

## **MATH 661-852: Applied Statistics** *Spring 2020 Graduate Course Syllabus*

**NJIT Academic Integrity Code:** All Students should be aware that the Department of Mathematical Sciences takes the University Code on Academic Integrity at NJIT very seriously and enforces it strictly. This means that there must not be any forms of plagiarism, i.e., copying of homework, class projects, or lab assignments, or any form of cheating in quizzes and exams. Under the University Code on Academic Integrity, students are obligated to report any such activities to the Instructor.

### **COURSE INFORMATION**

**Course Description:** Role and purpose of applied statistics. Data visualization and use of statistical software used in course. Descriptive statistics, summary measures for quantitative and qualitative data, data displays. Modeling random behavior: elementary probability and some simple probability distribution models. Normal distribution. Computational statistical inference: confidence intervals and tests for means, variances, and proportions. Linear regression analysis and inference. Control charts for statistical quality control. Introduction to design of experiments and ANOVA, simple factorial design and their analysis. **MATH 661** and **MATH 663** cannot both be used toward degree credits at NJIT.

**Number of Credits:** 3

**Prerequisites:** **MATH 112**.

**Course-Section and Instructors**

Course-Section	Instructor
Math 661-852	Professor A. Pole

**Office Hours for All Math Instructors:** [Spring 2020 Office Hours and Emails](#)

**Required Textbooks:**

<b>Title</b>	<i>Introduction to the Practice of Statistics</i>
<b>Author</b>	D.S. Moore, G.P. McCabe and B. Craig
<b>Edition</b>	9th
<b>Publisher</b>	MacMillan Learning
<b>ISBN #</b>	1. 978-1319055967 (e-book) 2. 978-1319013622 (looseleaf)

**University-wide Withdrawal Date:** The last day to withdraw with a **W** is **Monday, April 6, 2020**. It will be strictly enforced.

## COURSE GOALS

**Course Objectives:** This course will acquaint students with statistical techniques, with emphasis on applications: Turning data into information.

### Course Outcomes

*On successful completion of this course, the student will be able to :*

- Demonstrate understanding and application of statistical methods for displaying, summarizing and describing data
- Demonstrate knowledge and use of basic probability and inference
- Demonstrate conceptual understanding and practical application of sampling distributions and the central limit theorem
- Perform statistical analysis including estimation, hypothesis testing, and analysis of variance.

**Course Assessment:** Assessment of objectives is achieved through homework assignments and two examinations: a midterm exam and a comprehensive final exam.

---

## POLICIES

**DMS Course Policies:** All DMS students must familiarize themselves with, and adhere to, the **Department of Mathematical Sciences Course Policies**, in addition to official **university-wide policies**. DMS takes these policies very seriously and enforces them strictly.

**Grading Policy:** The final grade in this course will be determined as follows:

Homework	40%
Midterm Exam	30%
Final Exam	30%

Your final letter grade will be based on the following tentative curve:

A	90 - 100	C+	75 - 79
B+	85 - 89	C	60 - 74
B	80 - 84	F	0 - 59

**Attendance Policy:** Attendance at all classes will be recorded and is **mandatory**. Please make sure you read and fully understand the **Math Department's Attendance Policy**. This policy will be strictly enforced.

### Using Respondus LockDown Browser and a Webcam for Online Exams

Respondus LockDown Browser is a locked browser for taking assessments or quizzes in Canvas. It prevents you from printing, copying, going to another URL, or accessing other applications during a quiz. If a Canvas quiz requires that LockDown Browser be used, you will not be able to take the assessment or quiz with a standard web browser. You may be required to use LockDown Browser with a webcam (Respondus Monitor), which will record you during an online exam.

**This course requires the use of Respondus LockDown Browser and/or Respondus Monitor with a webcam for online exams.** The webcam can be built into your computer or can be the type that plugs in with a USB cable. Watch this **short video** to get a basic understanding of LockDown Browser and the webcam feature. A student **Quick Start Guide (PDF)** is also available.

