multiple Regression<br><br>**Unit 11 Objectives:**<br>• Use regression residuals to analyze linear relationships.<br>• Describe the difference between simple and multiple regression<br>• Interpret the outcome table for a multiple regression model.<br>• Identify a dataset that meets the assumptions of multiple regression.<br>• Describe the F statistic and R-squared in the context of a multiple regression model. | **Unit 11 Reading/Viewing:**<br>1. Sharpe, Chs. 16, 17 |
|---|---|---|---|
| Unit 12 | Unit 12 Dates: 08/01 – 08/07 | **Unit 12 Title:** Semester Review of Topics<br><br>**Unit 12 Learning Objectives:**<br>• Open question and answer week to have a student-guided review of any topic or statistical concept covered this semester. | **Unit 12 Reading/Viewing:**<br>1. None |
| Final | **Final Dates:** 08/08 – 08/12 | **Final Exam Week** | |

**Course Assignments/Rubrics**
All course assignments and rubrics will be posted and available on Blackboard.

*Assignment Resubmission Policy*
Performing statistical analyses [and/or building data visualizations] is typically a new skill for students taking this course, therefore, with the exception of the midsemester and final assignments, students are encouraged to revise and resubmit any of the assignments if scored less than 85%. Any assignment resubmissions cannot score more than 85%.

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**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.**

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