UNIVERSITY OF MIAMI
FACULTY SENATE

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MEMORANDUM

To: Julio Frenk
             University President

From: Linda L. Neider
             Chair, Faculty Senate

Date: August 31, 2021

Subject: Faculty Senate Legislation #2021-07(D) – University Curriculum Committee Review
             of the Quantitative Skills Proficiency Requirement

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The Faculty Senate, at its August 25, 2021, meeting, had no objections to the acceptance of the
University Curriculum Committee Review of the Quantitative Skills Proficiency Requirement as
presented by Committee Chair David Chin.

The review and recommendations are enclosed for your reference.

This legislation is now forwarded to you for your information.

LLN/rh

Enclosure

cc: Jeffrey Duerk, Executive Vice President and Provost
         David Chin, Professor, Chair, University Curriculum Committee
         Karen Beckett, Registrar
         Patty Murphy, Associate Provost, Office of Accreditation and Assessment
         Undergraduate Academic Deans

Review of the Quantitative Skills Proficiency Requirement
By the University Curriculum Committee

Introduction

The University Curriculum Committee (UCC) is responsible for the periodic review of the general education requirements of the University (Faculty Manual, Section B4.15). The Quantitative Skills Proficiency Requirement falls within the general education requirements, and were last reviewed by the UCC in AY2013-14.

The UCC is a standing committee of the Faculty Senate, and the voting members of the committee consist of one representative from each school/college having an undergraduate program. The Senate Chair, after appropriate consultation, appoints the committee members, and also names the committee chair. The UCC also has ex-officio members that represent other constituencies of the University. The voting and ex-officio members who participated in this review are listed below.

Members:
College of Engineering: David Chin (Chair)
College of Arts and Sciences: Mitsunori Ogihara
School of Architecture: Carie Penabad
Miami Herbert Business School: Vidhi Chhaochharia
School of Communication: Grace Barnes
School of Education and Human Development: Jennifer Krawec
School of Music: Kate Reid
School of Nursing and Health Studies: Patricia Larrieu-Jimenez
Rosenstiel School of Marine and Atmospheric Science: Mohamed Iskandarani

Ex-Officio:
Office of the Provost: Maria Stampino, Patty Murphy, Kendee Franklin
Student Government: Julia Platt
Registrar: Karen Beckett
Library: Lisa Baker
General Welfare Committee: Dorothy Hindman

The UCC began its current review of the quantitative skills proficiency (QSP) general education requirement in fall 2020.

Current QSP Requirement

The current QSP requirement as stated in the University Bulletin is as follows:

> In a world increasingly influenced by science and technology, it is important for students to acquire the capacity to understand and use essential quantitative skills. The Quantitative Skills requirement helps students learn to use quantitative skills and tools to solve problems, including the interpretation, manipulation, and application of quantitative data. Students fulfill this requirement by completing either a Department of Mathematics course numbered MTH 108 or higher or a quantitative skills course approved by the student's college/school and the University Curriculum Committee in consultation with appropriate academic units[1].

> Students may be able to fulfill this requirement through credit earned through the following tests: AP, IB, A-Level, and Cambridge Pre-U. Please click here to see how credit/exemption may be earned through these tests[2].

> Students will be able to:

> Select and use appropriate quantitative methods and tools to solve problems. Interpret, manipulate, and apply quantitative data to solve problems.

[1]Students in the following majors in the Frost School of Music may take MTH 101: Algebra for College Students instead of MTH 108: Instrumental Performance, Keyboard Performance, Vocal Performance, Studio Music and Jazz Instrument, Studio Music and Jazz Vocal, Music Education, and Music Therapy. Students in the following majors in the Frost School of Music may take MTH 113: Finite Math instead of MTH 108: Music Business Entertainment Industries, Music, Musicianship, Artist Development and Entrepreneurship, Music Theory-Composition, and Media Writing and Production.

[2]Students in the Frost School of Music: An appropriate score on the SAT, ACT or proctored ALEKS examination may earn a student exemption from, but not credit for, the math requirement of the student's degree program.

Review Process

At the beginning of the review, it was generally understood that the courses approved for meeting the QSP requirement were from three academic units: the Department of Mathematics (MTH 108 or higher), the Department of Management Science (MAS 110), and the School of Communication (STC 103 and JMM 285). Students in selected majors in the Frost School of Music could meet the QSP requirement by successfully completing MTH 101. Each of the three aforementioned academic units (Mathematics, Management Science, and Communication) were contacted and asked to provide a report on their courses that are currently being used to meet the QSP requirement. Representatives of

the Department of Mathematics also made an in-person presentation to the UCC and answered questions from committee members.

During the course of the review, it was discovered that documentation of UCC authorizations granted for MAS 110 and JMM 285 could not be located in the faculty senate records; however, documentation of UCC approval of STC 103 in AY2015-16 was found in the UCC annual report for that year. It was also discovered that there might be other courses that are currently being used in various programs to meet the QSP requirement. This issue was researched by Patty Murphy and the findings are described below.

The confusion about how many and which statistics courses outside the Department of Mathematics are being used to fulfill the QSP requirement is primarily due to the fact that many degrees require a statistics or other quantitative course beyond the QSP requirement. The University Registrar's Office staff was contacted in an effort to determine which non-mathematics courses were set up in the undergraduate program Degree Progress Reports (DPRs) in CaneLink. It was discovered that the DPRs were not set up to differentiate the QSP requirement from the quantitative course requirements for each undergraduate degree. The Chair and Program Coordinator in the Department of Mathematics were also contacted to see if they had any documentation on which non-mathematics courses fulfilled the requirement, but no documentation was found. Finally, Patty Murphy reviewed the undergraduate section of the Academic Bulletin and put together a summary table (see Appendix II) including each undergraduate degree and listed the course(s) identified as meeting the QSP requirement. Since the University offers over 200 undergraduate majors, the analysis was kept at the degree level, though some programs were broken out if the degree requirements differed. Quantitative courses required for a major rather than for general education or a degree requirement were not included in the analysis. The analysis also included assembling information on whether each degree required a mathematics course, a statistics course, and/or a computer science course. From this analysis, it appeared that six non-mathematics courses are currently being used to fulfill the QSP requirement. These courses, along with their Bulletin descriptions are listed below.

> **STC 103: Statistical Reasoning for Strategic Communication.**
> An introduction to statistical reasoning for advertising and public relations.
>
> **JMM 285: Applied Statistics for Journalism and Media Management.**
> This course provides students an introduction to descriptive and bivariate inferential statistics to better understand and use media research and analysis. Computer applications are included.

MAS 110: Quantitative Applications in Business.
Review of algebra emphasizing its application to supply and demand functions, market equilibrium, compound interest, and amortization. Differential calculus emphasizing its applications to marginal cost and revenue functions, maximization, taxation in competitive markets, and elasticity of demand are discussed. The application of integral calculus to total cost and profit of demand, to total cost and profit functions, consumer's and producer's surplus, computation of present value, and constrained optimization using partial differentiation are also included.

BPH/HCS/NUR 202: Introductory Statistics in Health Care
Application of descriptive and inferential statistics. Principles and methods of summarizing data including tables, graphs, percentile ranks, central tendency, variability, normal distribution. Basic concepts of probability, hypothesis testing, and analysis of variance. Examples and problems from nursing and health sciences.

EPS 351: Introduction to Statistics and Research Design
The course will cover basic statistics relevant to the social sciences (e.g., central tendency, variation, t-tests, correlations), with emphasis on real world applications employing commonly used research designs. Students will acquire the tools necessary to interpret elementary statistical analyses and a foundation in the basic analytic methods used in conducting quantitative research in the behavioral sciences.

PSY 291: Introduction to Biobehavioral Statistics
The basics of descriptive and inferential statistics, but the focus will be on the latter. We will cover only enough descriptive statistics to enable us to introduce the inferential concepts of regression, t-tests ANOVA and Chi Square.
The syllabi of the above six courses were requested and received from the responsible persons in the respective academic units offering these courses, and these syllabi can be found in Appendix I. The syllabi were subsequently sent to the Department of Mathematics for review.

Two degree programs, the Bachelor of Liberal Arts (College of Arts and Sciences) and the Bachelor of Science in Public Health (School of Nursing and Health Studies) stated in the Academic Bulletin that students could use another "approved statistics course" and do not require MTH 108 or higher, which does not comply with the QSP requirement, since UCC approval is required for any non-mathematics course that is used to fulfill the QSP requirement.

Based on the above mentioned considerations, the UCC decided to clarify the status of all non-mathematics courses that can be used to meet the QSP requirement. This was

done by considering the content of the courses that are currently being used to satisfy the QSP requirement, and voting on whether these courses should be approved. As part of the consideration process, the syllabi of the six courses listed above were sent to the Department of Mathematics to identify any mathematics course equivalencies, and the gauge the level of the courses relative to the MTH 108 benchmark.

The UCC considered the issue of whether a computer programming course should be a mandatory component of the QSP requirement. The prevailing opinion of UCC members was that a computer programming course should not be mandatory. The UCC expressed support for the requirement of a computer programming course in addition to the mathematics course (MTH 108 or higher) that is used to meet the existing quantitative skills requirement.

The UCC also considered the QSP requirements at several other private R1 universities (see Appendix III). The UCC noted that the term "Quantitative Reasoning Requirement" is used at some other universities instead of "Quantitative Skills Requirement."

Review by the Department of Mathematics

The syllabi of all six non-mathematics courses that were considered by the UCC as currently being used to meet the QSP requirement were provided to the Department of Mathematics for review. Summaries of the reviews of these given below.

> The statistics courses - BPH/HCS/NUR 202, JMM 285, STC 103, and PSY 291 - are all elementary statistics courses that include discipline-specific applications. Some of these topics are covered in MTH 113. Each of these courses lists MTH 101 as a prerequisite. There is no MTH equivalent for any of these courses.

> EPS 351 also covers topics in elementary statistics with discipline-specific applications. Some of these topics are also covered in MTH 113. Although the School of Education and Human Development lists MTH 101 in their first-year program for EPS majors, MTH 101 is not specifically listed as a prerequisite for the course. It is recommended that MTH 101 be added as a prerequisite to this course. There is no MTH equivalent for this course.

> MAS 110 includes topics covered in MTH 130, but emphasizes business applications. The MTH 130, Introduction to Calculus, course is more general in nature. MAS 110 has a prerequisite of MTH 107 or SAT/ACT/ALEKS placement criteria in line with MTH 161. There is no MTH equivalent to MAS 110.

Requested Input from Academic Units

The academic deans of all colleges and schools with baccalaureate degree programs were each informed that the UCC was reviewing the UM QSP requirement, and each dean was asked to provide any relevant input or suggestions for consideration by the UCC. No input or suggestions were received from the deans.

Input was also requested from the Department of Mathematics, the Department of Management Science, and the School of Communication regarding QSP courses that are under their purview. Responses were received from all of these academic units, and these responses are summarized below.

Input from the Department of Mathematics

Drs. Cantrell, Ramakrishnan, and Oropesa of the Department of Mathematics reported that the current QSP requirement has sufficient flexibility to meet the needs of the University. Categorized responses from the Department of Mathematics are summarized below.

1. Basic Overview
   MTH 101 or MTH 107 is the minimal level of quantitative competency that underpins all requirements in all schools.

   The quantitative skills proficiency requirement varies across the schools and colleges, reflecting the wide range of intellectual pursuits that are offered. With one exception (music performance majors which only require MTH 101), it can be distilled into the following:

   - MTH 101 or 107 plus either MTH 108, 113, 130 or statistics as approved by the college in question and the UCC.

     In addition to the quantitative skills proficiency requirement, bachelor's degree requirements across the university generally include the following with some exceptions:

   - Calculus plus a statistics or computer science course as approved by the college in question.

2. Assessment
   The above-described framework serves the varying needs of the diverse colleges well. The first option is standard across universities world-wide, and the breadth of the use of mathematics continues to increase.

For non-STEM students, the Department of Mathematics offers finite mathematics MTH 113 as an option distinct from a traditional pre-calculus (MTH 108) or calculus (MTH 130) option. This option enables students to learn about important topics such as logic, counting principles, and basic probability and statistics. Although it has a number higher than 108, it is a more elementary course that has only 101 as a prerequisite.

3. Recommendations/Actions

    a. The Department will produce an interactive tutorial about placement and initial course option that will be available on its website. This device will serve to inform and clarify options for both students and advisors.

    b. Some non-STEM students may be better served by taking MTH 113 rather than MTH l 08. It will afford them a basic level of cultural numeracy that informs them as citizens in the 21st century.

    c. Placement is key to the continued successful implementation of the QSP requirement. Over the past several years the Department of Mathematics has been offering students the option of accepting initial course placement based on SAT or ACT quantitative test scores or taking a proctored ALEKS test in order to advance initial placement. The Department of Mathematics reports that there is a very good correlation between the two. Consequently, for students entering UM in fall 2021 without either an SAT or ACT score, the Department is confident that proctored ALEKS will serve the University well. However, at this point, it is not known what portion of students will have to take the proctored ALEKS. As a result, the Department has requested an increase in the budget for this item.

Input from the Department of Management Science

The Department of Management Science offers MAS 110, Quantitative Applications in Business, which is used to satisfy the QSP requirement for the bachelor's degree in Business Administration (BBA). The current total enrollment in the BBA program is 1994 students, with 548 seniors, 547 juniors, 445 sophomores, and 454 freshmen. The University QSP proficiency requirement is satisfied within the BBA degree requirements upon successful completion of MAS 110 or MTH 161 (or a MTH 161 equivalent).

MAS 110 includes the following topics: Review of algebra emphasizing its application to supply and demand functions, market equilibrium, compound interest, and amortization; differential calculus emphasizing its applications to marginal cost and revenue functions, maximization, taxation in competitive markets, and elasticity of demand; application of integral calculus to total cost and profit of demand, to total cost and profit functions, consumer's and producer's surplus, computation of present value, and constrained optimization using partial differentiation.

Input from the School of Communication

The School of Communication requires that all undergraduate majors meet the existing QSP requirement: basic college algebra and one course past MTH 101. While most of the SoC majors complete the requirement by taking MTH 113, Finite Mathematics, SoC students may also fulfill the requirement by completing either JMM 285, Applied Statistics for Journalism and Media Management, or STC 103, Statistical Reasoning for Strategic Communication. JMM 285 is not a required course for any SoC major; STC 103 is a required course for all students majoring in Public Relations. Both courses are available to all students in the School.

