



## Applied Probability and Statistics II (Stat 401, Sec -0401)

**Term:** Spring 2025

**Professor:** Mestiyage D Gunatilleka

**Email:** danulg@umd.edu

**Office Hours:** Th 1 PM - 1.50 PM (MTH 4106)

W 12 PM - 12.50 PM (Online - See ELMS for Zoom link. Please let me know in advance if you plan to attend)

**Grader Information:** Please see Grader Info pdf in ELMS

**Course Times:** TuTh 11 AM - 12.15 PM

**Classroom:** PHY 2124

### Course Description

Stat 401 is a class on (classical) statistical techniques for students who have had an introductory class in probability such as Stat 400 or Stat 410 (or any class with comparable content). After reviewing concepts from probability we will focus our attention on covering topics related to estimators, mean squared error, maximum likelihood estimators, confidence intervals, hypothesis testing, ANOVA, regression and some non-parametric methods.

### Required Resources

- Course Website: Please access the course webpage through ELMS [elms.umd.edu](https://elms.umd.edu)
- Book: (Required) **Probability and Statistics for Engineering and the Sciences, Ninth Edition** by Jay L. Devore.  
ISBN: 978-1-305-25180-9  
We will focus on covering most of Ch 6-8, 10, 12 as well as selected topics from Ch 13 and some techniques from nonparametric statistics.
- Application/Software: (Required) R, RStudio

**Prerequisites:** The prerequisites for this class are Stat 400 or Stat 410 (as well as familiarity with calculus). I will be working under the assumption that you have a solid grounding in the material from the prerequisite classes as well as differentiation and integration. While we will review some of the material initially, I will not be able to re-teach the material in its entirety in class. You may want to spend some time reviewing this material. Chapter 2 - 5 of the required text can be used to review this material and can be referred to throughout the semester as needed.

## Policies and Resources for Undergraduate Courses

It is our shared responsibility to know and abide by the University of Maryland's policies that relate to all courses, which include topics like:

- Academic integrity
- Conduct
- Accessibility and accommodations

- Harassment
- Attendance and excused absences
- Grades and appeals
- Copyright and intellectual property

Please visit [www.ugst.umd.edu/courserelatedpolicies.html](http://www.ugst.umd.edu/courserelatedpolicies.html) for the full list of campus-wide policies prepared by the Office of Undergraduate Studies, and follow up with me if you have questions.

## Course Guidelines

**ELMS:** I will send IMPORTANT announcements via ELMS messaging. You must make sure that your email & announcement notifications (including changes in assignments and/or due dates) are enabled in ELMS so you do not miss any messages. You are responsible for checking your email and Canvas/ELMS inbox with regular frequency (I would suggest once a day, but twice a day, at the start and end of the day is preferable).

**Email:** If you need to reach out and communicate with me, please email me at [danulg@umd.edu](mailto:danulg@umd.edu) using your **official UMD account**. Please DO NOT email me with questions that are easily found in the syllabus or on ELMS (i.e. When is this assignment due? How much is it worth? etc.) but please DO reach out about personal, academic, and intellectual concerns/questions related to the class. I will do my best to respond to emails **within 24 hours (excluding weekends) and 48 hours at the most**. In the extremely unlikely case that you do not hear back from me within 48 hours, please feel free to follow up with me. **Please include the course and section number in all of your email communications**. Emails without this information will likely receive replies that fall outside the 24-48 hour window for responses.

## Grades

Your work will be graded for **completeness, correctness and clarity**. Note that under this criteria you may not receive the full grade for simply having the correct final answer. You will need to include a reasonable number of steps highlighting your thought process and provide a clean, legible solution in order to get full credit.

**All assignments and grades will be posted on the course ELMS.** Please check ELMS regularly and let me know if you have any questions or concerns. Assignments may contain a significant amount of computation. **You will submit your solutions via Gradescope.** You will need to **create a single pdf of your work and upload it to Gradescope** for grading (if you are unfamiliar with how to use Gradescope, please access the **Student Hub** for Gradescope via <https://guides.gradescope.com/hc/en-us> and read the starred articles. In addition please make sure that you read the article about submitting variable length assignments). You will be able to access the **graded assignments via Gradescope as well**.

Your graded assignments will consist of five categories: Homework, Quizzes, R-Projects, Midterms and Final Exam.

**Homework:** Homework assignments and due dates will be posted on ELMS. You should submit your solutions on ELMS as well. You will usually have a homework assignment per week. You will need to scan your work and upload a pdf of your solutions into ELMS for grading. You will receive 40% of the grade for a homework set if you have

completed (i.e. made a good faith attempt to answer) all the assigned problems. The other 60% of the grade will be assigned based on how well you have performed on a particular subset of the question. The particular subset of the questions that are worth 60% will not be announced before you submit the homework set.

**Quizzes:** There will be, roughly, a quiz per week. Weekly quizzes will mostly focus on the material that was covered the week before and will take roughly 10-15 minutes to complete. They will take place towards the end of class.

