AMS 102 Syllabus, Spring 2025,
ONLINE Synchronous/Asynchronous Combined

Course Title: AMS 102 Elements of Statistics
Course ID number: 102.30 and 102.31, **51957 and 51958**

Course Description:
We will discover the use and misuse of statistics in real life situations; basic statistical measures of central tendency and of dispersion, frequency distributions, elements of probability, binomial and normal distributions, small and large sample hypothesis testing, confidence intervals, and regression.
This course may not be taken by students with credit for AMS 110, 310, 311, 312; ECO 320; POL 201; PSY 201; or SOC 202.

Prerequisite: Satisfaction of entry level skill in mathematics requirement (Skill 1) or satisfactory completion of D.E.C. C or ; Non AMS majors only
3 credits

Instructor and graders assigned by last name of student:

Your instructor: Bakoo Hagedorn bakhtavar.hagedorn@stonybrook.edu

Please see below for the person who will grade your work. You may visit ALL TAs for assistance during office hours (see **Staff Info/Office hours→Complete list of office hours by day** on Brightspace).

Student's last name	TA	Email
A - Che	Samuel Quitzau	Samuel.quitzau@stonybrook.edu
Chi - Har	Sherif Elrashidi	Sherif.elrashidi@stonybrook.edu
Has - Lee	Rose Shojaeian	Rose.shojaeian@stonybrook.edu
Li - Ni	Sophia Lu	Sophia.lu@stonybrook.edu
No - Sl	Alyssa Kayoon	Alyssa.kayoon@stonybrook.edu
Sm - Z	Rizwana Uddin	Rizwana.uddin@stonybrook.edu

Office hours

Each of us will be holding multiple office hours per week via Zoom. Please check **Staff information/office hours** on Brightspace for office hours and Zoom links. No appointment is necessary, simply join as soon as you need help on this material. It is

wise to maintain "in-person" contact to facilitate learning whenever possible. For all Zoom calls, please mute your microphone unless you are speaking or otherwise directly participating in the discussion.

Each of us will also be checking the Discussion board on Brightspace daily for your general questions. Outside of office hours, you may post on the Discussion board and one of us will respond quickly. Please see above for the assignment of graders. This is the person who will be providing a grade for each assignment that you submit. For a grading discrepancy please email your TA directly.

Course Delivery Mode and Structure:

This is a Synchronous/Asynchronous combined course delivered in the D2L Brightspace learning management system (LMS). You will be provided videos of the required material for you to watch, along with the corresponding notes, already prepared for you. Please print the notes and follow along while watching the videos.

We will meet, via Zoom, to discuss specific problems (HW and review problems) during a major subset of your class time, giving you the opportunity to be exposed to exam type problems. In addition, we will all hold office hours for extra help. This will allow you to be connected and supported, and not feel alone in this endeavor. On your Brightspace please click on **Content→Please start here, Syllabus and Important Course information → Class Meetings**, for a complete list of zoom meeting times and **Staff Info/Office hours → Complete list of office hours by day** for a complete list of all office hours, I think you will be thrilled with the level of support offered for this online class. **It is expected that you will have watched the relevant videos before coming to class, so that we can target problem areas, not start from first principles.**

Other than Zoom meeting times for interaction with your instructor (**mandatory**), office hours with your instructor and TAs (optional), exam times (fixed, not flexible), and hw due dates (not flexible), you will have total flexibility regarding when you learn the material (watch the lecture videos provided, following along with the notes, already taken for you). Attending our zoom meetings and office hours will keep you engaged and connected with your instructor and fellow students, and better prepared for exams.

The course is not self-paced. All activities have specific deadlines designed to help you complete the course in the required number of weeks. Students must be mindful of all course expectations, deliverables, and due dates. All assignments will utilize internet

technologies. See **Important Course information→Technical Requirements** for more information.

This course will be divided into 3 sections separated by two midterm exams. The lecture material for Exam 1 will be available at the start of the course and the lecture material for Exam 2 and the final will be available right after Exam 1. Once you have prepared for Exam 2, you will be in great shape for the final, considering there is just one small topic to be covered after Exam 2.