JMM 285 and STC 103 are basic, introductory statistics courses, comparable to those taught in other disciplines (e.g., psychology). Both cover introductory topics, including computation and interpretation of indices of central tendency and dispersion, sampling distributions (SE mean and SE estimate), validity and reliability, reasoning under the normal curve (including use of z-scores) testing hypotheses of differences and association while conforming to appropriate assumptions. Students are taught to perform and interpret statistical analysis using SPSS or other software tools, like Excel and R. (Software is available on all SoC computers, but students normally subscribe to needed software for the semester at a cost of about $20.) As with most introductory statistics classes, basic parametric and non-parametric tests are covered: T-tests, one-way ANOVA, multi-factor ANOVA, Pearson and Spearman correlations, factor analysis, and linear regression. Non-parametric tests are also covered, including chi-square and others.

UCC Action

At a formal meeting of the UCC on 19 April 2021, the following courses were approved to fulfill the QSP requirement: STC 103, JMM 285, MAS 110, NUR 202/BPH 202/HCP 202, and PSY 291. The following course was approved with the condition that MTH 101 be added as a prerequisite: EPS 351.

Recommended Actions

Bulletin Revision

Based on the results of this review, it is recommended to amend the QSP statement in the University Bulletin to: (1) explicitly list non-mathematics courses that can be used to meet the QSP requirement, (2) remove the redundancy in explicitly identifying mathematics courses numbered higher than MTH 108 as meeting the QSP requirement, and (3) provide clarifying wording. The recommended Bulletin statement is as follows:

> In a world increasingly influenced by science and technology, it is important for students to acquire the capacity to understand and use essential quantitative

skills. The Quantitative Skills Proficiency Requirement helps students learn to use quantitative skills and tools to solve problems, including the interpretation, manipulation, and application of quantitative data. Students fulfill this requirement by completing either a Department of Mathematics course numbered MTH 108 or higher, MTH 113 Finite Mathematics (recommended for non-STEM majors), or a statistics course approved by the student's college/school and the University Curriculum Committee in consultation with appropriate academic units.

Students in the following majors in the Frost School of Music may meet the Quantitative Skills Proficiency Requirement by taking MTH 101, Algebra for College Students: Instrumental Performance, Keyboard Performance, Vocal Performance, Studio Music and Jazz Instrument, Studio Music and Jazz Vocal, Music Education, and Music Therapy.

Students in the following degree programs may use the approved courses indicated below to meet the Quantitative Skills Proficiency Requirement:

- Bachelor of Business Administration: MAS 110
- Bachelor of Liberal Arts: EPS 351, MAS 110, or PSY 291
- Bachelor of Science in Communication: JMM 285 or STC 103
- Bachelor of Science in Education in Community and Applied Psychological Studies: EPS 351
- Bachelor of Science in Nursing: BPH 202/HCS 202/NUR 202
- Bachelor of Science in Public Health: BPH 202/HCS 202/NUR 202

Students may be able to fulfill the Quantitative Skills Proficiency Requirement through credit earned through the following tests: AP, IB, A-Level, and Cambridge Pre-U. Please click here to see how credit/exemption may be earned through these tests. For students in the Frost School of Music, an appropriate score on the SAT, ACT or proctored ALEKS examination may earn a student exemption from, but not credit for, the math requirement of the student's degree program.

After satisfactory completion of the QSP courses, students will be able to:

1. Select and use appropriate quantitative methods and tools to solve problems; and
2. Interpret, manipulate, and apply quantitative data to solve problems.

Other Recommendations

1. The BLA and BSPH programs should stop allowing courses to be substituted for the UCC approved courses and remove the corresponding language from the Academic Bulletin.

2. The University Registrar's Office should revise the undergraduate DPR's so that the Quantitative Skills Proficiency Requirement is separated from other quantitative degree requirements and align it with what has been approved by the UCC so that schools cannot substitute unapproved non-mathematics courses in the future.

3. The undergraduate college associate deans should clarify what courses satisfy the Quantitative Skills Proficiency Requirement, and request that they review the program pages in the Academic Bulletin to ensure that these pages clearly differentiate how students in each program fulfill the requirement.

4. The School of Education and Human Development should add MTH101 as a prerequisite to EPS 351.

5. The Department of Mathematics should follow up on their commitment to produce an interactive tutorial about placement and initial course option that will be available on its website. This will serve to inform and clarify options for both students and advisors.

Appendix I
Course Syllabi

School of Communication
University of Miami

STC 103
Statistical Reasoning for Strategic Communication
Section 103-Section D
Spring 2021
Class Time: Monday, Wednesday, Friday 11:45 AM-12:35 PM, Online via Zoom
Instructor: John Petit
Office Hours: Monday, 2:30PM-4:30PM
Email: johnpetit@miami.edu

Meeting ID: 984 9428 7967
Password: 333915

SYLLABUS

Course Description and Purpose:
The main purpose of this course is for students to understand the meaning of outcomes in quantitative research studies in the field of strategic communication. This course introduces students to statistical reasoning by providing fundamental knowledge of how quantitative data, statistical procedures, and basic analyses are used in academia and industry in the field of strategic communication. It emphasizes on providing a conceptual understanding rather than the details of formulas and computation. This course also teaches students to utilize SPSS, a convenient software for statistical analysis.

By the end of this course, students will be able to:
- Understand basic concepts and practices of statistical analysis for strategic communication;
- Identify and apply appropriate statistical procedures for different research questions and hypothesized relationships;
- Calculate univariate and bivariate statistical tests
- Enter data and use statistical procedures (e.g. t-test, ANOVA, correlations, regression) to answer research questions;
- Interpret and present quantitative results based on appropriate statistical analyses for strategic communication (public relations and advertising) outcomes.

Course Prerequisites:
MTH 101, or
ALEKS score of 60 or higher, or
SAT score greater than or equal to 630, or
28 ACT score or higher.

Required Textbook:

Salkind, N. J. (2017). *Statistics for people who hate statistics* (6th ed.). Thousand Oaks, CA: Sage. ISBN: 978-1-5063-3383-0, $82.00 (List Price)

Recommended Textbook:

A Simple Guide to IBM SPSS: For Version 23.0 (by Lee A. Kirkpatrick and Brooke C. Feeney, 14th Edition, ISBN-13: 978-1305877719, ISBN-10: 1305877713), Cengage Learning

Required Software:
IBM SPSS Statistics is required for this course. The software is available for use and download on the university's IT homepage: https://www.it.miami.edu/a-z-listing/spss-statistical-package/index.htmlYou.

Grading/Evaluation:
Grades will be based on points accumulated on homework, quiz, exam and attendance and participation. There will be 100 total possible points, distributed as follows:

	Percent of grade
Homework (6)	30% (120 points total; 20 points each)
Exam 1	15% (60 points)
Exam 2	15% (60 points)
Final Exam	30% (120 points)
Attendance and Participation	10% (40 points)

Grading Scale:

A+ = 97% and above	C+ = 77-79.9%	
A = 94-96.9%	C = 70 -76.9%	I = incomplete
A - = 90-93.9%	D+ = 67-69.9%	
B+ = 87-89.9%	D = 64-66.9%	
B = 84-86.9%	D - = 60-63.9%	
B - = 80-83.9%	below 60% = F	

Assignments/Coursework:
Homework assignments (30%)
Students are expected to complete **six homework** assignments. These assignments are critical for your learning experience and are necessary for you to really understand and conduct statistical analysis covered in lectures. All homework assignments are expected to be turned in via e-mail before the beginning of the class on the scheduled dates (see course topics outline for details). Each homework assignment has 20 points in total. **Late submission will result in a deduction of 5 points per day (24 hours)**. Furthermore, students must submit an assignment within two days (48 hours) of original due date to

receive partial points for the assignment. <u>NO points</u> will be given after two days of the original due date. <u>If you will be absent on the day an assignment is due, you should notify the instructor in advance and submit via email by the due date.</u>

Please write your <u>full name and C-number</u> on each assignment. <u>Grades are NOT negotiable</u>. If you have any questions about the grading, please contact the instructor within one week after I post your grade on Blackboard. Please make sure to back up all your homework because they will be critical in preparing for the exams.

Exams (60%)
There will be **three exams** to test students' knowledge of the lectures offered, readings assigned, as well as any handouts or PowerPoint presentations provided throughout the semester. All exams will be given online and finished during the scheduled class time. **No extensions/make-ups will be given, unless having a legitimate, written, and documented reason is submitted PRIOR to the examination date.** If you cannot take these exams, you should not take this class. Please check your calendar now! More details will be made available as the exams draw near.

Online Exams with Respondus LockDown Browser in Blackboard: Exams will be given using the Respondus LockDown Browser available in Blackboard. Students must install the Respondus Lockdown Browser software on their personal computer before taking the exam. The webcam feature (Respondus Monitor) will record the student during the online exam so each student's personal computer must have a webcam, microphone and a broadband connection.

Students can download and install the LockDown Browser with this link: https://download.respondus.com/lockdown/download.php?ID=527636896. Students can also review instructions in the Student Quick Start Guide: https://web.respondus.com/wp-content/uploads/2019/08/RLDB-Quick-Start-Guide-Bb-Student.pdf

Performance evaluation (10%)
Students will be evaluated based on their <u>attendance</u> and <u>performance</u> throughout the semester. Being on-time, actively involved in class, and keeping a positive attitude are key to higher performance evaluation scores.

<u>**Class Policies:**</u>
Attendance policy:
You are allowed **three absences** in this class without penalty. <u>However, regular class attendance is essential for success in this course as each class may include in-class exercise that is supplemental to information in the lecture material.</u> If you miss class, you are expected to get the notes from your classmates. Office hours will not be an opportunity to review a lecture or PowerPoints that you missed. **Each absence beyond three will result in a 5-point deduction in your final grade. If you are tardy, you will be counted as absent for that day.** Students should submit their homework assignments

via email to the instructor prior to the class they miss if they are supposed to turn in their homework on that day.

Course Recording:
It is expected that all students in this class will participate in synchronous learning. However, in an effort to enable both synchronous and asynchronous learning (for those who are unable to attend class during the regular class period due to illness or other approved reason), all Zoom lectures in this course will be recorded and posted on Blackboard. Students are expressly prohibited from individually recording any part of this course without written consent from the instructor. Course recordings will be available to ONLY students registered for this class, as they are intended to supplement the classroom experience. To maintain your privacy and the privacy of the other students in the course, the sharing of the recorded lecture materials posted on Blackboard is <u>not</u> permitted. Students are expected to follow appropriate University policies and maintain the security of passwords used to access recorded lectures. Recordings may not be reproduced, shared with those not in the class, or uploaded to other online environments. If the instructor or a University of Miami office plans any other uses for the recordings, beyond this class, students identifiable in the recordings will be notified to request consent prior to such use.

Late work policy:
You should turn in your assignments on time. Late submission will result in a deduction of 5 points per day late if turned in after the class meeting time (including the first day). Please be aware, if you turn in an assignment after two days of the original due date, you will get no points!

Office hours:
If you have concerns about your performance in the class as the semester progresses, please do not hesitate to contact me during my office hours (through Zoom meeting). Do not wait until the end of the semester to ask for help or to explain unusual circumstances that have affected your grade. At that point, it will be too late.

Class etiquette:
In order to create the best, most interactive learning environment for everyone, it is required that you turn on your video when you are participating in the class remotely. If you have a legitimate reason for not being able to employ video during class, please email the instructor as soon as possible for advance approval.

Email etiquette:
As this is a top school in public relations and advertising, the ability to communicate in a professional and courteous manner via e-mail is important. When sending an email, please bear in mind that a polite and specific message is likely to result in a more detailed and timely response. Thus, please follow some common courtesies:

1. Include the subject of your message, for example, "STC 103 HW#1."
2. In the body of your message,

1. Address the recipient of your message (e.g., "Hello Mr. Petit," "Dear Mr. Petit,"). "Hey" or no salutation is not acceptable.
2. Clearly state your question using complete sentences and proper grammar.
3. State your name at the end of the message.

3. Please allow 48 hours for a response. If you have not received a response in this time period, please email again.

University Email and Blackboard:

Students will be notified via UM emails and Blackboard announcement for any changes of this course. Students are responsible to check their UM emails and Blackboard before each class for any changes and/or notice. **Lecture material will be shared via Blackboard.**

Student with Disbabiloties:

The Office of Disability Services (ODS) at the Academic Resource Center is here to help you if you have a physical or learning disability. If you anticipate the need for special accommodations to complete the course requirements, **please register with ODS and obtain a "letter to professor" to notify me within two weeks of receiving this syllabus**. I will try my best efforts to assist you. You may choose not to disclose a disability but it is your responsibility to register with ODS and to notify me of your condition if you request special accommodations.

Religious Holy Day Policy:

It is the student's obligation to provide faculty members with notice of the dates they will be absent for religious holy days, preferably before the beginning of classes but no later than the end of the first three (3) class days. Absences due to observance of religious holy days not pre-arranged within the first three class days may be considered unexcused and there is no obligation to allow any make up work, including examinations. Missing a class due to travel plans associated with a particular religious holy day does not constitute an excused absence. The University's complete Religious Holy Day Policy can be found in the current *UM Bulletin*.

Honor Code and Plagiarism Statements:

Students enrolled in this course are expected to abide by the University of Miami Honor Code. The purpose of the Honor Code is to protect the academic integrity of the University by encouraging consistent ethical behavior in assigned coursework. Academic dishonesty of any kind, for whatever reason, will not be tolerated.

No honest student wants to be guilty of the intellectual crime of plagiarism, even unintentionally. Therefore, we provide you with these guidelines so that you don't accidentally fall into the plagiarism trap.

Plagiarism is the taking of someone else's words, work, or ideas, and passing them off as a product of your own efforts. Plagiarism may occur when a person fails to place quotation marks around someone else's exact words, directly rephrasing or paraphrasing

someone else's words while still following the general form of the original, and/or failing to issue the proper citation to one's source material.

In student papers, plagiarism is often due to...