**Midterms** will take place during regular class time and will take up a class period. They will be close book, closed notes. However, you will be allowed a formula sheet for the exams (both sides of a **handwritten** A4 / letter size piece of paper)

**R-Projects:** There will be several mini projects that you will need to complete using R. Like homework assignments, the due dates for R-projects will be announced in ELMS.

**Final Exam:** The final exam is scheduled for May 15th from 10.30 AM - 12.30 PM. It will take place in our classroom. You will be allowed a formula sheet for the final exam as well (both sides of two **handwritten** A4 / letter size pieces of paper).

**You are allowed to collaborate and / or use resources beyond the textbook and class notes etc in certain circumstances. Please see the "Academic Integrity" section of the syllabus for further details.**

#### **Calculator Policy:**

You may use a standard scientific / graphing calculator during exams. Examples include the Texas Instruments TI-30Xa scientific calculator and the Texas Instruments Ti-84 calculator. **You will also not be permitted to use your phone, iPad etc as a calculator during exams.** Please ask me if you are unsure about the calculator you are planning on using. The use of any other electronic devices during assignments as an aid to obtaining solutions is prohibited and their use would be considered as academic dishonesty.

#### **Make-up Policy**

Accommodations (extensions, make-up assignments) will be made in case of missed graded assignments with excused absences in accordance with university policy. **Accommodations will not be made unless a student can present substantial evidence that an absence was caused by serious illness, a death in the immediate family, religious observance, participation in University activities at the request of University authorities, or compelling circumstances beyond the student's control.** If the absence is caused by foreseeable circumstances, notice must be given in advance in order to be allowed to take a makeup assignment. Students who do not provide adequate documentation for their absence will receive a score of zero for the corresponding assignment.

**Missed assignments must be made up in a timely manner, usually within a week of returning to class.** Exemptions to this policy will be made on a case by case basis if required.

#### **Reviewing your Grades**

If you would like to review any of your grades (including exams), or have questions about how something was scored, please email me or come to my office hours. I am happy to discuss any of your grades with you.

Mistakes do happen when grading. If the TAs / graders / myself have made a mistake, I will be happy to correct it. Please bring it to my attention as soon as possible.

Any formal grade disputes must be submitted in **writing and within one week of receiving the grade**. It should include where you believe there is an error in grading.

## Academic Integrity






You are expected to adhere to the academic integrity standards ([www.ugst.umd.edu/courserelatedpolicies.html](http://www.ugst.umd.edu/courserelatedpolicies.html)) set by the university.

It is important to note that, for this particular class, you are not allowed to post homework questions (or solutions) or copy solutions for homework from course assistance websites, such as CourseHero, StackExchange, Chegg. AI generated content (for example R code) is not permitted. Material taken or copied from these sites can be deemed unauthorized material and a violation of academic integrity. Relying on restricted sources will hamper your learning process, particularly the critical thinking steps necessary for college-level assignments.

Working with your classmates is a great way to learn material. I highly encourage you to do so. You are allowed to talk to each other about any non-proctored assignments (such as homework), discuss methods for obtaining the solutions, etc. However please note that working together is different from simply copying down someone else's answers and passing them off as your own. The former is a great way to learn and the latter is academic dishonesty. Please visit the [Office of Undergraduate Studies' full list of campus-wide policies](#) and reach out if you have questions.

Finally, on each exam or assignment you must write out and sign the following pledge: ***"I pledge on my honor that I have not given or received any unauthorized assistance on this exam/assignment."*** If you ever feel pressured to comply with someone else's academic integrity violation, please reach out to me straight away.

To help you avoid unintentional violations, **the following table** lists levels of collaboration that are acceptable for each graded exercise.

	 <b>OPEN NOTES</b>	 <b>USE BOOK</b>	 <b>LEARN ONLINE</b>	 <b>GATHER CONTENT With AI</b>	 <b>ASK FRIENDS</b>
Homework Assignments	✓	✓	✓	---	✓
R Projects	✓	✓	✓	---	✓
Quizzes	—	—	—	—	—
Midterms	*	—	---	---	—



## Course Outline

I have uploaded a tentative course schedule into ELMS (see “Files”). It contains the topics that we will be covering by week, **dates on which exams are held** etc. I may update it through the semester as required (to allow for campus closures due to bad weather etc). Please make sure that you check this **document at least once a week**.

## Resources & Accommodations

If you are registered with the ADS office, please approach me to discuss your accommodations.

### Student Resources and Services (this applies mostly to lower-level courses)

Taking personal responsibility for your own learning means acknowledging when your performance does not match your goals and doing something about it. I hope you will come talk to me so that I can help you find the right approach to success in this course, and I encourage you to visit [UMD’s Student Academic Support Services website](#) to learn more about the wide range of campus resources available to you.

You should also know there are a wide range of resources to support you with whatever you might need ([UMD’s Student Resources and Services website](#) may help). If you feel it would be helpful to have someone to talk to, visit [UMD’s Counseling Center](#) or [one of the many other mental health resources on campus](#).

**Other policies, suggestions, and information:** Please see “Files” in ELMS for a pdf of various policies and suggestions that apply to all classes.