There will be ongoing **online assignments** through MyLabStatistics, which is a **Pearson** product. The first three online assignments will be due the day after Exam 1. The next few (all but the last one) of the online assignments will be due shortly after Exam 2, and the last assignment, on Normal approximation to the Binomial, due by **midnight on May 12, 2025.** You will be able to complete the online assignments well before the due date if you choose to do so, but this will be the last day that the assignments will be available. Please do not ask for / count on an extension after midnight on **May 12**.

In addition to these, there will also be **written assignments** that you will submit regularly via Brightspace. Please see the posting under **Important course information → About Written Assignments** regarding the process for submitting written assignments via Brightspace (one pdf of all pages will be required to be submitted to Brightspace). Late written assignments **will** be accepted after their due dates with a 10% penalty per day of lateness as long as solutions are not yet posted. Immediately upon submitting an assignment, please verify that it is legible and ensure that this is done before the assignment's due date. **Please make sure to show all your work, not just the final answer.**

Practice exam problems and pretests with solutions are available in the weekly modules after **week 6** and **week 13** to help you prepare for exams.

Examinations:

Your exams will be administered online using Respondus Monitor. A dummy quiz **(due February 1)** will be available to get you familiar with your syllabus, Respondus LockDown Browser and Monitor. Accordingly, any issues related to taking exams on Respondus will be resolved very early, prior to the exams themselves. Always click on the exam or quiz, then scroll all the way to the bottom to **Launch Lockdown browser.** The exams and quizzes can be found in the appropriate **weekly module** on your

Brightspace as well as under **Exams/Quizzes**. The exam will become available at both these locations at the appropriate time.

You will be observed via Respondus Monitor and recorded as you take your exams. Any attempt to cheat on an exam will have serious consequences. There will be no room for explanations and negotiation: Your case will be brought to the Academic Judiciary committee.

1. Before you begin any exam, you will be required to clearly show your workspace to the webcam. Clearly show your blank scrap paper (2 sheets) as well. Clearly show any tables and your cheat sheet that you may have brought with you.
2. When you are finished with the last question on your exam, please completely destroy your scrap work while you are still being recorded.
3. Please pack away your cell phone, do NOT communicate with anyone, do NOT use an i-watch or any other device.
4. Calculators are allowed on all exams. **Also, please bring printed copies of relevant tables.**
5. The exams will be administered through Respondus Lockdown Browser. Please click on Exams/Quizzes in Brightspace to access your exam. Each exam can only be accessed by you ONCE. Do not tamper with the link prematurely, that will be disastrous for you.
6. You can have an 8.5 x 11 hand-written cheat-sheet for each exam. You may write on both sides.

All exams are multiple choice. You will be able to backtrack and change your answers while taking the exam.

These will be the requirements, and disregarding these instructions will invalidate your exam. Sending an email apology, after the fact, showing a recording of yourself destroying your scrap work is not acceptable practice.

Tentative exam dates are as follows:

AMS 102 Exam 1 part 1 and part 2: 1 hour 30 minutes for under 40 questions on each part. Both parts will be available from 12:01 AM on Monday, March 10 to Thursday, March 13, at midnight. You may take each part of the exam at a time that is convenient during the given time interval above, both parts back to back or on different days - the choice is yours. **You are allowed both sides of an 8.5 x 11 sheet of paper**

as a cheat sheet for formulas. Please have your **calculator, 2 blank scrap papers, pen** and **ID**.

Each part will be a mix of questions from Lectures 1 and 2.

AMS 102 Exam 2: This is a 3 hour long exam, multiple-choice, with under 80 questions. **Exam 2 will be available from 12:01 AM on May 5 to midnight on May 6** via Respondus. Please take this exam at your convenience during the given timeframe. There is only one part for this exam.

Exam 2 material will begin with Empirical rule and Chebyshev's Theorem. These are the only topics that will be repeated, most of the exam I material will **not** be on Exam 2.