- Turning in someone else's paper as one's own
- Using another person's data or ideas without acknowledgment
- Failing to cite a written source (printed or internet) of information that you used to collect data or ideas
- Copying an author's exact words and putting them in the paper without quotation marks
- Rephrasing an author's words and failing to cite the source
- Copying, rephrasing, or quoting an author's exact words and citing a source other than where the material was obtained. (For example, using a secondary source which cites the original material, but citing only the primary material. This misrepresents the nature of the scholarship involved in creating the paper. If you have not read an original publication, do not cite it in your references as if you have!)
- Using wording that is very similar to that of the original source, but passing it off as one's own.

The last item is probably the most common problem in student writing. It is still plagiarism if the student uses an author's key phrases or sentences in a way that implies they are his/her own, even if s/he cites the source.

Course Topics Outline (NOTE: As you know, the Covid-19 pandemic has had a profound effect on how classes are taught, and things may change as the semester progresses. Therefore, the instructor reserves the right to modify the class schedule, course requirements, and other class-related policies if circumstances dictate that such changes are necessary. If any changes are made, students will be notified via email as soon as possible, and any changes also will be posted on Blackboard under "Announcements.")

Week	Date	Topic	Notes
1	1/25	Introduction & Expectations	
	1/27	Introduction to Statistics and Research	
	1/29	Variables, Population, and Sampling	
2	2/1	Measurement	
	2/3	Levels of Measurement/ Reliability & Validity	
	2/5	SPSS Introduction	
3	2/8	SPSS Practice	
	2/10	SPSS Practice, Describing Distributions	**HW#1 Due**
	2/12	Describing distributions	
4	2/15	Describing distributions	
	2/17	Describing distributions SPSS Practice	
	2/19	Population & Sample/Statistical distribution	
5	2/22	Normal Distribution	
	2/24	Review for Exam #1	**HW#2 Due**
	2/26	**Exam#1**	
6	3/1	Exam#1 Answers	
	3/3	Hypothesis testing (Wellness Wednesday, Asynchronous Class)	
	3/5	Hypothesis testing	
7	3/8	Independent-samples t-test	
	3/10	Dependent-samples t-test One-sample t-test	
	3/12	t-test SPSS Practice	

8	3/15	One-way ANOVA	
	3/17	One-way ANOVA	**HW#3 Due**
	3/19	One-way ANOVA SPSS Practice	
9	3/22	Review t-test & One-way ANOVA	
	3/24	Midterm class evaluation	
	3/26	No Class (Fall Recess)	
10	3/29	Multiple factor (two-way) ANOVA	
	3/31	Multiple factor (two-way) ANOVA SPSS Practice	
	4/2	Analysis of correlation	**HW#4 due**
11	4/5	Correlation SPSS Practice	
	4/7	Review for Exam#2	
	4/9	**Exam#2**	
12	4/12	Exam#2 Answers	
	4/14	Simple linear regression (Wellness Wednesday, Asynchronous class)	
	4/16	Single linear regression SPSS practice	
13	4/19	Correlation & Simple linear regression exercise	
	4/21	Multiple regression	**HW #5 due**
	4/23	Multiple regression SPSS Practice	
14	4/26	Final SPSS Practice	
	4/28	Final review	**HW#6 due**
	4/30	Final review	
Exam #3—Final Exam: During the Scheduled Final Exam Period, Date/Time TBA			

Please complete, scan/take a photo, and return to the instructor via email with information required below:

Student Acknowledgement:

I have received and read the syllabus for STC 103-Section D, for the Spring semester 2021. I have completed the prerequisite courses listed in the syllabus or have had the professor sign below to certify a waiver of the prerequisites.

Signed: _____

Print Name: _____

Date: _____

Professor Prerequisite Waiver (If Needed)_____

JMM 285 SECTION S

APPLIED STATISTICS FOR JOURNALISM AND MEDIA MANAGEMENT

A course in the Department of Journalism and Media Management
School of Communication, University of Miami
Synchronous Remote Course/Asynchronous Remote as Necessary
Spring 2021

Virtual Class Meeting Times: Mondays and Wednesdays, 4:20 p.m. – 5:35 p.m.
Zoom links for synchronous sessions are on Blackboard under the tab "Zoom Meetings."
Virtual Office Hours: By appointment Tuesday 1 p.m. to 3 p.m.

Dr. Jyotika Ramaprasad
jyotika@miami.edu

Teaching Assistant
Doctoral Student Ruoyu Sun
ruoyu.sun@miami.edu

SYLLABUS

COURSE DESCRIPTION AND PURPOSE

This course provides an introduction to descriptive and bivariate inferential statistics to better understand and use media research and analysis. Computer applications are included.

Students will learn how to compute summary statistics, visualize data and relationships, test hypotheses of difference and association, and estimate predictions from simple models. This course will also teach students how to perform and interpret statistical analysis using SPSS and help them understand the relationship between research methods and statistics.

The objectives of this course are:
- To understand basic concepts and practices of statistical analysis.
- To calculate univariate and bivariate statistical tests.
- To interpret the meaning of statistical results.
- To learn how to use SPSS for basic statistical analysis.

COURSE PREREQUISITES

MTH 101. Or ALEKS Score 60+ or 630 Math SAT+ or 28 Math ACT+
This course requires the student to be aware of and/or practice the use of contemporary technology in use in the profession, including basic computer literacy skills and various digital presentation technologies.

MATERIAL FEES

Please bring a calculator to class that is not on their phone to perform basic mathematical functions (e.g., square root) for quizzes and exams. This and other similar calculators can be bought for about $10 on Amazon.com, at

Office Depot, or at the University of Miami Bookstore.

ASSIGNMENTS/COURSEWORK

Exams

There will be three exams consisting of short-answer and exercise questions in some combination. Tests will cover materials from the readings, lectures, and handouts. Grades for the first two exams will be posted on Blackboard. Please note that no make-up exam will be given in JMM 285 except for documented, exceptional circumstances.

In-Class/Take-Home Assignments and Quizzes

To apply statistical analysis to real-world problems, students will complete individual assignments (in-class and take-home) on using SPSS as well as on descriptive statistics, tests of difference and relationship/association, and simple regression analysis using SPSS. Some assignments will be graded, others will be for practice and thus not graded. For practice assignments, which you do not have to submit, you will receive the correct answers along with the assignment so you can check your work. If you are absent from class on days when you have in class assignments graded assignments, you will not be allowed to make them up unless you have a valid excuse (see attendance policies below).

You will complete a few in-class quizzes. These will be announced ahead of time.

TEXTBOOKS AND RESOURCES (REQUIRED)

- Salkind, Neil J. and Frey, Bruce B. (2019). *Statistics for People Who Think They Hate Statistics* (7th ed.). Los Angeles: Sage.
  - For textbook's student resources, see: https://edge.sagepub.com/salkindfrey7e/student-resources
- **A six-month license for the SPSS student version that can be loaded on two computers**. It is available at https://studentdiscounts.com/base.aspx. Two students can share one license for six months so you can team up with someone in the course to buy it. Buy the version that suits the operating system you have. Version 25 is good for this course, but if your Mac operating system is Catalina, it takes only version 26.
- **You are required to have SPSS on your laptop to use in class.**

GRADING/EVALUATION

The exams and assignment will count toward your final course grade as follows:

Quizzes	5%
First exam	20%
Second exam	30%
Third exam	15%
Assignments	30%

Scores will be weighted according to these percentages and combined into a final numerical score. Letter grades will be assigned on the following basis:

Score	Grade
100 - 93	A = 4.00
92.99 - 90	A- = 3.70
89.99 - 87	B+ = 3.30
86.99 - 84	B = 3.00
83.99 - 80	B- = 2.70
79.99 - 77	C+ = 2.30
76.99 - 73	C = 2.00
72.99 - 70	C- = 1.70
69.99 - 67	D+ = 1.30
66.99 - 60	D = 1.00
Below 60	F = 0.00

The Undergraduate Bulletin explains these grades as follows:

A: Excellent attainment
B: Good attainment
C: Fair attainment
D: Poor attainment (earns credit hour but may not fulfill requirement for a major)
F: Failure (effective Fall 1995)

No grade of Incomplete will be given except for students in good academic standing who have missed extended periods of class for verifiable, substantial reasons.

No extra credit assignments will be given.

All students in the course must install the Respondus Lockdown Browser software on their personal computer before taking exams. The webcam feature (Respondus Monitor) will record the student during the online exam; so, each student's personal computer must have a webcam, microphone, and a broadband connection. Students can download and install the LockDown Browser using this link: https://download.respondus.com/lockdown/download.php?ID=527636896. Students can also review instructions in the Student Quick Start Guide: https://web.respondus.com/wp-content/uploads/2019/08/RLDB-Quick-Start-Guide-Bb-Student.pdf.

ATTENDANCE POLICY

- If you are approved to take this course under the remote learning option, synchronous attendance in the virtual class is required as scheduled unless this creates undue hardship due to a difference in the time zone of your location and that of Miami, Florida.

- If you are attending class sessions synchronously, you are required to have your video enabled.

- If you are attending class sessions synchronously but are ill or have other dire reasons due to which you cannot attend a particular class, please contact the instructor as soon as possible.

- If you are a remote learning student in a time-zone that does create undue hardship and you cannot attend synchronously,
  - let your instructor know immediately, and
  - keep up asynchronously with the virtual class as scheduled unless you are ill or have other dire reasons due to which you cannot keep up with the class, in which case please contact the instructor as soon as possible.

- Unexcused absences from the virtual classroom for synchronous students and failure to keep up with the virtual class for students allowed to be asynchronous due to a severe time zone difference may affect your grade.

- The attendance policy for this course is that attendance is mandatory unless you are ill/have some other dire reason or cannot attend synchronously due to a time difference.

- Each student, synchronous or asynchronous, is responsible for all information presented in class, including any special announcements or syllabus revisions.

- Class will begin promptly at 4.20 p.m. and for your attendance to be counted you must be in class for the entire class period. Please keep in mind that late arrivals are distracting and disrespectful to others in the classroom. Habitual late arrival may affect your grade.

RECORDING POLICY

Students are expressly prohibited from recording any part of this course.

Meetings of this course will be recorded by the University. These recordings will be particularly useful for remote learning students in locations with very different time zones, who cannot attend the class synchronously, but they will be available to all students registered for this class as they are also intended to supplement the classroom experience. **These recordings will remain available for 48 hours after the lecture session.** Students are expected to follow appropriate University policies and maintain the security of passwords used to access recorded lectures. Recordings may not be reproduced, shared with those not in the class, or uploaded to other online environments.

If the instructor or a University of Miami office plans any other uses for the recordings, beyond this class, students identifiable in the recordings will be notified to request consent prior to such use.

In essence, Professor Ramaprasad is the copyright owner of the courseware; individual recordings of the materials on Blackboard and/or of the virtual sessions are not allowed, and such materials cannot be shared outside the physical or virtual classroom environment.

RELIGIOUS HOLY DAY POLICY

It is the student's obligation to provide faculty members with notice of the dates they will be absent for religious

holy days, preferably before the beginning of classes but no later than the end of the first three class days. Absences due to observance of religious holy days not pre-arranged within the first three class days may be considered unexcused and there is no obligation to allow any make-up work, including examinations. Missing a class due to travel plans associated with a particular religious holy day does not constitute an excused absence. The University's complete Religious Holy Day Policy can be found in the *Bulletin*.

HONOR CODE AND PLAGIARISM STATEMENT

"Students enrolled in this course are expected to abide by the University of Miami Honor Code. The purpose of the Honor Code is to protect the academic integrity of the University by encouraging consistent ethical behavior in assigned coursework by students."

Academic dishonesty of any kind, for whatever reason, will not be tolerated.

The following guidelines are provided to keep you from committing plagiarism, even unintentionally.

Plagiarism is the taking of someone else's words, work, or ideas, and passing them off as your own. Plagiarism may occur when a person fails to place quotation marks around someone else's exact words, to sufficiently paraphrase someone else's words, or to properly cite source material. In student papers, plagiarism is often due to:

- Using another person's data or ideas without acknowledgment
- Turning in someone else's paper as one's own
- Using an author's exact words without quotation marks and citation
- Paraphrasing a source and failing to cite the source
- Insufficiently paraphrasing a source (the most common type of plagiarism in student work). This is not acceptable, even if you cite the source; either use the original words and put them in quotation marks or change the wording sufficiently to convey the idea in your own words and cite the source.
- Quoting or sufficiently paraphrasing a source but citing a source other than where the material was obtained. For example, using a secondary source, which cites the original material, but citing only the primary material. This misrepresents the nature of the scholarship involved in creating the paper. If you have not read an original publication, do not cite it in your references. You may use secondary sources (when the primary source is impossible to obtain) but you must cite them as secondary sources.

COURSE OUTLINE

- Readings/videos and other materials for the day's topic(s), listed below, must be completed **before** the class period for which they are assigned (except for the first day's reading, which must be completed as soon after the first class session as possible).

- **Dates for assigned materials and assignments may change based on the progress of the course.** Virtual learning is a new experience for many of us, different from the in-person classes we have attended/taught in the past. So, expect changes. Changes will be announced in class or by e-mail.

- If you need to meet me during office hours, please schedule the meetings through Calendly: https://calendly.com/jyotika-2/officehours

  There are a few times, when my colleagues and others schedule meetings that I must attend (I have no control over their scheduling). If these fall during office hours, I will keep you informed so that we can set up another time for meeting.