1. Download and install LockDown Browser from this link:

<http://www.respondus.com/lockdown/download.php?id=264548414>

2. Once your download has finished, locate the “LockDown Browser” shortcut on the desktop and double-click it. (For Mac users, launch “LockDown Browser” from the Applications folder.)
3. You will be brought to the Canvas login page within the LockDown Browser, click “Login with your UCID” to log in with your NJIT UCID and password and then click Login.
4. Under “My courses”, click on the course in which you have to take the exam that requires the LockDown Browser.
5. After you enter the course, find the exam and click on it.
6. A confirmation prompt will appear, click the “Start attempt” button. Once a quiz has been started with LockDown Browser, you cannot exit until the Submit all and finish button is clicked.
7. If you are required to use a webcam (Respondus Monitor), you will be prompted to complete a Webcam Check and other Startup Sequence steps.

**Exams:** There will be a midterm exam during the semester and one comprehensive final exam during the final exam week. Use of Non-programmable/Non-graphing calculator is permitted during the exam. Exams will be held on the following days:

Midterm Exam	Week 8
Final Exam Period	May 8 - 14, 2020

The final exam will test your knowledge of all the course material taught in the entire course. Make sure you read and fully understand the [Math Department's Examination Policy](#). This policy will be strictly enforced.

**Makeup Exam Policy:** To properly report your absence from a midterm or final exam, please review and follow the required steps under the DMS Examination Policy found here:

- [http://math.njit.edu/students/policies\\_exam.php](http://math.njit.edu/students/policies_exam.php)

**Cellular Phones:** All cellular phones and other electronic devices must be switched off during all class times.

## ADDITIONAL RESOURCES

**Accommodation of Disabilities:** Disability Support Services (DSS) offers long term and temporary accommodations for undergraduate, graduate and visiting students at NJIT.

If you are in need of accommodations due to a disability please contact Chantonette Lyles, Associate Director of Disability Support Services at [973-596-5417](tel:973-596-5417) or via email at [lyles@njit.edu](mailto:lyles@njit.edu). The office is located in Kupfrian Hall, Room 201. A Letter of Accommodation Eligibility from the Disability Support Services office authorizing your accommodations will be required.

For further information regarding self identification, the submission of medical documentation and additional support services provided please visit the Disability Support Services (DSS) website at:

- <https://www.njit.edu/studentssuccess/accessibility/>

**Important Dates** (See: [Spring 2020 Academic Calendar, Registrar](#))

Date	Day	Event
January 21, 2020	T	First Day of Classes

January 31, 2020	F	Last Day to Add/Drop Classes
March 15 - 22, 2020	Su-Su	Spring Recess: No Classes/ University Open
April 6, 2020	M	Last Day to Withdraw
April 10, 2020	F	Good Friday - University Closed
May 5, 2020	T	Friday Classes Meet - Last Day of Classes
May 6 & 7, 2020	W & R	Reading Days
May 8 - 14, 2020	F - R	Final Exam Period

## Course Outline

Topics
<b>WEEK 1 &amp; 2</b> Chapter 1. Looking at data distributions.
<b>WEEK 3</b> Chapter 2. Looking at data relationships.
<b>WEEK 4 &amp; 5</b> Chapter 4. Probability: The study of randomness
<b>WEEK 6 &amp; 7</b> Chapter 5. Sampling distributions
<b>WEEK 8</b> <b>MIDTERM EXAM</b>
<b>WEEK 9 &amp; 10</b> Chapter 6. Introduction to inference.
<b>WEEK 11</b> Chapter 7. Inference for means
<b>WEEK 12</b> Chapter 8. Inference for proportions
<b>WEEK 13</b> Chapter 9. Analysis of two-way tables
<b>WEEK 14</b> Chapter 12. One way analysis of variance
<b>WEEK 15</b> <b>FINAL EXAM</b>