You will be allowed both sides of **an 8.5 x 11 cheat-sheet for formulas**, and you will be required to have your **z and t tables, a calculator, pen** and your **ID. You are allowed scrap paper, but most of the problems can be answered swiftly on your calculator**. Although z and t tables are included on your exam, **we recommend bringing paper copies of tables** so you don't get disconnected when trying to access the tables during your Respondus exam.

Final Exam, multiple-choice, 2 hours long, around 40 questions, online and open notes. This final contains exam 2 material plus one more topic, Normal approximation to the Binomial. There will be no exam 1 material on this final exam at all. Please have your **calculator, tables, pen** and **ID. You are allowed 2 scrap pages.** Please have a **printout of your tables.**

You will take your final exam according to the following times (listed on the university final exam calendar):

102-31 M/W 9:30 AM class: Final at 11:15 AM - 1:15 PM, Wednesday, May 14.

102-30 Tu/Th 9:30 AM class: Final at 11:15 AM - 1:15 PM, Monday, May 19.

Course eBook and Required Online Homework Materials from Pearson :

Students can either purchase an access code for Pearson through the bookstore (they mail your access code, this could take a few days) or directly through the Pearson MyLabStatistics link in the margin of your Brightspace (immediate access after you give them your credit card). Prices can vary between these two methods so please compare

for the best option. **There should be a 14 day free trial so you may choose to begin your Pearson assignments even before purchasing the access code.**

The **ISBN is 9781323902653** which includes MyLab Access Code + eText.
The hard copy of the textbook is purely optional, since you already have an eText packaged with your Pearson product. Please check with the University bookstore and the publisher (Pearson Publishing) for pricing.

NOTE: Students wishing to receive instant access to the MyLab Access Code (required) should purchase the access code by clicking **Content→Pearson MyLab Statistics** in the margin of Brightspace. This will bring you to Pearson Publishing's website to purchase from them directly, using your credit card.

Your Pearson MyLabStatistics access code will include the Pearson eText; - there will be no need for a physical textbook. If you wish to purchase a loose-leaf version of the text, however, you may click "PURCHASE OPTIONS" from your MyLab Statistics course, and order a $49.95 copy mailed directly to you. This is purely optional.

How We Will Communicate: If you have a question, it is highly likely that others taking this class with you have the same question. Posting it in the Discussion Board area enables us to answer it once, in a place where everyone can see, saving us from responding to multiple emails about the same question. Accordingly, please confine your questions to the **Discussions area**. You can generally expect us to reply to Discussions within 24 hours. If you need to contact me about a private or personal matter, please email me directly. Otherwise, **office hours and the Discussion board should be used.**
Course-related general questions should be posted in the General Questions Forum in the course Discussion board. If you have a simple Statistics question, post it on the Discussion board. For more involved discussion please plan on joining public zoom office hours. Questions regarding Exam 1 material should be posted in the Exam 1 material discussion forum, and similarly for Exam 2 and final exam material.
Your Stony Brook University email must be used for all University related communications. Accordingly you must have an active Stony Brook University e-mail account as well as access to the Internet. All Instructor correspondence will be sent to your SBU email account. Please plan on checking your SBU email account regularly for course related messages.

Students who need assistance with their personal devices can contact DoIT's service desk at (631) 632-9800 or submit an online request. For more information please visit:

https://it.stonybrook.edu/students. You should also cc both myself and your TA on your email so that we are aware of the situation.

Technical Requirements:

This course uses Brightspace for communication between faculty and students, submission of assignments, and posting of grades. The Brightspace course site can be accessed at mycourses.stonybrook.edu.

Caution! You may be at a disadvantage if you attempt to complete all coursework on a smartphone or tablet. It may not be possible to submit the files required for your assignments.