  Office hours are held on my personal Zoom meeting space: https://miami.zoom.us/j/3162287199

SCHEDULE

WEEK 1	**Frequency Distributions, Charts/Graphs, The Normal Curve, SPSS**

Tuesday, January 26 DAY 1

Topics
- Introduction to the Course
- What Statistics is About (Chapter 1)
- Frequency Distributions (Chapter 4)
- Charts and Graphs (Chapter 4)

Take Home Assignment
Look under Week 1 Day 1 on Blackboard and do the following:
- Collect data and submit ecopies of completed questionnaires
  - Due Saturday, January 30, 11:59 p.m.
  - Graded

Thursday, January 28 DAY 2

Topics
- Introduction to the Normal Curve (Chapter 8)
- SPSS (Appendix A)

WEEK 2	**Measures of Central Tendency/Dispersion**

Tuesday, February 2 DAY 3

Topics
- Measures of Central Tendency (Chapter 2, except pp. 30-31)
Watch (optional): https://www.khanacademy.org/math/statistics-probability/sampling-distributions-library/sample-means/v/statistics-sample-vs-population-mean
  - Percentiles

- Measures of Dispersion (Chapter 3)
Watch (required): https://www.khanacademy.org/math/probability/data-distributions-a1/summarizing-spread-distributions/v/range-variance-and-standard-deviation-as-measures-of-dispersion

Take Home Assignments
Look under Week 2 Day 3 on Blackboard and do the following:
- Enter collected data into Excel file
  - Due Saturday, February 6, 11:59 p.m.
  - Graded

- Run SPSS to get frequency charts/graphs/normal curve/skewness/ kurtosis on collected data; write up results
  - Do not submit
  - Not graded
  - Correct output provided

Thursday, February 4 DAY 4

Quiz 1: Descriptive/Inferential Statistics; Measures of Central Tendency

In Class Assignments
Look under Week 2 Day 4 on Blackboard and do the following:
- Calculate standard deviation
  - Do not submit
  - Not graded
  - Correct answer provided

- Calculate standard deviation
  - Due Saturday, February 6, 11:59 p.m.
  - Graded

WEEK 3	**Levels of Measurement, Reliability/Validity of Measures**

Tuesday, February 9 DAY 5

Quiz 2: Measures of Dispersion

Topics
- Levels of Measurement (Chapter 2, pp. 30-31)
- Reliability of Measures (Chapter 6)

Thursday, February 11 DAY 6

Topics
- Validity of Measures (Chapter 6)
- Cronbach's Alpha Using SPSS

Take Home Assignment
Look under Week 3 Day 6 on Blackboard and do the following:
- Run SPSS to get Cronbach's alpha, measures of central tendency and dispersion; write up results
  - o Do not submit
  - o Not graded
  - o Correct answer provided

WEEK 4	**The Research Process, Conceptual/Operational Definitions, All Kinds of Variables, Hypotheses, Populations/Samples, Sampling Error**

Tuesday, February 16 DAY 7

Quiz 3: Levels of Measurement, Reliability & Validity

Topics
- The Research Process
- Conceptual and Operational Definitions
  Watch (required): https://www.youtube.com/watch?v=8HyshxsdRb4
  Watch (required): https://www.youtube.com/watch?v=7aHZrXvHsuw
- All Kinds of Variables: DVs & IVs, Discrete & Continuous Variables, Constructs

Take Home Assignment
Look under Week 4 Day 7 on Blackboard and do the following:
- Answer questions on DVs & IVs, discrete & continuous variables, constructs, & levels of measurement (Nominal, Ordinal, Interval, Ratio)
  - o Due February 20, 11:59 p.m.
  - o Graded

Thursday, February 18 DAY 8

Topics
- Hypotheses Populations Samples (Chapter 7)
- Sampling Error

WEEK 5	**Z Scores, Central Limit Theorem, Standard Error**

Tuesday, February 23 DAY 9

Quiz 4: Populations and Samples

Topics
- Z scores (Chapter 8)

Take Home Assignments
Look under Week 5 Day 9 on Blackboard and do the following:
- Calculate raw scores from z scores
    - Due Saturday, February 27, 11:59 p.m.
    - Graded

- Calculate sampling error; write up results
    - Due Saturday, February 27, 11:59 p.m.
    - Graded

Thursday, February 25 DAY 10

Topics
- Central Limit Theorem (Chapter 8)
- Standard Error (Chapters 7 and 8)
  Watch (required): https://www.khanacademy.org/math/ap-statistics/sampling-distribution-ap/sampling-distribution-mean/v/central-limit-theorem

WEEK 6	**Exam 1 Review, Exam 1**

Tuesday, March 2 DAY 11

Exam 1 Review

Thursday, March 4 DAY 12

Exam 1

WEEK 7	**Statistical Significance, Type I and Type II Errors, Power, Effect Size, One Sample Z Test**

Tuesday, March 9 DAY 13

Topics
- Statistical Significance (Chapter 9)

Thursday, March 11 DAY 14

Topics
- Type I and II Errors, Power, Effect Size (Chapters 9 & 10)
- One Sample Z Test (Chapter 10)

WEEK 8	**Independent and Dependent Samples T-tests**

Tuesday, March 16 DAY 15

Topics
- Independent Samples T-test (Chapter 11)

Take Home Assignment
Look under Week 8 Day 16 on Blackboard and do the following:
- Run independent samples t-test; write up results
  - o Do not submit
  - o Not graded
  - o Correct answer provided

Thursday, March 18 DAY 16

Topics
- Dependent Samples T-test (Chapter 12)

In Class Assignment
Look under Week 8 Day 16 on Blackboard and do the following:
- Answer questions; run independent samples t-test; write up results
  - o Due at the end of class
  - o Graded

WEEK 9	**Oneway Analysis of Variance (ANOVA)**

Tuesday, March 23 DAY 17

Topics
- Oneway Analysis of Variance (Chapter 13)

Take Home Assignment
Look under Week 9 Day 17 on Blackboard and do the following:
- Run one-way ANOVA; write up results
  - o Do not submit
  - o Not graded
  - o Correct answer provided

Thursday, March 25 DAY 18

In Class Assignment
Look under Week 9 Day 18 on Blackboard and do the following:
- Run one-way ANOVA; write up results
  - o Due at the end of class
  - o Graded

WEEK 10	**Factorial Analysis of Variance (ANOVA)**

Tuesday, March 30 DAY 19

Topics
- Factorial Analysis of Variance (Chapter 14)

Take Home Assignment
Look under Week 10 Day 19 on Blackboard and do the following:
- Run factorial ANOVA; write up results
  - Do not submit
  - Not graded
  - Correct answer provided

Thursday, April 1 DAY 20

In Class Assignment
Look under Week 10 Day 20 on Blackboard and do the following:
- Run factorial ANOVA; write up results
  - Due at the end of class

WEEK 11	**Exam 2 Review and Exam 2**

Tuesday, April 6 DAY 21

Exam 2 Review

Thursday, April 8 DAY 22

Exam 2

WEEK 12	**Chi-square, Correlation**

Tuesday, April 13 DAY 23

Topics
- Goodness of Fit & Chi-square Test of Independence (Chapter 17)

Take Home Assignments
Look under Week 12 Day 23 on Blackboard and do the following:
- Calculate chi-square
  - Do not submit
  - Not graded
  - Correct answer provided

- Run goodness of fit and chi-square tests; write up results
  - Due Saturday, April 17, 11:59 p.m.
  - Graded

Thursday, April 15 DAY 24

Topics
- Correlation Coefficient (Chapters 5 and 15)

WEEK 13	**Linear Regression**

Tuesday, April 20 DAY 25

Topics
- Linear Regression (Chapter 16)

Take Home Assignment
Look under Week 13 Day 25 on Blackboard and do the following:
- Run correlation; write up results
  - Due, Saturday April 24, 11:59 p.m.
  - Graded

Thursday, April 22 DAY 26

Topics
- Linear Regression Continued

Take Home Assignment
Look under Week 13 Day 26 on Blackboard and do the following:
- Run linear regression; write up results
  - Do not submit
  - Not graded
  - Correct answer provided

WEEK 14	**Big Data, Exam 3 Review**

Tuesday, April 27 DAY 27

Big Data

Thursday, April 29 DAY 28

Exam 3 Review

EXAM WEEK	**Exam**

Thursday, May 6

Exam 3

Please complete and return the form to the teaching assistant for this course.

STUDENT ACKNOWLEDGEMENT

Student Acknowledgement:

I have received and read the syllabus for JMM285, Section S. I have completed the prerequisite courses listed in the syllabus or have had the professor sign below to certify a waiver of the prerequisites.

Signed: _____

Print Name: _____

Date: _____

Professor Prerequisite Waiver (If Needed)_____

MAS 110 - Quantitative Applications in Business

COURSE SECTION: E, Monday, Wednesday and Friday 1:00 pm – 1:50 pm
ONLINE LECTURES: Blackboard Collaborate Ultra
INSTRUCTOR: Dr. Ronny Aboudi
CELL PHONE: (954) 422 2272 (do not send files nor long text messages, use email!)
OFFICE HOURS: Mondays and Wednesdays 3:15 pm to 5:15 pm by cellphone and/or email
Email: raboudi@miami.edu

RECOMMENDED TEXT: <u>Mathematical Applications for the Management, Life,and Social Sciences</u> by Harshbarger and Reynolds, 11th Edition.

Description: MAS 110 is an applications oriented course in quantitative methods designed for students in the School of Business who must be familiar with the uses of quantitative techniques, but need minimal exposure to the theory behind these applications.

Learning Objectives:

- Review of linear, quadratic, exponential and logarithmic functions.

- Gain basic knowledge of differential calculus in one and two variables and one variable integral calculus.

- Be able to determine optimal values (maxima and minima), for various types of functions (for one and two variables).

- Acquire the ability to apply the above techniques to various business applications:

  Compound Interest, Annual Percentage Yield (APY)
  Amortization
  Break Even Analysis
  Marginal Cost, Revenue and Profit functions (for one and multiple products)
  Maximization of Profit functions
  Minimization of Average Cost functions
  Maximization of Taxation Revenue
  Elasticity of Demand
  Consumer's Surplus, Producer's Surplus, Present Value of an income stream.

Measurement of Learning Objectives:

This course is a freshman level course and it emphasizes the basic mathematical skills. The students are expected to master these skills in their first year which they will be later able to apply these skills in the study of Statistics, Economics, Finance and Marketing. The most appropriate way is to encourage the students to keep up with the material. This is done by assigning regular homework where the students are expected to work on their own or in teams. The instructor will then review the homework and answer any questions. Quizzes are used to monitor understanding of individual concepts. The ultimate measurement of outcome still uses the traditional approach of tests and a final examination. Any student who performs well in these will have gained the ability to apply differential and integral calculus to problems that arise in business.

Calculator Policy: A scientific calculator is required. The recommended calculator is the TI 30XA or TI30XS. Calculators that are programmable or having graphing capabilities are NOT allowed. Calculators on smart phones are NOT allowed.

Make up Exams: There are **no make-up exams** given in MAS 110. An unexcused absence will result in a grade of **zero** for the exam. In order to avoid the above penalty, you must notify the instructor **in advance.** Furthermore, the excuse must be documented in writing in order to be considered. It must be received by the instructor no later than one week following the exam's date. **If** the excuse is deemed valid, the weight of the missed exam will be distributed to the final exam. A student who misses more than one examination during the semester or misses the final examination will receive a failing grade for the course regardless of the reason. Note that family vacations, family events, exciting trips, music festivals, court dates, appointments at the consulate, fraternity parties, medical appointments, advising appointments or similar non-emergency events are NOT valid excuses!

Religious Holy Days: Any student who must miss class due to observance of a religious holy day must notify the instructor in writing PRIOR to the third class meeting of the semester.

Extra Credit: The University of Miami has a strict policy prohibiting extra credit assignments being offered to individual students. If extra credit assignments are made available to one student they must be made available to all students and all students so informed.

University Sanctioned Activities (for all students including student athletes): Any student who is scheduled to be out of town due to a university sanctioned activity on an **examination day** must notify Dr. Aboudi at least 10 days in advance so that the examination can be administered **prior** to your departure.

Spring 2021 Wellness Wednesdays

Wednesday, March 3, 2021 --- NO CLASS
Wednesday, April 14, 2021 --- NO CLASS
Please review the material and do extra problems from the text on the weekends of February 20 and March 20.

Grading:

Quizzes	20%
Final Exam (Chapters 9 to 14)	30%
All Others Test	50%

Examinations: All examinations and quizzes are open book and open notes
and will be administered online in Blackboard. See the Resources Section below for information about Blackboard.

Students must install the Respondus Lockdown Browser software on their personal computer before taking the exam. The webcam feature (Respondus Monitor) will record the student during the online exam so each student's personal computer must have a webcam, microphone and a broadband connection. Students can download and install the LockDown Browser with this link: https://download.respondus.com/lockdown/download.php?ID=527636896.
Students can also review instructions in the Student Quick Start Guide: https://web.respondus.com/wp-content/uploads/2019/08/RLDB-Quick-Start-Guide-Bb-Student.pdf.

Quizzes: Unannounced short quizzes will be administered during class meeting times. They will be given using Blackboard. They count 20% of the final grade. There are no make-up quizzes. The two lowest quizzes will be dropped.

Assessments (Quizzes and Tests) On Blackboard

You must start the assessment within the first 5 minutes of its availability.
All assessments have limited time. Your assessment will automatically be submitted

when the time runs out. Note that you will get one question at a time and **YOU WILL NOT BE ABLE TO GO BACK**. Once you go to the next question you will NOT be able to go back and check your answers.

In most cases you will solve the questions on each assessment using the traditional method using pen and paper and submit the required answers to blackboard (see the next section for the required notation). Once you have finished the assessment and have submitted your answers, you will be required to take a picture of your work and create a PDF file. Do not share this with any other student. Do NOT email me the file unless I explicitly ask you to do so! I suggest you create a special folder to store all your PDF files for the course.

Mathematical Notation for all Assessments (Quizzes and Tests)

Note being assessed using Blackboard is very different than the traditional pen and paper exams that you are used to. In order to prevent ambiguity, all students are required to express numerical values using two or three decimals and exponents are to be expressed using the symbol ^ (above the number 6 on most keyboards). Students must also be aware of the order of operations and use parentheses whenever needed. Note that the default setting on some calculators is to provide the exact answer. You can consult google or youtube to find out how to convert these answers to decimals. Examples:

The value 11/3   must be written as 3.67
The value $3\sqrt{2}$ must be written as 4.24
The expression $\sqrt[3]{x} = x^{\frac{1}{3}}$ must be expressed as x^0.33

> **Note, if you write x^1/3 it will be interpreted as (x^1)/3= x/3   WRONG!**

Also, combine all constants as a single coefficient which must appear before the algebraic expression.

The expression $4\sqrt{x+7}/3$ must be expressed as 1.33(x+7)^0.5

Academic Integrity during Assessments

You may use only one electronic device during the assessment. All other devices must be turned off. Note that all assessments are open book and open notes. However, you may not consult any other information such as webpages, chatrooms, emails, or text messages. You are not allowed to take a photo of any of the questions that appear on blackboard during or after the assessment. The only exception is the copy of your own work which you are not to share with any other student. Note that a violation of any of these rules will result in a referral to the Honor Council (see next Section).

