

JOHN JAY COLLEGE OF CRIMINAL JUSTICE
The City University of New York
524 West 59th Street, New York, NY, 10019

Syllabus for:

MAT 301-03 Probability and Statistics I
MAT 301-04 Probability and Statistics I

Professor's name: Nicholas Petraco

E-mail address: npetraco@gmail.com

Contact hours:

MAT 301-03 Tuesday/Thursday 3:05-4:20 and anytime over email
MAT 301-04 Tuesday/Thursday 4:30-5:45 and anytime over email

Course Format:

MAT 301-03 In-person twice a week
MAT 301-04 In-person twice a week

Course website: <https://npetraco.github.io/MAT301/>

Course Description:

The purpose of this course is to acquaint undergraduate science students with statistical methods that are applicable to data they will encounter in their scientific careers, as well as issues and pitfalls to be aware of when applying these methods.

It is not adequate to simply learn the “theory” behind the methodology encountered in this course. It must be applied on real data of practical interest to the sciences. As such this course will build expertise in the general scientific/statistical computing environment R (<http://www.r-project.org/>). The course assumes minimal knowledge of computers and statistical procedures. It is designed to build the student’s skill set and confidence in both of these areas. Topics covered will include basic data descriptive tools, graphing, probability theory, discrete/continuous distributions, estimation and hypothesis testing.

Course lecture materials will be posted on the following website:

<https://npetraco.github.io/MAT301/>

Occasional announcements and important reminders will be emailed to you. As such **you must give me an email address that you check on a regular basis.**

Most lectures posted to the course website will be accompanied by short videos which will be posted to YouTube. A link to the videos will be sent to you in email when it is posted. **Homework and Exams will be given through WebAssign.** See below for details.

Learning outcomes:

By the end of the course students will be able to:

1. Choose an appropriate probability or statistical model for a particular problem.
2. Know what conditions are typically required for the use of particular probability and statistical models; and be able to assess whether those conditions are reasonably met.
3. Interpret calculated solutions of particular statistical models.
4. Make appropriate inferences using the chosen statistical models.
5. Use the R software system to handle datasets, display datasets graphically, and do probability computations, statistical analyses, and computer simulation.

Requirements / course policies

Unethical/unprofessional conduct which includes cheating will result in a failing grade and referral for additional action. These include copying others work and sharing work when explicitly forbidden.

No make up exams will be given. Failure to take a scheduled examination without a valid and independently supported official documentation from a medical provider at least 48 hours in advance (unless the emergency is induced by force majeure, subsequent to the 48 hour cutoff, where in a valid and independently supported official documentation from a medical provider is still required) will result in a zero grade for that examination.

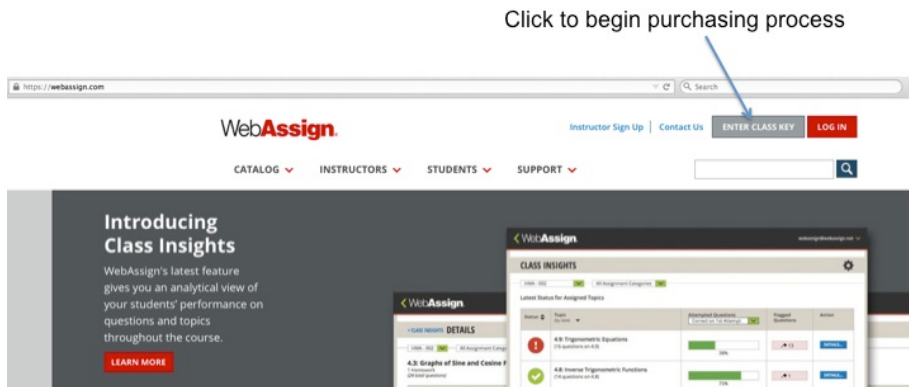
Required Electronic Text and Resources:

Probability and Statistics for Engineering and the Sciences - 9e
J. L. Devore

- The Assignments/Electronic Text can be purchased at:

<https://www.webassign.net/>

- In order to purchase click on “Enter Class Key”:



- The WebAssign website will probably prompt you to log into your account. If you don't have an account, create one.
- When you log in, you should see a place to enter the class key:

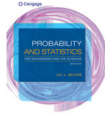
Enter class key here

CAREFUL: NOTE YOUR SECTION!!!!!!!

- Students Registered for Petraco **MAT 301-03** Probability and Statistics Section-03:
 - Class Key: **jjay.cuny 1770 5065**
- Students Registered for Petraco, **MAT 301-04** Probability and Statistics Section-04:
 - Class Key: **jjay.cuny 4699 9020**

- After logging in/creating-account, eventually the website will prompt you to purchase the materials for the class:

Ready to buy?