The following list details a minimum recommended computer set-up and the software packages you will need :

- PC with Windows 8 or higher or Macintosh with OS 10.11 or higher
- Intel Core i5 or higher
- 250 GB Hard Drive
- 8 GB RAM
- Latest version of Chrome, Firefox or Explorer/Edge (Windows), Mac users may use Chrome, Firefox or Safari. (A complete list of supported browsers and operating systems can be found on the My Institution page when you log in to Brightspace.)
- High speed internet connection. Note that public WiFi (ex. Starbucks) and internet service provider hotspots (ex. Optimumwife or xfinitywifi) are not recommended.
- Printer and scanner. A cell phone or tablet camera can work for the latter with apps such as CamScanner or MyScans (there are myriad others). You must be able to create a high quality scan in PDF format.
- Microphone (either internal or external) and Speakers (either internal or external) or headphones. Headphones are strongly recommended to reduce the risk of feedback during communications.
- WebCam or other camera for producing video (either internal or external).
- Word processing software (Microsoft Software applications and plug-ins (note: you must have administrator access to install applications and plug-ins).
- You will need the ability to download and install software applications and plug-ins. You may need administrator access on your computer to install some applications and plug-ins.

- Adobe Flash player with the latest update is crucial for playing multiple videos throughout the course.
- PDF viewer, such as Adobe Reader or Preview (MacOS).
- Zoom. Stony Brook has a site license for Zoom. You can find information for downloading, installing and using Zoom at https://it.stonybrook.edu/services/zoom/students.
- Respondus LockDown browser and Monitor. Stony Brook has a site license for these packages; https://download.respondus.com/lockdown/download.php?id=772113517.

Just a word of caution: Chromebooks and ipads are not suitable for exams, Respondus is not compatible with the Chromebook, per CELT.

Technical Assistance:

If you need technical assistance at any time during the course or if you need to report a problem with Brightspace you can:

- Visit the Stony Brook University Student Help Desk Page, http://www.stonybrook.edu/helpme
- Phone: (631) 632-2358 (technical support and Brightspace issues)
  (631) 632-9800 (client support, wifi, software and hardware)
- Create a ticket at http://service.stonybrook.edu

You should also cc both myself and your TA on your email to Tech support so that we are aware of the situation.

Calculator: You will need a calculator that takes square roots and raises numbers to powers (y^x). I have found the TI 83^+/TI 84 to be most helpful in this class, and I shall post the Texas Instruments calculator commands necessary as we cover new formulas. You **will** be able to use it on exams. Although one can manage without a fancy calculator, the Texas Instruments calculator models mentioned above will enable you to swiftly verify your answers on homework assignments and exams. If you choose to use a different calculator, please look up the appropriate commands in your user manual or on the internet.

Course Objectives:

This course will provide students an introduction to the principles of statistical methods. We will cover the following topics:

1. Probability

2. Conditional Probability

3. Sampling methods
   Simple random sampling, cluster sampling, 1 in k systematic sampling
   Stratified random sampling

4. Descriptive Statistics
   Bar graphs, histograms, frequency polygons, stem and leaf displays

5. Measures of Central Tendency
   Mean (including mean of grouped data), median, mode, percentiles, quartiles, box and whisker plots, symmetric vs. skewed distributions

6. Discrete and continuous probability distributions
   Binomial Distribution
   Bernoulli trials, determining binomial probabilities, mean and standard deviation of a Binomial distribution

7. Normal Distribution, Standard normal curve, concept of z score
   Normal Approximation to the Binomial Distribution

8. Inferential Statistics, Sampling distribution of the Mean, Central Limit Theorem

9. Estimation of parameters
   Point estimates versus interval estimates and bounds of error
   Construct and interpret Confidence intervals

10. Conduct, interpret Hypothesis tests
    Tests involving the mean – large samples, small samples – t distributions

11. P-Value

Learning Outcomes

• Describe and apply the process of statistical investigations from conception through conclusion. This process involves:
    * Formulating questions and collecting data
    * Analyzing data and drawing inferences
    * Interpreting results and communicating conclusions

• Demonstrate facility with, and a solid conceptual understanding of, the key tools of data analysis, including:
    * Histograms
    * Box plots, stem-and-leaf plots and other graphical displays
    * Measures of central tendency
    * Measures of dispersion

• Demonstrate knowledge of elements of probability and key probability distributions, including:
    * Probability of an event, sample space, equi-probable outcomes
    * Conditional probability and Bayes' theorem
    * Binomial distribution * Normal Distribution