Violation of the Honor Code: The University of Miami has instituted a new Academic Integrity Policy. Please read this policy: new policy.

Please be aware that a student who cheats in this course (even on a quiz that constitutes a small fraction of the final grade) will automatically **FAIL** the course. Cheating will not be tolerated in this course. If you are unable or unwilling to abide by this strict policy you should drop the course. The deadline for dropping the course without a "W" is February 9, 2021.

Course Notes and Practice Homework

Notes for the entire course (over 300 pages) are posted in Blackboard under "Course Documents". The notes contain all the necessary mathematical derivation, explanations and examples. The folder labeled "Practice Homework" contains practice problems and answers. These are subdivided by topic. Please refer to the schedule below for the topics that will be covered in class. If you need more examples or extra problems you may refer to the recommended text listed above.

CLASS	TOPIC	Text
1-9	Business Applications	
	Total Cost Revenue and Profit	1.6,2.3
	Supply and Demand functions	1.6,2.3
	Compound Interest	5.1-5.3 and 6.2
	Amortization	6.5
10	Rates of Change	9.3
11	Derivative Formulas	9.4

| 12 | **T E S T # 1 (16.67%) : Friday, February 19, 2021** | |

13	Product Rule	9.5
14-15	Quotient and Chain Rules Marginal Revenue, Cost and Profit	9.5-9.7,9.9
16	Higher Order Derivatives	9.8
17-21	Relative Maxima and Minima	10.1-10.3
22	Applications	10.4

| 23 | **T E S T # 2:** (16.67%) **Friday, March 19, 2021** | |

24	Exponential/Logarithmic Derivatives	11.1-11.2
25-26	Miscellaneous Applications	
	Taxation	
	Elasticity of Demand	11.5
27-32	Indefinite Integration	12.1-12.4

| 33 | **T E S T # 3:** (16.67%) **Monday, April 12, 2021** | |

34-35	Definite Integration	13.2
36-37	Applications of Integration	13.3-13.4
	Total Cost, Revenue and Profit Functions	
	Area between Two Curves	
	Consumer's Surplus	
	Producer's Surplus	
	Present Value of a Continuous Income Stream	
38-39	Partial Differentiation	14.1-14.3
40	Relative Maxima and Minima	14.4

Final Examination: (30%) Wednesday, May 5, 2021, 2:00 pm – 3:45 pm
Chapters 9-14.

6

Studying for MAS 110 (tutoring and office hours)

The best way to succeed in MAS 110 is to study the material on a regular basis. You should review the notes and solve the practice homework posted in Blackboard. Additional problems are available in the text. You may study with fellow students and you feel that you need extra help, you use the Camner Center.

To Schedule an tutoring appointment www.miami.edu/navigate

Contact email tutoring.arc@miami.edu

Website: www.camnercenter.miami.edu/tutoring-services

You may also contact me during my office hours. Before contacting me you should attempt the problem(s) and email me (using the email contact above) a neat word/pdf file showing your attempt to solve the problem. You may then call or text me on my cell during my office hours. Do not send files nor pictures to my cell number.   Use email.

Information about Blackboard

The class will be conducted using Blackboard collaborate Ultra. You should familiarize yourself with Blackboard. You may use the following resources:

For help and tutorials for Blackboard and Zoom

www.it.miami.edu/continuity/index.html

phone (305) 284 3949 email: learningplatforms@miami.edu

You may use the following link for more information about Blackboard

https://www.bus.miami.edu/_assets/pdfs/secure/return-info/bb-getting-started-button.pdf

Classroom Conduct

1. Blackboard Collaborate Ultra

All students must join the session using Blackboard Collaborate Ultra. All Students are required to have their video enabled. **All lectures will be recorded and available to students on Blackboard.**

2. Camera

All Students are required to have their video enabled.

3. Usage of other Electronic Devices:

You must use your laptop or Ipad to join the session. All other electronic devices must be turned off for the duration of the session.

4. Attendance Policy

All students must join the Blackboard Collaborate Ultra at the scheduled time. Attendance details (time logged in, logged out etc.) are maintained by Blackboard and are available to the instructor.

Remote Students
If you are approved to take this course under the Remote Learning Option, attendance in the virtual class is required as scheduled **as long as class starts between 7:30 am to 11pm at the student's local time.** If class starts before or after the above time interval you must contact the professor for other arrangements. If you cannot attend the virtual class due to illness or other reason, you must contact the instructor. Unexcused absences from the classroom may affect your grade or lead to failing the course.

Make-up attendance
If you are not able to attend the live session, you should watch the recording within 48 hours of the scheduled session. You must email me within 48 hours of the scheduled

session confirming that you have watched the recording of the lecture. You must include the time you watched the recording (the start and end times in Miami, FL time). Once you do so, you will be marked as excused. **Note: there are no make-up quizzes. Quizzes are given during the regular live class time (unless you are given an explicit arrangement as a remote student). If you miss a quiz then it will be considered as a dropped quiz.**

5. Intellectual Property

Professor Aboudi is the copyright owner of the courseware; individual recordings of the materials on Blackboard and/or of the virtual sessions are not allowed; and that such materials cannot be shared outside the physical or virtual classroom environment. "courseware" includes: course syllabi, assignments, assessments, and/or other materials that are first created and made available to students as part of the educational curriculum at the University. Courseware is owned by the faculty member.

6. Recordings

Students are expressly prohibited from recording any part of this course. Meetings of this course might be recorded by the University. Any recordings will be available to students registered for this class as they are intended to supplement the classroom experience. Students are expected to follow appropriate University policies and maintain the security of passwords used to access recorded lectures. Recordings may not be reproduced, shared with those not in the class, or uploaded to other online environments. If the instructor or a University of Miami office plans any other uses for the recordings, beyond this class, students identifiable in the recordings will be notified to request consent prior to such use.

MAS 110 - Quantitative Methods in Business

COURSE SECTION: E, Monday, Wednesday, Friday   12:20-1:10 pm
CLASSROOM: SB 508
INSTRUCTOR: Dr. Ronny Aboudi, 407 KE (Kosar Epstein) Bldg
PHONE: (305) 284 1966
OFFICE HOURS: Monday and Wednesday 9:45 am-12:15 pm
Email: raboudi@miami.edu

TEXT: Mathematical Applications for the Management, Life,and Social Sciences
   by Harshbarger and Reynolds, 11th Edition.

Description: MAS 110 is an applications oriented course in quantitative methods designed for students in the School of Business who must be familiar with the uses of quantitative techniques, but need minimal exposure to the theory behind these applications.

Learning Objectives:

● Review of linear, quadratic, exponential and logarithmic functions.

● Gain basic knowledge of differential calculus in one and two variables and one variable integral calculus.

● Be able to determine optimal values (maxima and minima), for various types of functions (for one and two variables).

● Acquire the ability to apply the above techniques to various business applications:

   Compound Interest, Annual Percentage Yield (APY)
   Amortization
   Break Even Analysis
   Marginal Cost, Revenue and Profit functions (for one and multiple products)
   Maximization of Profit functions
   Minimization of Average Cost functions
   Maximization of Taxation Revenue
   Elasticity of Demand
   Consumer's Surplus, Producer's Surplus, Present Value of an income stream.

1

Measurement of Learning Objectives:

This course is a freshman level course and it emphasizes the basic mathematical skills. The students are expected to master these skills in their first year which they will be later able to apply these skills in the study of Statistics, Economics, Finance and Marketing. The most appropriate way is to encourage the students to keep up with the material. This is done by assigning regular homework where the students are expected to work on their own or in teams. The instructor will then review the homework and answer any questions. Quizzes are used to monitor understanding of individual concepts. The ultimate measurement of outcome still uses the traditional approach of tests and a final examination. Any student who performs well in these will have gained the ability to apply differential and integral calculus to problems that arise in business.

Calculator Policy: A scientific calculator is required. The recommended calculator is

the TI 30XA or TI30XS. Calculators that are programmable or having graphing capabilities are NOT allowed. Calculators on smart phones are NOT allowed.

Electronic Devices in the Classroom: All electronic devices must be **turned**

off in the classroom at all times. This includes cell phones, iPods, iPads, and laptops.

Make up Exams: There are **no make-up exams** given in MAS 110. An unexcused

absence will result in a grade of **zero** for the exam. In order to avoid the above penalty, you must notify the instructor **in advance.** Furthermore, the excuse must be documented in writing in order to be considered. It must be received by the instructor no later than one week following the exam's date. **If** the excuse is deemed valid, the weight of the missed exam will be distributed to the final exam. A student who misses more than one examination during the semester or misses the final examination will receive a failing grade for the course regardless of the reason. Note that family vacations, family events, exciting trips, music festivals, court dates, appointments at the consulate, fraternity parties, medical appointments, advising appointments or similar non-emergency events are NOT valid excuses!

Honor Code: All students must read and agree to abide by the University of Miami Honor

Code.

Religious Holy Days: Any student who must miss class due to observance of a religious

holy day must notify the instructor in writing PRIOR to the third class meeting of the semester.

Extra Credit:
The University of Miami has a strict policy prohibiting extra credit assignments being offered to individual students. If extra credit assignments are made available to one student they must be made available to all students and all students so informed.

Grading:

Quizzes/homework/ participation	20%
Final Exam (Chapters 9 to 14)	30%
All Others Test	50%

Note: In the event that the final exam's score exceeds the lowest test score, the lowest score will be replaced by the final exam's score.

Examinations:
All examinations, including the final, are closed book and closed notes. You must bring your own calculator to the exam. There will be no sharing of calculators during the exam. For some tests, a limited number of formulas will be provided by the instructor.

Quizzes:
Unannounced short quizzes will be administered. They count 20% of the final grade. There are no make-up quizzes. The two lowest quizzes will be dropped. **Note that copies of your graded quizzes and exams will be kept by the instructor.**

Usage of Electronic Device:
Each time you text during class your final grade will decrease by one letter grade. You are not allowed to leave the classroom in order to text! You must ask permission to leave the class in the middle of the lecture. If you feel that texting is a priority, and if your life depends on it, please do not show up to class!

University Sanctioned Activities (for all students including student athletes):
Any student who is scheduled to be out of town due to a university sanctioned activity on an **examination day** must notify Dr. Aboudi at least 10 days in advance so that the examination can be administered **prior** to your departure.

Announcement:
Please carefully read the syllabus. If you are unable or unwilling to abide by the rules you should drop the class!

CLASS	TOPIC	Text
1-8	Business Applications	
	Total Cost Revenue and Profit	1.6,2.3
	Supply and Demand functions	1.6,2.3
	Compound Interest	5.1-5.3 and 6.2
	Amortization	6.5
9	Rates of Change	9.3
10	Derivative Formulas	9.4

11	**T E S T # 1 (16.67%) : Friday, February 7, 2020**	

12	Product Rule	9.5
13-14	Quotient and Chain Rules Marginal Revenue, Cost and Profit	9.5-9.7,9.9
15	Higher Order Derivatives	9.8
16-21	Relative Maxima and Minima	10.1-10.3
22	Applications	10.4

23	**T E S T # 2:** (16.67%) **Friday, March 6, 2020**	

24	Exponential/Logarithmic Derivatives	11.1-11.2
25-26	Miscellaneous Applications	
	Taxation	
	Elasticity of Demand	11.5
27-32	Indefinite Integration	12.1-12.4

33	**T E S T # 3:** (16.67%) **Monday, April 6, 2020**	

34-35	Definite Integration	13.2
36-37	Applications of Integration	13.3-13.4
	Total Cost and Profit Functions	
	Area between Two Curves	
	Consumer's Surplus	
	Producer's Surplus	
	Present Value of an Income Stream	
38-39	Partial Differentiation	14.1-14.3
40-41	Relative Maxima and Minima	14.4

Final Examination: (30%) Monday, May 4, 2020 11am – 1 pm
Chapters 9-14.

4

UNIVERSITY OF MIAMI
SCHOOL OF NURSING AND HEALTH STUDIES
UNDERGRADUATE AND GRADUATE
SYLLABUS FORMAT

Course Number & Title: BPH/HCS/NUR 202 Introductory Statistics in Health Care

Number of Credits and Clock Hours:
3 credits
SONHS Legend for Clock and Credit Hours
1 credit lecture = 1 clock hour (50 minutes of class instruction time plus a 10 minute break) each week for 14 weeks

Placement in Curriculum:
Fall & Spring
During the first two years (pre-clinical) of the Traditional BSN program (NUR 202)

Faculty Responsible:
Name: Karina Gattamorta, PhD, EdS
Title: Research Associate Professor
Room location: 432G
Office phone: (305) 284-1572
Email: kgattamorta@miami.edu
Office hours: on Zoom by appointment

TA Contact Info:
Name: Vanessa Morales
Email: vxm450@miami.edu

Prerequisites:
MTH 101 and Nursing Major (NUR 202)
MTH 101 (HCS/BPH 202)

Course Description:
Application of descriptive and inferential statistics. Principles and methods of summarizing data including tables, graphs, percentile ranks, central tendency, variability, normal distribution. Basic concepts of probability, hypothesis testing, and analysis of variance. Examples and problems from nursing and health sciences.

Course Objectives:
1. Use basic quantitative statistics for examination of health care issues. BSN Essentials III. SBP Domains 2, 6, 9
2. Analyze quantitative data about health care issues. BSN Essentials III. SBP Domains 2, 6
3. Interpret quantitative data for solving health care problems. BSN Essentials III. SBP Domains 2, 6, 9

References:
American Association of Colleges of Nursing (2008). *The essentials of Baccalaureate education for professional nursing practice.* Retrieved from
http://www.aacnnursing.org/Portals/42/Publications/BaccEssentials08.pdf

1

Council on Education for Public Health (2016). *Accreditation Criteria: Schools of Public Health and Public Health programs.* Retrieved from https://ceph.org/assets/2016.Criteria.pdf

Writing/Communication Components:	Technical Communication assessed via assignments and examinations
Civic Engagement:	No
Civic Engagement Description:	N/A
Topics:	Tables and graphs, percentile ranks, central tendency and variability, standard scores and normal distributions, sampling and confidence intervals, hypothesis testing, correlations, t-tests, and chi-square tests.
Teaching Methods:	Lecture with discussion, statistical data analysis, exams.