Homework and eBook (single-term access) MAT
301 03
9th Edition
Jay L. Devore
WebAssign
9781337765275
\$100.00
Already purchased?
[Enter access code](#)

Here are your options:

Most Affordable Option

Purchase Product

- Homework and eBook (single-term access)
MAT 301 03 9th Edition

1-term access

\$100.00

[BUY PRODUCT](#)

TEMPORARY ACCESS

- Purchase “Probability and Statistics for Engineering and the Sciences – 9/e by Devore, Homework and eBook (single term access only)”, which should be ~\$100.00

Suggest supplementary text (NOT REQUIRED):

Statistics: An introduction using R, 2nd ed.

Crawley

ISBN-10: 1118941098

Grading:

The grades for this course are based on homework (25%), two exams (50%) and a final (25%).

Course lecture posting calendar:

<u>Week</u>	<u>Lecture Topics</u>	<u>Sub Topics</u>	<u>HW and Exam Dates</u>
Jan. 26	Introduction	Introduction Important Definitions Basic Graphing	
Jan. 31 - Feb. 2	Introduction and Tutorial for R		Feb 7: HW Set 1 Due
Feb. 7-9	Summarizing Data 1-3	Mean, Median, Mode Variance and Standard Deviation Range and Quantiles	Feb 14: HW Set 2 Due
Feb. 14-16	Probability 1-2	Definitions Axioms and Theorems	Feb 23: HW Set 3 Due
Feb. 23	Probability 3-4	Conditional Probability and Bayes' Theorem Example Problems	Feb 28: HW Set 4 Due
Feb. 28 - Mar. 2	Review and Exam I		Mar 2: Exam 1
Mar. 7-9	Important Distributions 1-3	Permutations and Combinations Discrete Probability Mass Discrete Moments	Mar 14: HW Set 5 Due
Mar. 14-16	Important Distributions 4-5	Discrete Distributions Continuous Distributions	Mar 21: HW Set 6 Due
Mar. 21-23	Point Estimation 1-4	Maximum Likelihood Estimators Sampling Distributions Unbiased Estimators Example Problems	Mar 28: HW Set 7 Due
Mar. 28-30	Point Estimation 5-6 Review	Bootstrap Estimation Bootstrap Fails	Apr 3: HW Set 8 Due
Apr. 4	Exam II		Apr 4: Exam 2
Apr 18-20	Interval Estimation 1-3	Definitions and Theory Computing Confidence Intervals Reference Formulas	Apr 25: HW Set 9 Due
Apr. 25-27	Interval Estimation 4	Bootstrap Confidence Intervals	May 2: HW Set 10 Due
May 2-4	Hypothesis Testing 1-3	Definitions and Theory One Sample Hypothesis Tests Two Sample Hypothesis Tests	May 9: HW Set 11 Due
May 9-11	Analysis of Variance 1-3	Definitions and Theory Example Problems Post Hoc Testing	May 16: HW Set 12 Due
May 16.	Regression 1-3	Definitions and Theory Workflow Example Problems	May 18: HW Set 13 Due Sec 03 : May XX, XX:XX: Exam 3 (Final) Sec 04 : May XX, XX:XX: Exam 3 (Final)

College wide policies for undergraduate courses (see the *Undergraduate Bulletin*, Chapter IV Academic Standards)

A. Incomplete Grade Policy

B. Extra Work During the Semester

C. Americans with Disabilities Act (ADA) Policies

“Qualified students with disabilities will be provided reasonable academic accommodations if determined eligible by the Office of Accessibility Services (OAS). Prior to granting disability accommodations in this course, the instructor must receive

written verification of a student's eligibility from the OAS which is located at L66 in the new building (212-237-8031). It is the student's responsibility to initiate contact with the office and to follow the established procedures for having the accommodation notice sent to the instructor."

Source: *Reasonable Accommodations: A Faculty Guide to Teaching College Students with Disabilities*, 4th ed., City University of New York, p.3.
(http://www.jjay.cuny.edu/studentlife/Reasonable_Accommodations.pdf)

Statement of the College Policy on Plagiarism

Plagiarism is the presentation of someone else's ideas, words, or artistic, scientific, or technical work as one's own creation. Using the ideas or work of another is permissible only when the original author is identified. Paraphrasing and summarizing, as well as direct quotations require citations to the original source.

Plagiarism may be intentional or unintentional. Lack of dishonest intent does not necessarily absolve a student of responsibility for plagiarism.

It is the student's responsibility to recognize the difference between statements that are common knowledge (which do not require documentation) and restatements of the ideas of others. Paraphrase, summary, and direct quotation are acceptable forms of restatement, as long as the source is cited.

Students who are unsure how and when to provide documentation are advised to consult with their instructors. The Library has free guides designed to help students with problems of documentation. (*John Jay College of Criminal Justice Undergraduate Bulletin*, <http://www.jjay.cuny.edu/academics/654.php>, see Chapter IV Academic Standards)