• Demonstrate facility with, and a solid conceptual understanding of, the key tools of statistical inference, including:
    * z-scores
    * Estimation of intervals
    * Testing hypotheses, including Type 1 and Type 2 errors

• Perform important statistical procedures, such as:
    * t-test
    * Linear regression

• Work with technology to:
    * Analyze data graphically
    * Analyze data numerically
    * Analyze data inferentially

• Decide which statistical methods to use in which situations:
    * Recognizing which statistics tests apply in a situation
    * Checking the necessary conditions for those methods to be valid

• Use statistics to address the research question at hand
    * Interpret the results of statistical analyses to answer the research question
    * Communicate conclusions that follow from the statistical analyses of the question

• Demonstrate an appreciation of the power and scope of statistical thinking for addressing research questions in a variety of scientific disciplines and in everyday life.

Netiquette Guidelines:
The following are guidelines for participation on the discussion Board:

- Remember that with the absence of face-to-face communication it's easy to misunderstand. Carefully review and read materials that you receive electronically to ensure that you fully understand the message
- Be sure to carefully re-read and understand what you will be sending in order to ensure that you are not misunderstood by anyone
- Disagreement and discussion in higher education is normal but it is important to be polite, and to clearly communicate why you disagree, supporting your own ideas with academic sources.
- Avoid cluttering your messages with excessive emphasis (stars, arrows, exclamations)
- If you are responding to a message, either include the relevant part of the original message in your message, or make sure you refer to the original's contents so as to avoid confusion
- Be specific and clear, especially when asking questions. If your messages can be typed in UPPER and lower case, please use the two appropriately instead of all UPPERCASE characters. This gives the appearance of shouting and makes the message less readable; Remember that not all readers have English as their native language, so make allowance for possible misunderstandings.

Tips for success in this course:

- Attend the meetings that are scheduled during the specified subset class time. Please click **Important Course information → Class Meetings**, for a complete list of zoom meeting times and **Staff Info/Office hours → Complete list of office hours by day** for a complete list of all office hours. No appointment is necessary for instructor or TA office hours. Simply show up and ask for help or guidance.

  All classes will meet at 9:30 AM.

Feel free to come to the other section's classes too if you need more reinforcement.
Review sessions will be held for every exam - We are committed to preparing you for exams.

- Please refer to the annotated notes posted while watching the videos.
  It won't be necessary to take any notes, they have already been taken for you.
  Watch the required videos and read the required pages before class meetings.

- Keeping up with the written HWs (15% of semester grade) and online assignments (15% also) will result in a successful experience.

- **Solving the pretests and practice problems, provided in the weekly modules, is also essential to your success.**

For a complete course schedule, including Lectures, assignments, exams please go to Weekly Materials → weekly modules. Here, you will find the expectations for each week and all the material you will need to satisfy those expectations.

Grading

Please note that any total provided on Brightspace will not be a weighted total, so it is irrelevant to your semester grade. The grade on the dummy quiz is also irrelevant.
A 90 weighted average will earn you an A in this class, 85 translates to A-, 80 earns a B+, etc.
A 65 semester average will translate to a C+ in this class. Your grade will not depend on your performance relative to the performance of other students.

Please note: Sadly, unless you have TA'd for this class it is not possible for me to write a letter of recommendation for you as it is not possible to address your character or your work ethic, your written or verbal expression, your response to criticism, etc.

Assessment & Grading:

Percentage/Points	Activity/Assignment
15%	Written Homework
15%	Online HWs
25%	Exam 1
25%	Exam 2
20%	Final Exam

Due dates of Pearson Online Assignments

Online Assignment #1 (chapter 4) MARCH 15
Online Assignment #2 (chapter 2) MARCH 15
Online Assignment #3 (chapter 3) MARCH 15

Online Assignment #4A (chapter 6) MAY 7
Online Assignment #4B (chapter 6) MAY 7
Online Assignment #5 (chapter 7) MAY 7
Online assignment #6 Hypothesis tests(chapter 8) MAY 7
Online Assignment #7 Discrete and Binomial (chapter 5) MAY 7
Online Assignment #8 Normal Approximation (chapter 6.6) MAY 12