Evaluation:

Method	Weight (each item separately)
Online Assignments (x4)	10% = 40% total
Exams (x4)	15% = 60% total

All assignments must be completed to receive a grade.

Grading Scale:

98 – 100	A+
93 – 97	A
90 – 92	A-
87 – 89	B+
83 – 86	B
80 – 82	B-
78 –79	C+
75 – 77	C
70 – 74	C- **below passing BSN**
67 – 69	D+ **below passing HCS/BSPH**
64 – 66	D
63 or LESS	F

Required Text(s): Corty, E. W. (2016). *Using and Interpreting Statistics: A Practical Text for the Behavioral, Social, and Health Sciences (3rd Ed.).* Worth Publishers: New York. (List Price: $201.99; Ebook: $58.99; Rentals also available from publisher)

Recommended Text(s): (none)

Required Software: The data analysis software we will use in this class is JAMOVI. This program can be downloaded from https://www.jamovi.org/. The "Solid" version is recommended.
Respondus Lockdown Browser and Respondus Lockdown Monitor will be used for all exams in this course.

2

Students can download and install the LockDown Browser with this link: https://download.respondus.com/lockdown/download.php?ID=527636896.

Students can also review instructions in the Student Quick Start Guide: https://web.respondus.com/wp-content/uploads/2019/08/RLDB-Quick-Start-Guide-Bb-Student.pdf.

Supplementary Bibliography: See course blackboard for additional reading.

Honor Code: You are advised to refer to the Student Handbook for your program.

INFORMATION FOR STUDENTS REQUIRING ACADEMIC RESOURCE ASSISTANCE: You are advised and encouraged to contact the Office of Accessibility Resources as soon as possible to provide the necessary documentation in order to obtain academic accommodations. Faculty cannot provide accommodations without a letter from the Office of Accessibility Resources. It is the student's responsibility to provide an accommodation letter to the faculty at least 2 weeks prior to the first exam.

You may contact that office at:

University Center, Room N201
(305) 284-2374
TDD (305) 284-3401

Religious Holy Day Policy   The SONHS abides by the University of Miami Religious Day Policy. Please refer to https://culture.miami.edu/resources/religious-holiday.html
Please take note of the policy as it applies to the SONHS, especially for clinical courses.

Attendance Policy: Unless you are approved to take this course under the Remote Learning Option, physical attendance in the classroom is **expected**. If at some point in the semester you cannot physically attend class sessions due to illness, injury, or other approved absence, you must contact the instructor for permission to temporarily attend the course online.

If you are approved to take this course under the Remote Learning Option, attendance in the virtual class is required as scheduled unless this creates undue hardship due to differences in your residential time-zone and that of Miami Florida. If you are a Remote Learning Option student, you may not under any circumstances physically attend the class on campus. If you cannot attend the virtual class due to illness or other reason, you must contact the instructor.

3

Webcams

Students who are attending a class session synchronously are required to have their video enabled. Webcams are also required during exams for all students.

Recording of Lectures

Students are expressly prohibited from recording any part of this course. Meetings of this course might be recorded by the University. Any recordings will be available to students registered for this class as they are intended to supplement the classroom experience. Students are expected to follow appropriate University policies and maintain the security of passwords used to access recorded lectures. Recordings may not be reproduced, shared with those not in the class, or uploaded to other online environments. If the instructor or a University of Miami office plans any other uses for the recordings, beyond this class, students identifiable in the recordings will be notified to request consent prior to such use.

Face Coverings

Face coverings are mandatory at all times (with the exception of when drinking water) while in on-campus class sessions. Failure to follow this requirement is grounds for disciplinary action and may lead to removal from the classroom and/or the course.

Assigned Seating

The seat you select on the first day of class must be from among those identified as meeting the physical distance requirements for COVID-19; this seat will be your assigned seat for the remainder of the semester. This will enable the most effective COVID-19 contact tracing, should it be required.

Daily Symptoms Check

Students are required to use the Daily Symptom Checker and be cleared to attend class each day. Students may be asked to show the green "Good to Go" notice. You may be required to produce your notice at any time while on campus. Students who fail to comply or to produce their "Good to Go" notice will be asked to leave the classroom.

Intellectual Property

Professor Gattamorta is the copyright owner of the courseware; individual recordings of the materials on Blackboard and/or of the virtual sessions are not allowed; and that such materials cannot be shared outside the physical or virtual classroom environment.

Who to Contact

For content-related questions, support understanding course content, or questions about your progression in the course, you should first reach out to the course TA. If after working with the TA, you are still concerned about your progress in the course, you can reach out to Dr. Gattamorta.

For emergencies including illness that requires you to miss an exam, contact Dr. Gattamorta immediately.

4

BPH/HCS/NUR 202 Introductory Statistics in Health Care

Class Schedule and Reading Assignments
These dates are subject to change. Check Blackboard for changes to the schedule

Date	Topic	Reading Assignment
1/26	Introduction to Statistics	Chapter 1
1/28 2/02	Frequency Distribution	Chapter 2
2/04	Central Tendency and Variability	Chapter 3
2/09 2/11	Normal Distribution and Standard Scores	Chapter 4
2/14	***Assignment 1 due at 11:59 pm***	
2/16	Sampling and Confidence Intervals	Chapter 5
2/18	Introduction to Hypothesis Testing	Chapter 6
2/23	Review for Exam 1	
2/25	**EXAM 1 – ALL STUDENTS ONLINE**	**Ch 1-6**
3/02	Single Sample *t*-test	Chapter 7
3/04 3/09	Independent Samples *t*-test	Chapter 8
3/11 3/16	Paired Samples *t*-test	Chapter 9
3/14	***Assignment 2 due at 11:59 pm***	
3/18	**EXAM 2 – ALL STUDENTS ONLINE**	**Ch 7-9**
3/23 3/25	One-Way ANOVA	Chapter 10
3/30 4/01	One-Way Repeated Measures ANOVA	Chapter 11
4/04	***Assignment 3 due at 11:59 pm***	
4/06	Two-Way Between-Subjects ANOVA	Chapter 12
4/08	**EXAM 3 – ALL STUDENTS ONLINE**	**Ch 10-12**
4/13	Correlation Coefficients	Chapter 13
4/15 4/20	Simple and Multiple Regression	Chapter 14
4/22	Chi-Square and Non-Parametric Tests	Chapter 15
4/25	***Assignment 4 due by 11:59 pm***	
4/27	Selecting the Right Statistical Test	Chapter 16
4/29	**EXAM 4 – ALL STUDENTS ONLINE**	**Ch 13-16**

5

PSY 291-P: Introduction to Biobehavioral Statistics, Spring 2021
Tuesdays & Thursdays, 11:20am-12:35pm, Location: online via Zoom
Department of Psychology, University of Miami

Professor: Dr. Elizabeth A. Simpson, Ph.D. (she/her)
Email: simpsone@miami.edu; *Office*: Flipse Room 359, 305-284-6181
Office Hours: Mon & Wed 1:15-2:15pm, Tues & Thurs 12:30-1:30pm, Tues 3:30-4:30pm, & by appointment (on Zoom)

Teaching Assistant: Guangyu Zeng, M.S. (goes by "Zeng") (he/his)
Email: gxz102@miami.edu
Office Hours: by appointment (on Zoom)

Prerequisite: C- or Higher in PSY 110, MTH 101 or mathematics placement above MTH 101. For a review of prerequisite math, see the textbook Appendix A.

Description: Statistics is a branch of mathematics, often used by social scientists, that focuses on the organization, analysis, and interpretation of numerical data. Students will learn the basics of descriptive and inferential statistics, introducing the inferential concepts of regression, t-tests, ANOVA, and chi-squared tests. This is an introductory course in data description and hypothesis testing. We will discuss the conceptual logic underlying statistics and will not focus on computer data analysis or the mathematical development of statistical theory.

Student Learning Outcomes: Students will increase research and quantitative skills, including:
1. Appropriately selecting and conducting basic statistical analyses.
2. Interpreting statistical information in research articles.
3. Applying statistical understanding to everyday life.

Course Overview: This course is intended to teach the basics of statistical analysis, its use, and application. This is not merely a course where you will memorize formulae, plug in some numbers, turn the crank, and come up with the only answer needed. A major focus of this course will be to understand the reason for using a particular formula, why it does what it does, and how to interpret the answer.

Because of this approach, it is important to keep up with the material. Statistics is not a course where you can cram and catch-up right before the quiz. The material is cumulative in nature and is difficult, so make class preparation a priority. It is also recommended that, should you begin to have trouble, immediately contact Dr. Simpson or the Teaching Assistant as soon as possible to schedule a one-on-one Zoom meeting. Same-day and next-day appointments cannot always be accommodated, so please plan ahead.

There will be substantial overlap between the text and lecture materials, as in a regular math course. However, the overlap will not be total, and students are responsible for all material, both text and lecture. There is some in-class material that the text does not cover.

Materials:
- **Textbook**: Robert R. Pagano's *Understanding Statistics in the Behavioral Sciences*, 10th Edition (2013)
- **Calculator**: An extremely simple calculator without business, scientific, advanced math, graphing, or statistical function keys and without programming keys. Squares and square root keys and a single memory, however, should be included. A change of sign key is also useful. You should be able to find one for under $10.

Course Expectations:
- Come to class on time and prepared (readings assigned for that day already completed).
- Actively participate in class activities and discussions.
- Respect your classmates, Teaching Assistant, and instructor.
- During quizzes, use of unapproved materials (cell phone, classmate) will result in an automatic zero on the quiz.
- All cases of cheating will be reported to the university and may result in a failing grade in the class as well as expulsion from the university.

Blackboard: Course material, including lecture slides, lecture videos, course readings, study guides, practice problems, important announcements, and grades are available on Blackboard.

Zoom: Synchronous class meetings will take place on Zoom. (See Blackboard for link.)
- Mute your microphone if you're not talking, to reduce background noise
- Add your preferred name and pronouns (e.g., they/them/she/him) and a photo of yourself to your Zoom account, so we can still "see" you, when your camera is off ☺
- Turn on your video and position your camera at eye-level, to create engagement
  - If your internet slows, or if you need privacy, turn off your video
- Send a chat message to Dr. Simpson if you have a comment or question
- Raise your (real or virtual) hand to talk and Dr. Simpson will call on you one at a time
- Participate in class Zoom polls
- Limit distractions; try to find a calm and productive space
- Avoid multi-tasking, so you'll retain information better
- Be prepared with notes and questions ready
- Introduce us to your kitty or puppy, if you have one ♥
- If you lose connection or are unable to make it, you can request a copy of the meeting recording to catch up on what you missed

Camera while remote: Students who are attending class meetings synchronously are encouraged to have their video enabled, as much possible, to increase engagement.

Attendance: Attendance in synchronous Zoom class meetings is strongly encouraged. Students who fully participate in all aspects of class tend to do well. You will get out of this class what you put into it.

Grading: Grades are based on your performance on 10 quizzes (each worth 10% of your grade).
- 11 Quizzes will be offered; can drop lowest or miss one.
- Can retake quizzes to improve your grade, so long as they're completed by the due date.
- Think of these as a way to check your understanding of the material.
- Must be completed independently by each student.
- Will be posted on the dates in the schedule and are due approximately 1 week after they're posted (see schedule on last page of syllabus).
- Instructor decisions on grades are final and will not be changed except in cases of clerical error. Discuss grade-related concerns with the instructor within 1 week of the posting.
- Neither quiz scores nor final grades will be "rounded up" or graded on a curve. If you ask Dr. Simpson for extra credit and/or for your grade to be rounded-up/curved, your grade will be reduced by 1% for each request. Dr. Simpson will not respond to these requests.
- Final course grades will be posted on Blackboard on **May 12th**.

Grades Scale:

A+ =	98-100	B+ =	88-89.99	C+ =	78-79.99	D+ =	68-69.99
A =	92-97.99	B =	82-87.99	C =	72-77.99	D =	60-67.99
A- =	90-91.99	B- =	80-81.99	C- =	70-71.99	F =	< 60

Quizzes:
- Take place on Blackboard.
- Once posted, students will have approximately 1 week to complete the quiz (including retakes). See scheduled due dates on last page of this syllabus.
- Extra time will not be allowed, unless accommodations have been pre-approved by the Office of Disability Services (see contact information below) or in unavoidable circumstances (e.g., illness, internet outage).
- Students who experience these difficulties or have questions about the quizzes should contact the Teaching Assistant as soon as possible, for accommodations.
- Quizzes are "open book" - textbook, lecture slides, formula sheets, tables, and class notes are allowed.
- Quizzes must be taken INDEPENDENTLY by the student, without help from anyone else.
- Students are NOT allowed to communicate with one another during quizzes or share materials (e.g., screen shots) from quizzes with one another. Such behaviors are considered cheating.
- Cheating during quizzes will not be tolerated and will result in an automatic zero. All instances of cheating will be reported to the university and may result in expulsion.
- Due to the nature of the course, the material is cumulative, and therefore a working knowledge of earlier material is necessary to do well on later quizzes.
- Quizzes will primarily consist of multiple choice, but may also include matching, short-answer, fill-in-the-blank, and computational problems.
- Formulae and tables will be provided. See the textbook appendix and postings on Blackboard for copies of these materials so you can practice using them before the exams.

- Basic calculators are needed for each quiz. Calculators need simple arithmetic and square root functions. It is up to you to have a working calculator, so plan ahead.
- Study guides and practice problems will be posted on Blackboard. It is also a good idea to complete the practice problems in the textbook and to review the practice problems we cover in class. It is not enough to simply read through the problems; you must do them yourself, and then check your answers.

Study Tips:
- Memorize symbols. Learn definitions of terms.
- Work out numerous problems and check your answers with the keys.
- Don't fall behind. The course is cumulative. Don't skip assigned chapters.
- Complete the readings for that day before coming to class.
- Please ask questions as you think of them. You can ask them in class review sessions, during one-on-one meetings, or through email (see below).
- See textbook pages xxviii and xxix for resources on dealing with anxiety.

Email: The best way to contact Dr. Simpson and the Teaching Assistant is through email. Please allow 24 hours for a response on a weekday. Emails sent after 5pm on a Friday (or prior to a holiday/break), will receive a reply by the following Monday (or day the university re-opens).

