Manhattan College

Department of Mathematics

MATH 336 Section 01 ***Applied Statistics*** Spring 2021

Class Time: TF 2:05 pm -3:20 pm *Class Room*: RLC 102
The Google Meet for remote instruction is:
https://meet.google.com/yxb-btsg-jnj

Instructor: Angel R. Pineda, Ph.D. *Office*: RLC 201H
Email: angel.pineda@manhattan.edu *Phone*: 718-862-7730
Website: https://turing.manhattan.edu/~apineda01/

Office Hours: Tuesday 11:00-11:50 am, Wednesday 2-2:50 pm, Friday 1:00-1:50 pm, or by appointment. All office hours this semester will be virtual using Google Meet (the same link as for remote instruction): https://meet.google.com/yxb-btsg-jnj

Textbook: Applied Statistics for Engineers and Scientists, 3rd Edition by Devore, Farnum and Doi, Cengage Learning, 2014. ISBN:113311136X

Software: R and RStudio (available for free and in computer labs)
https://www.r-project.org/
https://rstudio.com/products/rstudio/download/

Catalog Course Description:
(3 credits) A calculus based survey of probability and statistics with applications in social, natural sciences and engineering. Topics include probability, discrete and continuous random variables, point and interval estimation, hypothesis testing, linear models (encompassing regression and ANOVA). Not open to students with credit for MATH 351.

Prerequisite: A grade of C or better in Calculus II (MATH 156 or MATH 186 or MATH 188).

Learning Outcomes: Upon successful completion of this course, the student will be able to:

- Organize and describe data
- Formulate a statistical model
- Analyze data using appropriate methods and software
- Report the results of the analysis

Course Homepage (Moodle):
Here you will find four features that will be used in this course:

- *Email:* make sure that your email on Moodle is one that you check regularly.
- *Course Information and Documents:* material covered each week, assignments, supplementary video and solution keys.
- *Student Discussion/Social Forum:* this online forum allows for students and faculty to communicate about the course. It is like an online study group. We will also share something about ourselves to get to know each other.
- *Grades:* students will be able to keep track of their grades online.

Minimum Technology Requirements for Remote Students:
Windows or Macintosh computer - although many courses activities can be completed on a mobile device, students will need a computer in order to fully participate in the remote component of the course.

Windows minimum requirements:
2 GHz Intel core i5
8 GB of Memory
256 GB Hard Drive
Macintosh minimum requirements:
1.3 GHz Intel core i5 or higher
8 GB of Memory
256 GB Hard Drive

Computer should be equipped with a webcam, microphone, and speaker/headphones for participating in virtual class meetings, completing video-based assignments, and completing exams that require video proctoring. Reliable internet access and the Chrome web browser (latest version) are needed.

Assessment of Student Learning:
Homework and Quizzes (30%)

Exam 1 (20 %): March 5

Exam 2 (20 %): April 9

Final Project (30 %)
Initial Project Presentation (in class): April 23
Initial Paper: April 30
Final Project Presentations: Wednesday May 12, 1:30 pm – 3:30 pm
Final Paper: Wednesday May 12, 1:30 pm – 3:30 pm

The class project will explore a topic of your choice applying statistics. You will work in pairs to develop skills for working in teams. The main idea is for you to find a problem that you are excited about which uses material from this course. Possible topics could be extensions of material in our text, may come from your own research projects, other classes or from outside sources.
Details for the writing project will be given after Exam 1.

Tentative Grading Scale

Percent	93-100	90-92	87-89	83-86	80-82	77-79	70-76	67-69	60-66	0-59
Grade	A	A-	B+	B	B-	C+	C	D+	D	F

The exact grading scale will be determined after the final exam. The numerical scores in the tentative grading scale guarantee the associated letter grade but the instructor may change the scale to the student's benefit.

Dates to Remember:

January 27: First Day of Classes
February 2: Late Registration & Add/Drop Ends
March 18: Midterm Grades Due
April 1-5: Easter Holiday (No Classes)

April 7: (Wednesday) Monday Schedule
April 14: Last Day to Withdraw from Courses
April 21: (Wednesday) Monday Schedule
May 7: Last Day of Classes

Class Policies:

- **Attendance:** The official College Attendance Policy, as published in the College Catalog, is: "Students are required to fulfill all course requirements as detailed in the course syllabi for their registered courses. Implicit in these requirements is completion of all course assignments and attendance in all classes. A student who is absent from class cannot expect the course instructor to provide notes or allow makeup tests, quizzes, or laboratories. The student may incur an appropriate grading penalty for such absences if the penalty was described in the syllabus. Reasonable accommodations for absences are recommended, but are solely at the discretion of the course instructor. If the instructor believes that a student's failure to attend class is substantially affecting the student's course grade, then the instructor is strongly encouraged to report the situation to the dean of the school in which the student is matriculated. It is recommended that the dean be contacted by the course instructor after the student incurs four hours of absences in a course. The dean will address the situation with the student."
- **Time-on-Task:** Whether this course is taught online, remotely, or face-to-face, the total amount of time that you spend on this course is equivalent to that which you would spend in the face-to-face version of the course and is consistent with the Federal Credit Hour Definition. For each 3-credit fifteen-week course, you are expected to complete a minimum of nine hours (each academic hour is 50 minutes) of work each week on average, where 9 academic hours is equivalent to 7.5 real hours. This includes studying, working on projects, homework, reading, and any other activities that you must do to be successful in this class. Every student will work at his or her own pace, so you might take more or less than this average amount of time.
- **Late work**: Late assignments will not be accepted after the solutions are distributed. In case assignments are handed in before the solutions are posted it will be marked 20% off for every day (or part thereof) it is late.
- **Missing Quizzes or Exams:** Failure to attend class on a day of a quiz or exam will result in a zero grade unless it is an excused absence with a documented reason. No make-up exams will be given, unless you have a medical or family emergency. These emergencies require valid documentation.
- **Cell phones** (or other technology not related to the class) in the classroom is only allowed with express permission of the instructor for special circumstances. In general cell phone or other potentially disruptive technology use is not allowed in class.
- **In-Class Camera Policy:** In order to promote community, it is important that faculty are able to interact and engage with students. Thus, during online class activities, students are required to leave their cameras turned on. Students with extenuating circumstances may request an exemption from this requirement to the professor in writing.