Completing the online assignments before their due dates is important - this will help you prepare for exams. **However, we will leave all the online assignments open until midnight on 5/12 for you to perfect your scores.** Unfortunately, we cannot grant any extensions past this point for any reason. Please do not ask for extensions beyond **5/12.**

Academic Integrity Statement:

Each student must pursue his or her academic goals honestly and be personally accountable for all submitted work. Representing another person's work as your own is always wrong. Faculty is required to report any suspected instances of academic dishonesty to the Academic Judiciary. Faculty in the Health Sciences Center (School of Health Technology & Management, Nursing, Social Welfare, Dental Medicine) and School of Medicine are required to follow their school-specific procedures. For more comprehensive information on academic integrity, including categories of academic dishonesty please refer to the academic judiciary website at http://www.stonybrook.edu/commcms/academic_integrity/index.html

Important Note: Any form of academic dishonesty, including cheating and plagiarism, will be reported to the Academic Judiciary.

Posting the contents of this class on any public website is considered a violation of the university academic integrity policy and will be treated as such. Accordingly, please do not upload or post any material from our course on any public site. Your posting any lecture notes or homeworks on public sites would be in violation of federal copyright law.

Student Accessibility Support Center Statement:

If you have a physical, psychological, medical, or learning disability that may impact your course work, please contact the Student Accessibility Support Center, Stony Brook Union Suite 107, (631) 632-6748, or at sasc@stonybrook.edu. They will determine with you what accommodations are necessary and appropriate. All information and documentation is confidential.

Basic Needs:

If you are concerned about resources related to your basic needs, including access to nutritious food and stable housing, please contact the Student Support Team. They will be able to listen to your story, connect you with possible resources, and provide stigma-free support.

Critical Incident Management:

Stony Brook University expects students to respect the rights, privileges, and property of other people. Faculty are required to report to the Office of Student Conduct and Community Standards any disruptive behavior that interrupts their ability to teach, compromises the safety of the learning environment, or inhibits students' ability to learn.

Faculty in the HSC Schools and the School of Medicine are required to follow their school-specific procedures. Further information about most academic matters can be found in the Undergraduate Bulletin, the Undergraduate Class Schedule, and the Faculty-Employee Handbook.

Understand When You May Drop This Course:
It is the student's responsibility to understand when they need to consider disenrolling from a course. Refer to the Stony Brook Academic Schedule for dates and deadlines for registration:
http://www.stonybrook.edu/commcms/registrar/calendars/academic_calendars

Incomplete Policy:
Under emergency/special circumstances, students may petition for an incomplete grade. Circumstances must be documented and significant enough to merit an Incomplete. If you need to request an incomplete for this course, contact me as far in advance as possible as all incomplete grades must be approved by the undergraduate director, Prof. Estie Arkin.

Course Materials and Copyright Statement:
Course material accessed from Brightspace, SB Connect, SB Capture or a Stony Brook Course website is for the exclusive use of students who are currently enrolled in the course. Content from these systems cannot be reused or distributed without written permission of the instructor and/or the copyright holder. Duplication of materials protected by copyright, without permission of the copyright holder is a violation of the Federal copyright law, as well as a violation of Stony Brook's Academic Integrity.

Student Learning Resources:
- Academic and Transfer Advising Services: Have questions about choosing the right course? Contact an advisor today. Phone: (631) 632-7082 (option 2); email: advising@stonybrook.edu; website: http://www.stonybrook.edu/commcms/advising/
- The Stony Brook bookstore: https://sunysb.bncollege.com/shop/shop-red-west-stony-brook-university/home
- Bursar: For help with billing and payment. Phone: (631) 632-9316; email: bursar@stonybrook.edu; website: http://www.stonybrook.edu/bursar/
- Disability Support Services: Students in need of special accommodations should contact DSS. Phone: (631) 632-6748; email: dss@stonybrook.edu; http://www.stonybrook.edu/commcms/studentaffairs/dss/
- Support for Online Learning http://www.stonybrook.edu/commcms/onlineed/student.html

Our best wishes for a successful experience this semester!