Office Hours: Students with appointments will be given priority over students without appointments. Please email Dr. Simpson your preferred times and she will try to accommodate you. Same-day or next-day appointments may not be possible, so plan ahead. Changes to office hours may be necessary. See link to Zoom office hours on Blackboard.

Extra Credit: There is no extra credit in this class. If you email Dr. Simpson to ask for extra credit your class grade will be reduced by 1% per request and Dr. Simpson will not respond.

Religious Holy Day Policy: UM, although a secular institution, is determined to accommodate those students who wish to observe religious holy days. Classes missed due to observances of religious holy days will count as excused absences. Please provide written notice of intended absence(s) to the instructor no later than the end of the first three class meetings (Feb 2nd).

University of Miami Student Honor Code: All forms of scholastic dishonesty are prohibited, whether related to a written or oral examination, a thesis, term paper, mode of creative expression, computer-based work, or other academic undertaking. Scholastic dishonesty includes but is not limited to cheating, plagiarism, collusion, and violating the professional ethics of research projects. Moreover, students are expected to warn fellow students who do not appear to be observing proper ethical standards and to report violations of this Code. In determining what constitutes academic dishonesty, a student should be guided by the purposes of the Student Honor Code, common sense, and information provided by the instructor. All undergraduate students are responsible for reading, understanding, and upholding this Code.

Americans with Disabilities Act (ADA): The ADA is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Any student with a documented disability (e.g., physical, learning) who needs to arrange reasonable accommodations must contact the instructor and the Office of Disability Services at 305-284-2374 at the beginning of the semester.

Remote Learning: Keep up with the virtual class as scheduled. If you cannot keep up with the virtual class due to illness or other reason, you must contact the instructor. Failure to keep up with the virtual class as scheduled may affect your grade or lead to failing the course.

Class Recordings: Students are expressly prohibited from recording any part of this course. Meetings of this course might be recorded by the University. Any recordings will be available to students registered for this class as they are intended to supplement the classroom experience. Students are expected to follow appropriate University policies and maintain the security of passwords used to access recorded lectures. Recordings may not be reproduced, shared with those not in the class, or uploaded to other online environments. If the instructor or a University of Miami office plans any other uses for the recordings, beyond this class, students identifiable in the recordings will be notified to request consent prior to such use.

Intellectual Property: Dr. Simpson is the copyright owner of the courseware; individual recordings of the materials on Blackboard and/or of the virtual sessions are not allowed; and that such materials cannot be shared outside the physical or virtual classroom environment.

Campus Closure: In the event that the UM's campus closes unexpectedly for an extended period of time due to a hurricane, pandemic, or other emergency situation that prevents this course from meeting synchronously, students should be prepared to continue their learning through other means as determined by the instructor. In the most likely scenario, instruction would be delivered remotely through Blackboard and other platforms. Students are expected, to the extent feasible, to check their UM email and course Blackboard regularly for communications from their instructors. If instructed by the faculty, students are expected, to the extent feasible, to continue their participation in their courses asynchronously from their off-campus location.

Coronavirus (COVID-19): Everyone—including faculty, staff, and students—is required to wear face coverings on campus. Faculty have the right to restrict a student from participating in class if the student does not follow University COVID-19 policies.

Tentative Schedule

Dates	Topics	Textbook
Jan 26	Introduction to Statistics	Ch. 1
Jan 28	Basic Math & Measurement **Quiz 1 (due Feb 11th)**	Ch. 2
Feb 2	Frequency Distributions	Ch. 3
Feb 4	Central Tendency & Variability	Ch. 4

	Quiz 2 (due Feb 16th)	
Feb 9	Normal Curve & Standard Scores	Ch. 5
Feb 11	Correlation **Quiz 3 (due Feb 25th)**	Ch. 6
Feb 16	Linear Regression	Ch. 7
Feb 18	Random Sampling & Probability **Quiz 4 (due March 4th)**	Ch. 8
Feb 23	Binomial Distribution	Ch. 9
Feb 25	Hypothesis Testing & Sign Test **Quiz 5 (due March 11th)**	Ch. 10
March 2	Catch-up Day	
March 4	Power **Quiz 6 (due March 18th)**	Ch. 11
March 9	Sampling Distributions & z Test **Quiz 7 (due March 23rd)**	Ch. 12
March 11	Catch-up Day	
March 16	Single Sample t Test **Quiz 8 (due March 30th)**	Ch. 13
March 18	Correlated Samples t Test	Ch. 14
March 23	Independent Samples t Test **Quiz 9 (due April 6th)**	Ch. 14
March 25	Catch-up Day	
March 30	One-Way Analysis of Variance	Ch. 15
April 1	One-Way Analysis of Variance (cont) **Quiz 10 (due April 15th)**	
April 6	Two-Way Analysis of Variance (No quiz)	Ch. 16
April 8	Chi-Square	Ch. 17
April 13	Chi-Square (cont) **Quiz 11 (due April 27th)**	
April 15	Catch-up Day	
April 20	Wilcoxon Matched-Pairs Signed Ranks Test (No quiz)	Ch. 17
April 22	Mann-Whitney U Test (No quiz)	Ch. 17
April 27	Kruskal-Wallis Test (No quiz)	Ch. 17
April 29	Review of Inferential Statistics	Ch. 18
May 3-4	NO CLASS (Reading Days)	
May 5-12	Final Exam Days (No final for our class)	

	Date of final exam class period TBD (posted here). Final course grades will be posted on Blackboard on May 12th.	

This syllabus is a general plan for the course.
Changes will be announced in class & posted on Blackboard.

UNIVERSITY OF MIAMI
SCHOOL of EDUCATION
& HUMAN DEVELOPMENT

EPS 351 Introduction to Statistics and Research Design (Winter 2020)

General Information

Instructor: Jue Wang, Ph.D.

Email: jue.wang@miami.edu

Meeting dates: MTWRF

Meeting time: 2:30-7:00pm

Classrooms: Zoom via Blackboard (See Appendix)

Office hours: By Appointment

Grading System: A-F

Course Description

The aim of this course is to provide a foundation in the basic statistical concepts and procedures for describing and analyzing data. Specific topics covered include sampling process, hypothesis testing, descriptive and introductory inferential statistics such as measures of central tendency, variability, distributions, and relationship between variables.

Course Objective

The primary goal of this course is to learn the skills for exploring the data using graphical displays and introductory statistics. Completion of the course will enable students to develop a firm conceptual understanding of statistics used in social science studies, and to describe, analyze, and summarize data using appropriate statistical methods.

Required Textbooks

- Field, A. (2018). *Discovering Statistics Using SPSS* (5th Edition). London: Sage. *Companion website: https://www.discoveringstatistics.com/books/dsus/*.
- Gravetter, F. J., & Wallnau, L. B. (2010). *Statistics for the Behavioral Sciences. Companion website: https://www.cengage.com/c/statistics-for-the-behavioral-sciences-10e-gravetter/9781305504912/*.

Software

IBM Corp. IBM SPSS Statistics for Windows. Armonk, NY: IBM Corp.

Availability of SPSS

- The University has entered into a site license for IBM SPSS Statistics. It can be downloaded onto any University-owned or personal/home computer for free: http://it.miami.edu/a-z-listing/spss-statistical-package/index.html.
- Virtual labs. Here are the general instructions.

- o Use a web browser and go to https://umiami.cloud.com
- o Use your university credentials (username@miami.edu) to log in
- o If you don't have the Citrix Workspace App, you will be given an option to download. Download and install it.
- o After installing the app, log in again (Go back to Step 1). If you are having issues with Citrix Workspace make sure that you have the latest version.
- o After you logged in, on the left-hand side menus click on Desktops → All Desktops → The "Research – Non Persistent" desktop is now showing, click on it to start the Windows session. → After about 45 seconds to 1 minute you should see a VDI Windows session on your screen. → Double click on SPSS logo to activate the program.

Grading Policy

Final Grade = Class Participation (10%) + Assignments (5 in total; 30%) + Exam 1 (15%) + Exam 2 (15%) + Final Exam (30%)

Note: No late submission of assignments or projects will be accepted unless instructor's permission was given.

Grade	A	A-	B+	B	B-	C+	C	C-	D+	D	F
Score	> 94	90-94	85-89	80-84	75-79	70-74	65-69	60-64	55-59	50-54	50 >
Quality Point	4.00	3.70	3.30	3.00	2.70	2.30	2.00	1.70	1.30	1.00	.00

Course Policies

If you cannot attend a class for any reason, please let me know in advance. Any student who is absent for five times cumulatively with no prior notice or valid reason will receive an F as the final grade. Please see the University Policy for detailed class attendance and absences: http://bulletin.miami.edu/general-university-information/university-policies/course-information/

Specific requirements:

- Students are required to have the camera on when attending a session remotely.
- Students are required to keep the microphone off when not speaking.
- If anyone encounters connectivity or technical issues, please consider using the call-in option. The Student Technology Help Desk (STHD) supports student technology needs: https://studentsupport.it.miami.edu/sthd/
- All classes will be offered in both synchronous/asynchronous modalities, initially to ensure that students who become ill do not have an incentive to come to class. The recordings of each session will be available on Blackboard after the class.
- Students are expressly prohibited from recording any part of this course. Meetings of this course might be recorded by the University. Any recordings will be available to students registered for this class as they are intended to supplement the classroom experience. Students are expected to follow appropriate university policies and maintain the security of passwords used to access recorded lectures. Recordings may not be reproduced, shared with those not in the class, or uploaded to other online environments. If the instructor or a University of Miami office plans any other uses for the recordings, beyond this class,

students identifiable in the recordings will be notified to request consent prior to such use.

In-session Behavior

You are expected to attend class and be engaged which may indicated by asking questions, collaborating with fellow students, completing class activities, and contributing to class discussions. You are expected to come to class prepared and conduct yourself in a professional manner. We hope to build a respectful, engaging, and interactive learning community.

Make Up Exam

The make-up exams may only be given under the following conditions.
- *Illness.* A medical excuse signed by one's physician must be presented to the instructor. The instructor may verify excuses.
- *UM sponsored trips.* Travel dates and times accompanied by a signed memo from the group's advisor must be presented to the instructor prior to the travel dates.
- *Extenuating circumstances.* It will be the prerogative of the instructor whether or not the student will be allowed to be get an extension. Permission granted under this condition is very unlikely.

In all cases, the instructor must be notified prior to the exam date. If a student is allowed to take the make-up, the exam must be made up as soon as possible. The policy for final exam makeup follows the University's Final Examination Policy.

Students with Disabilities

The University of Miami seeks to comply with the Americans with Disabilities Act. If you need special accommodations, make sure that these are documented with Academic Resources so that I can assist you. Please visit the following website for more information about obtaining documentation and requesting reasonable accommodation.

http://camnercenter.miami.edu/disability-services/index.html

Honor Code and Cheating

You are reminded that the graduate honor code is in place. Any cheating (i.e., submitting another individual's work in place of your own original work) will be viewed as a violation of the honor code, and will lead to an "F" in the course.

Academic Grievances

Any student who believes he or she has been treated unfairly in academic matters should consult with the chairperson of the department or his or her associate dean to discuss the situation and to obtain information about relevant grievance procedures.

Students' Rights and Responsibilities

Information about your rights as a student at University of Miami can be found at the following web site.

http://www.miami.edu/sa/index.php/policies_and_procedures/student_rights_responsibilities

Academic Continuity Contingency Plan

This Plan anticipates the use of alternate methods for delivery of course material and for student-faculty communication in the event of a major campus emergency/University closure. During this period, course requirements, and deadlines are subject to change as necessary due to revised course delivery, changes in the semester calendar, or other circumstances. Students who cannot attend classes for any reason once the University reopens should discuss the challenges with the appropriate professor(s) to identify possible options.

Tentative Course Schedule

Date	Topic	Activity
12/07	1. Course Overview 2. Introduction to Statistics	
12/08	3. Measures of Central Tendency 4. Measures of Variability *Lab 1: Getting Started with SPSS*	Assignment 1 available
12/09	5. Normal Distribution 6. Z-scores & Probability *Lab 2: Descriptive Statistics in SPSS* Exam 1 Review	Assignment 1 due Assignment 2 available
12/10	Q&A Session **Exam 1 (3:30-5:20pm)** Exam 1 Debrief	Assignment 2 due
12/11	7. Sampling Distribution 8. Hypothesis Testing	Assignment 3 available
12/12 – 12/13	Break	
12/14	9. T-Statistic *Lab 3: Single sample t-test in SPSS*	
12/15	10. Independent Samples t-test 11. Repeated Samples t-test *Labs 4&5: Compare Two Means in SPSS* Exam 2 Review	Assignment 3 due Assignment 4 available
12/16	Q&A Session **Exam 2 (3:30-5:20pm)** Exam 2 Debrief	Assignment 4 due
12/17	12. Chi-Square Statistic 13. Correlation *Labs 6&7: Crosstabs and Correlations in SPSS* Final Exam Review	Assignment 5 available
12/18	Q&A Session **Final Exam (4:30-7pm)**	Assignment 5 due

Note: The course syllabus is a general plan which is subject to change based on our progress.

Appendix: Zoom Meeting Information

Topic: 20211 - EPS351-U80 - Introduction to Statistics and Research Design (Spring 2021)

Time: Dec 7, 2020 02:30 PM Eastern Time (US and Canada)

Every day, until Dec 18, 2020, 10 occurrence(s)

Dec 7, 2020 02:30 PM

Dec 8, 2020 02:30 PM

Dec 9, 2020 02:30 PM

Dec 10, 2020 02:30 PM

Dec 11, 2020 02:30 PM

Dec 14, 2020 02:30 PM

Dec 15, 2020 02:30 PM

Dec 16, 2020 02:30 PM

Dec 17, 2020 02:30 PM

Dec 18, 2020 02:30 PM

Please download and import the following iCalendar (.ics) files to your calendar system.

Daily: https://miami.zoom.us/meeting/tJYtfuuopzIvGNWbMTv-phEj0h3zn166fPW9/ics?icsToken=98tyKuCqrjIoGt2ctRuGRowQAor4a_TxmFhYjY1qnjLRFW1Daib8ZuoRKLwuRo7W

Join Zoom Meeting

https://miami.zoom.us/j/92092099521?pwd=WkorL1Z0TkM1VTcrdDUwbEdEanhLUT09

Meeting ID: 920 9209 9521

Passcode: 351351

Note: You can also access the Zoom meeting room through Blackboard.