Suggestions for Success

- The course requires a time commitment of about 6 hours outside of class time per week (2 per class hour). The material builds on itself, so it is very important not to fall behind.
- Find a study partner or group.
- Treat your homework and quizzes as a study guide for future exams. Write solutions to problems in a neat and organized fashion.
- Review your notes from the previous lecture before each class.

- Read the textbook. It will complement the presentation in lecture and help give you the big picture of the material.
- I encourage you to come to office hours regularly. I will do my best to help you.

Student Academic Support Services | Center for Academic Success

The Center for Academic Success (CAS) is committed to providing student-centered programs and initiatives designed to enhance learning and promote success and persistence for all Manhattan College students. Students will work collaboratively with qualified peers and professionals to develop knowledge, skills and strategies needed for success in the classroom and beyond. The CAS has two locations; the Learning Commons in Thomas Hall 3.10 and the Leo Learning Center in Leo 117/118. Services include online and in-person individual tutoring, online small group peer tutoring (select courses), Supplemental Instruction (select courses), student academic success coaching, and online writing center services. All services are free of charge and available to all Manhattan College students. Appointments are preferred but walk-ins are welcome. To make an appointment, students can log into their Jasper Connect account or visit the CAS in Thomas Hall, 3.10. Students can also contact success@manhattan.edu with any questions. For more information about these services please visit the CAS webpage here, and to learn about CAS Fall 2020 return to campus safety efforts please visit the One Manhattan webpage here.

Academic Integrity:

Recall that as students of Manhattan College, you have each signed The Manhattan College Honor Pledge as a part of the Honor Code:

As a Manhattan College student, I will not lie, cheat, or steal in my academic endeavors, nor will I accept the actions of those who do. I will conduct myself responsibly and honorably in all my activities as a Manhattan College student. I am accountable to the Manhattan College community and dedicate myself to a life of honor.

Whenever you put your name on work to be handed in for grading in this class, you are reaffirming the above pledge. Violations of the Honor Code include, but are not limited to, cheating, plagiarism, fabrication, and other forms of academic misconduct. Please see the Manhattan College Code of Conduct and Academic Polices for a detailed description: https://inside.manhattan.edu/student-life/dean-of-students/code-conduct.php

Covid-19 Safety

The One Manhattan Health and Safety Guidelines provide information on how students, faculty, staff, and visitors must work together to ensure the overall health and safety of the Manhattan College community. In accordance with section II.L of the Manhattan College Community Standards and Student Code of Conduct, students are must abide by these Guidelines and are subject to judicial action if they do not do so, including the **mandatory wearing of masks or facial coverings on campus**. The following expectations are also outlined in our policy:

- Symptom monitoring including daily symptom checker
- Contact tracing cooperation and truthful reporting
- Personal protective equipment (PPE) is required on campus, in the library and in classrooms.
- Testing is required for all staff, students, and faculty.

- Social distancing is expected on campus and in class.

Violations of these safety guidelines will be reported to the Dean of Students Office via this reporting form. It is the responsibility of all students to follow them. Should there be repeated violations, the following sanctions will be put into action:

- First Offense – Written Warning
- Second Offense – Interim Disciplinary Probation
- Third Offense – Suspension from participation in all on-campus activities including in-person classes.

Any questions regarding these guidelines, the sanctions, and/or about accommodations can be sent to deanofstudents@manhattan.edu.

Online Proctoring: All students, whether taking the class in-person or remotely, may be required to take examinations that utilize video proctoring software. The purpose of video proctoring is to promote academic fairness and maintain academic integrity. Video recordings of proctored testing sessions are only available to me, the instructor and allow me to monitor students' online exams in the same way I would if they were sitting in a classroom taking the exam. Whether proctoring software is used or not is at my discretion. If you have questions or concerns about the use of proctoring software for a course, please contact me to discuss this matter before the class begins.

Special Accommodations:

- Students with special needs should bring appropriate documentation to the Specialized Resource Center, Thomas Hall 3.15, https://inside.manhattan.edu/academic-resources/specialized-resource-center/, to obtain an Academic Adjustment/Auxiliary Aid form. Bring the completed form to me as soon as possible, and together we will decide on how best to fulfill the adjustments and/or aids listed on the form.
- Student athletes should bring their event schedules to me as soon as possible.

Copyright Materials: Copyright in educational materials prepared by the College faculty member is owned by the faculty member, and may not be shared without his or her permission.

Topics:

- Counting Responses/ Visualizing Data
  - Frequency Tables and Histograms
  - Cross tabulations
  - Stem and Leaf / Box Plots
  - Quantiles
  - Scatter Plots
- Descriptive Statistics:
  - Measures of Central tendency, dispersion and location
- Probability
- Discrete random variables
- Continuous random variables
- Point and interval estimation
- Hypothesis testing

- Linear models
    - Regression analysis
    - Correlation
    - ANOVA

As time permits:

- *Nonlinear regression*
- *Reliability/Quality Control*
- *Chi-Squared Goodness of Fit*

The material in this syllabus may be changed at the instructor's discretion. Any changes will be communicated to the students. During these challenging times, we need to be particularly flexible.