On Blackboard, go to Zoom Meetings. Next, click on Zoom Meetings on the right. Then enter the class meeting on the corresponding day.

Appendix II
Quantitative Skills Courses and Other Quantitative Requirements

Quantitative Skills Courses and Other Quantitative Requirements

College/School	Degree Abbr.	DEGREE REQUIREMENTS			QS Required Course(s)
		MTH Course Required	Statistics Course Required	Computing Course Required	
Architecture	B.Arch.	Y	N	N	MTH 130 Introductory Calculus
Arts & Sciences	B.A.	Y	N	N	MTH 108 or higher
Arts & Sciences	B.F.A.	Y	N	N	MTH 108 or higher
Arts & Sciences	B.L.A.	N[11]	N[11]	N[11]	MTH 108 or higher; or **MAS 110 Quantitative Applications in Business**, **EPS 351 Introduction to Statistics and Research Design**, or **PSY 291 Introduction to Biobehavioral Statistics**; *or approved statistics course*
Arts & Sciences	B.S.	Y	N[1]	N[1]	Calculus sequence is required (MTH 140+141+162, MTH 161+162, or MTH 171+172)
Arts & Sciences - DCIE	B.G.S.	Y	N	N[2]	Doesn't fall under the UM gen ed requirements but it requires MTH 101 Algebra for College Students and MTH 113 Finite Mathematics
Business	B.B.A.	N	Y	N	MTH 161 Calculus I or **MAS 110 Quantitative Applications in Business**
Business	B.S.A.F.	Y	Y	Y	MTH 161 Calculus I
Business	B.S.B.A.	Y	Y	Y	MTH 161 Calculus I
Communication	B.S.C.	N	N	N	MTH 113 Finite Mathematics, **JMM 285 Applied Statistics for Journalism and Media Management**, or **STC 103 Statistical Reasoning for Strategic Communication**
Education	B.S.Ed.: EPS	N	Y	N	**EPS 351 Introduction to Statistics and Research Design** (MTH 101 or equiv. placement score is a pre-req.)
Education	B.S.Ed.: KIN and TAL	Y	N	N	MTH 113 Finite Mathematics or higher
Education	B.S.Ex.P.	Y	Y	N	MTH 161 Calculus I
Engineering	B.S.A.E.	Y	Y	Y[3]	MTH 151 Calculus for Engineers
Engineering	B.S.A.S.E.	Y	Y	N	MTH 151 Calculus for Engineers
Engineering	B.S.B.E.	Y	Y	Y	MTH 151 Calculus for Engineers
Engineering	B.S.C.E.	Y	Y	Y[3]	MTH 151 Calculus for Engineers
Engineering	B.S.Cp.E.	Y	N	Y	MTH 151 Calculus for Engineers
Engineering	B.S.E.E.	Y	N	Y	MTH 151 Calculus for Engineers
Engineering	B.S.E.S.	Y	Y	N	MTH 151 Calculus for Engineers
Engineering	B.S.En.E.	Y	Y	Y[3]	MTH 151 Calculus for Engineers
Engineering	B.S.I.E.	Y	Y	Y[4]	MTH 151 Calculus for Engineers
Engineering	B.S.M.E.	Y	Y	Y[5]	MTH 151 Calculus for Engineers
Music	B.A.M.	Y	N	N	MTH 113 Finite Mathematics
Music	B.M.: MIP, MKP, MED, MVP	Y	N	N[7]	MTH 101 Algebra for College Students
Music	B.M.: MMT	Y	Y[8]	N[7]	MTH 101 Algebra for College Students
Music	B.M.: MSJI, MSJV	Y	N	N[10]	MTH 101 Algebra for College Students
Music	B.M.: MADE, MBEI, PS	Y	N	N[7]	MTH 113 Finite Mathematics
Music	B.M.: MWP	Y	N	N[9]	MTH 113 Finite Mathematics
Music	B.M.: MTC	Y	N	N	MTH 113 Finite Mathematics
Music	B.S.	Y	N	Y[6]	MTH 161 Calculus I

College/School	Degree Abbr.	DEGREE REQUIREMENTS			QS Required Course(s)
		MTH Course Required	Statistics Course Required	Computing Course Required	
Nursing	B.S.H.S.	Y	Y	Y	MTH 141 Calculus Concepts with Foundations, MTH 161 Calculus I, or MTH 171 Calculus I is required.
Nursing	B.S.N.	N	Y	N	**NUR 202 Introductory Statistics in Health Care** (MTH 101 or equiv. placement score is a pre-req.). NUR 202 is crosslisted/combined with HCS 202 and BPH 202. [The Accelerated BSN does not require general education because an earned bachelor's degree is required for admission.]
Nursing	B.S.P.H.	Y	Y	N	MTH 107 or higher is required for the degree but not for the QS requirement. **BPH 202 Introductory Statistics in Health Care** *or other approved statistics course* is required for the QS requirement. BPH 202 is crosslisted/combined with NUR 202.
RSMAS	B.A.	Y	N[1]	N[1]	MTH 108 or higher
RSMAS	B.A.M.A.	Y	N[1]	N[1]	MTH 108 or higher
RSMAS	B.S.	Y	N[1]	N[1]	Two semesters of Calculus (MTH 161+162 or MTH 171+172)
RSMAS	B.S.M.A.S.	Y	N[1]	N[1]	Two semesters of Calculus (MTH 161+162 or MTH 171+172)

[1]Students are required to take either a statistics or computer science course

[2]Students are required to take one course in computer information systems, business technology, or media management

[3]GEG 198 Geographic Information System for Engineers

[4]IEN 406 Computer-Aided Manufacturing and IEN 547 Computer Simulation Systems

[5]MAE 362 Computer Analysis of Mechanical and Aerospace Engineering Problems

[6]A computer engineering minor is built into this program

[7]MMI 250 Essential Technologies for Musicians is required but it doesn't seem to involve programming or computation

[8]A psychology minor is built into this program

[9]MMI 259 Digital Audio and MIDI Production is required but it doesn't seem to involve programming or computation

[10]MSJ 342 Technology Skills is required but it doesn't seem to involve programming or computation

[11]Students are required to take either a math or statistics course

Appendix III
Quantitative Reasoning Requirements at Private R1 Universities

Quantitative Reasoning Requirements at Private R1 Universities

Institution	Requirement	Requirement Description
Boston College	Quantitative Requirement	1 3-credit course from a list of math and computer science courses. Outcomes: learn the nature of mathematical inquiry: abstraction and generalization; understand the power of mathematical reasoning to reach conclusions with assurance; communicate solutions clearly and effectively; study and appreciate applications of mathematics to other disciplines.
Boston University	Quantitative Reasoning	2 courses (QR I and II) from list of approved courses from multiple disciplines
Brandeis University	Quantitative Reasoning	1 course from list of approved courses from multiple disciplines enabling students to understand, interpret, analyze and evaluate numerical data and other quantitative information
Brown University	N/A	
California Institute of Technology	Freshmen Mathematics	3 math courses (27 units, ~9 credit hours) covering multivariable calculus and linear algebra
Carnegie Mellon University (College of Humanities and Social Sciences)	Modeling: Mathematics, Physical and Natural Sciences, and Experiments	1 math course, 1 natural sciences course, 1 other modeling course (27 units, 9 credit hours)
Case Western Reserve University (College of Arts and Sciences)	Quantitative Reasoning	1 course from list of approved courses from multiple disciplines
Columbia University (Columbia College)	N/A	

Quantitative Reasoning Requirements at Private R1 Universities

Institution	Requirement	Requirement Description
Cornell University	Symbolic and Mathematical Reasoning (distribution requirement)	1 course from list of approved courses from multiple disciplines - Courses satisfying this requirement help students develop the skills to solve problems through understanding abstract, logical relationships. Such skills include mathematical analysis of patterns and phenomena, modeling natural and technological systems, and creating algorithms essential to computation. These courses explore specific quantitative and symbolic methods, strategies for applying logical reasoning in diverse areas, and the intrinsic elegance of mathematics. (Note: distribution requirements also include 1 course in Statistics and Data Science.)
Dartmouth College	N/A	
Drexel University	N/A	
Duke University (Trinity College of Arts and Sciences)	Quantitative Studies (area of knowledge requirement)	1 course - Calculus I or higher. Courses designated QS have as their main purpose instruction in a quantitative skill to achieve proficiency in mathematics, statistics, or computer science or the use of explicitly quantitative methodology.
Emory University	Math and Quantitative Reasoning	1 course (3 credits) - These courses expand a student's understanding of quantitative modes of analysis.
George Washington University	Quantitative Reasoning	1 course in math or statistics - courses that refer to the process of modeling problems of the real world within a formal abstract system, solving those problems using systematic numerical methods of analysis, and interpreting the results.
Georgetown University	N/A	
Harvard University (Harvard College)	Quantitative Reasoning with Data	1 course from multiple disciplines - courses introduce students to mathematical, statistical, and computational methods that will enable students to think critically about data as it is employed in fields of inquiry across the Faculty of Arts and Sciences.

Quantitative Reasoning Requirements at Private R1 Universities

Institution	Requirement	Requirement Description
Johns Hopkins University (School of Arts and Sciences)	Quantitative and Mathematical Sciences (distribution requirement)	1 course
Massachusetts Institute of Technology	Mathematics	2 courses - Calculus I & II
New York University (College of Arts and Sciences)	Quantitative Reasoning (Foundations of Scientific Inquiry)	1 course from core curriculum choices: QR: Problems, Statistics, & Decision Making; QR: Great Ideas in Mathematics; and QR: From Data to Discovery
Northeastern University	Conducting Formal and Quantitative Reasoning (competency)	1 course from a list of approved courses from multiple disciplines
Northwestern University	Formal Studies (distribution requirement)	2 courses - Courses introduce concepts, methods, and use of formal rules of inference in mathematics, statistics, computer science, logic, linguistics, and other areas by showing how objects of thought and experience and their relationships can be analyzed in formal terms.
Princeton University	Quantitative and Computational Reasoning	1 course from a list of approved courses from multiple disciplines - courses that engage students in the logic of mathematics and the manipulation of numerical and categorical information.
Rensselaer Polytechnic Institute	Mathematics	8 credit hours required
Rice University	N/A	(not differentiated from area of knowledge math and science requirement)
Stanford University	Applied Quantitative Reasoning	1 course from multiple disciplines - providing a focused experience in inferential and inductive reasoning. Students actively apply these methods of reasoning through direct manipulation of data, models, software, or other quantitative tools.
Syracuse University (College of Arts and Sciences)	Quantitative Skills	2 courses including Calculus I & II but a few non-math courses (statistical methods)

Quantitative Reasoning Requirements at Private R1 Universities

Institution	Requirement	Requirement Description
Tufts University (College of Arts and Sciences)	Mathematical Sciences (distribution requirement)	2 courses
Tulane University of Louisiana	Formal Reasoning	1 course - Any course in Mathematics (MATH) or Symbolic Logic (PHIL 1210)
University of Chicago	Mathematical Sciences (distribution requirement)	1 course - including some Computer Science, Statistics, and Mathematics offerings, including calculus.
University of Notre Dame	Quantitative Reasoning	1-2 courses - A course recognized as meeting the requirements for quantitative reasoning is one that provides a rigorous basis in logical or analytical thought. In terms of learning goals, a course that meets any three of the six goals from either Inductive or Deductive reasoning would be considered a quantitative reasoning course. Rigorous courses in formal logic, statistics, computer programming, and calculus are expected to qualify for this designation, as are, for example, mathematically intensive courses in specific disciplines, where quantitative methods are applied to analyze and model observational data. Courses based on discipline-specific applications of formal logic may also qualify, given the level of formal logic employed. In all cases, it is expected that a substantial focus on the understanding and the application of mathematical ideas, as defined above, should form the core syllabus of a quantitative reasoning course.
University of Pennsylvania	Quantitative Data Analysis	1 course - NOTE: Courses in calculus and computer science do not fulfill the requirement because these courses do not require students to analyze actual data sets with the goal of evaluating hypotheses or interpreting results. To count toward the Quantitative Data Analysis Requirement, a course must include such data analysis.

Quantitative Reasoning Requirements at Private R1 Universities

Institution	Requirement	Requirement Description
University of Rochester	N/A	
University of Southern California	Quantitative Reasoning (core literacy)	1-2 courses - All Quantitative Reasoning courses, be they formal, abstract or empirical, are designed to increase the capacity of students to evaluate chains of formal reasoning and to assess the validity of mathematical, logical or statistical inferences. Each course in this category aims to develop one or more of three sets of skills: formal reasoning (the use of formal logic or mathematics), abstract representation (the use or construction of symbolic or diagrammatic representations), and empirical analysis (the use of statistical inference).
Vanderbilt University (College of Arts and Sciences)	N/A	just area of knowledge requirement
Washington University in St Louis	Numerical Applications	1 course from the following: Econ 231 (Economic Statistics), Math 1011 (Intro to Statistics), Math 123 (Programming in C), Math 141 (Pre-Calculus I), Math 142 (Pre-Calculus II), Math 155 (Calculus I), Math 156 (Calculus II), Math 205 (Applied Statistics Online), Math 210 (The Art of Mathematical Thinking), Math 212 (Sports and Statistics), Math 255 (Calculus III), Math 256 (Calculus IV), any 300 level and higher math classes, Programming with Python (U20 133), PolSci 323 (Introduction to Quantitative Methods) or Psych 300 (Psychological Statistics).

Institution	Requirement	Requirement Description
Yale University	Quantitative Reasoning (distribution requirement)	2 courses from a list of approved courses from multiple disciplines - A course may be used to satisfy the quantitative reasoning requirement if it meets the following criteria: A primary aim of the course is to develop quantitative reasoning or its application. Quantitative reasoning includes mathematics, statistics, algorithms, and formal symbolic logic. Calculation, quantification, and measurement can supplement but cannot replace quantitative reasoning and problem solving. A substantial proportion (generally a majority) of course exercises, such as problem sets, should be designed to develop and strengthen quantitative reasoning skills through regular practice. Examinations or assigned projects should similarly be primarily quantitative in nature and should require students to demonstrate their quantitative reasoning skills.