

MA 485/585-2F, Probability, Spring 2021.

Instructor: Dr. Günter Stolz, stolz@uab.edu.

Virtual Office Hours: Tuesday, Thursday, 5:00 pm - 6.00 pm (after class) and by appointment

Instructional Method: Remote. This class will be conducted virtually using a combination of live and recorded content through Canvas, Zoom, and other tools using the Canvas Learning Management system. Students should reserve

Tuesday and Thursday from 3:30 pm to 4:45 pm

for live course lectures. Students will not attend class on-campus.

There is **NO required textbook** for this course. Instead, a full set of **Lecture Notes** in pdf-format, originally written by Professor N. Chernov and in part modified by the instructor, are available on Canvas under “Files”.

Optional Texts or Resources: Here are suggested books:

S. Ross, *A First Course in Probability*, Prentice Hall, or

S. Ghahramani, *Fundamentals of Probability, with Stochastic Processes*, Prentice Hall.

The former is simpler and more elementary, the latter is more sophisticated.

A free online textbook by Marcel Finan, covering topics similar to Ross, is available at

faculty.atu.edu/mfinan/actuariesshall/Pbook.pdf

Grading policy:

Here is the grading scale for the course:

$$A = 90 - 100, \quad B = 80 - 89 \quad C = 70 - 79 \quad D = 60 - 69 \quad F < 60.$$

One of two schedules that yields the better grade will be used.

Homework	20 %	or	0 %
Midterm Test I (Thursday 2/18)	25 %		30 %
Midterm Test II (Thursday 4/1)	25 %		30 %
Final Exam (Tuesday, April 27, 4:15pm to 6:45pm)	30 %		40 %

The date of the midterm tests is approximate and subject to change.

Homework: Weekly homework sets will be posted on Canvas and usually be due within one week. You need to submit your homework on the due date to Canvas. Generally, late homework will not be graded. Only one exception, with deadline extended by two days, will be made from this rule for each student. Homework will be graded within one

week and answers to the homework problems will be posted.

Homework is **not mandatory**. If you turn in HW regularly and schedule #1 above gives you a better grade, it will be automatically applied. Otherwise, your HW scores (if any) will be dropped and schedule #2 will be applied. It is advised that you do HW as often as possible, for your practice, even if you cannot do it regularly for credit. Exercises marked as 'Bonus' can be attempted for extra credit. They can be used to make up points lost on other problems, but your total HW score can not exceed 20%.

The tests and the final exam in this course will be proctored by the instructor via Zoom, where you will be asked to keep your camera switched on. During the tests and final exam you may use a printed copy of the course notes, but no other materials. You also don't need a calculator, as answers in tests don't have to be given in exact decimal form.

Most test problems will be similar to problems from class or homework. Thus you should make sure to study those problems carefully. I will also provide a sample test/final in the meetings before each test and the final exam.

Tentative Schedule

Chapter of Lecture Notes	Tentative Dates
1. Combinatorics	1/19, 1/21
2. Probability space, 3. Conditional probability, Independence	1/26, 1/28
3. continued, 4. Discrete random variables	2/2, 2/4
5. Continuous random variables	2/9, 2/11
6. Exponential random variables	2/16
Test - 1 (covers sections 1–5)	Thursday 2/18
7. Functions of random variables, 8. Normal random variables	2/23, 2/25
8. continued, 9. Survey of double integrals	3/2, 3/4
10. Joint distributions	3/9, 3/11
Wellness Day , no class	Tuesday 3/16
11. Mean value	3/18
11. continued, 12. Variance	3/23, 3/25
12. continued	3/30
Test - 2 (covers sections 6–11)	Thursday 4/1
13. More on Variance, Stable Distributions	4/6, 4/8
14. Covariance and correlation	4/13, 4/15
15. Law of large numbers, 16. Central Limit Theorem	4/20, 4/22

The **Final Exam** is scheduled for **Tuesday, April 27, 4:15pm to 6:45pm**. It covers sections 1 to 14, with higher weight on Sections 12, 13 and 14. Sections 15 and 16 will be covered in form of an all-bonus homework set, due on the day of the final.

UAB Policies and Resources:

- **Pass/Fail option:** The default grading method for the Spring 2021 semester will be the normal letter grade method, and UAB is encouraging students to continue taking courses for a letter grade where possible. There is also a Pass/Fail option in case there are circumstances and/or challenges students are encountering related to the ongoing pandemic that might make Pass/Fail the better option. If students are not remaining with the default letter grade method for the course, they must select the Pass/Fail grading method for the course individually. This selection is made toward the end of the semester. Once a student selects the option for a Pass/Fail grading method for a particular course, that decision is not reversible regardless of their performance on remaining assignments or final exams.
- **Add/Drop and Course Withdrawal:** Drop/Add: Deadlines for adding, dropping, or withdrawing from a course and for paying tuition are published in the Academic Calendar available online. Review the Institutional Refund Policy for information on refunds for dropped courses. Withdrawal: To avoid academic penalty, a student must withdraw from a course by the withdrawal deadline shown in the academic calendar and receive a grade of W (withdrawn). Failure to attend class does not constitute a formal drop or withdrawal.
- **UAB United: Safe Entry to Campus** Please go to the UAB United website for guidance and resources related to our safe entry to campus in Spring 2021, including information on:
 - Testing
 - Academic resources and in-depth information
 - Student Affairs resources to support all students (housing, dining, extracurricular activities, parking, etc.)
 - Health and safety resources and recommendations for on and off-campus
 - Information for graduate students, School of Medicine students, Post-Docs and International Students: All students should use the Student COVID-19 Entry Checklist to see what they have to do in order to enter the campus safely. Non-compliance with the required items will result in students not being able to remain on campus or participate in any in-person classes, meetings, jobs, extracurricular activities, and events.
- **Misconduct:** The University of Alabama at Birmingham expects all members of its academic community to function according to the highest ethical and professional standards. Students, faculty, and the administration of the institution must be involved to ensure this quality of academic conduct. Review the Academic Honor Code and Non-Academic Student Code of Conduct linked below.

www.uab.edu/students/one-stop/policies/academic-honor-code
www.uab.edu/studentconduct

- **DSS Accessibility Statement:** Accessible Learning: UAB is committed to providing an accessible learning experience for all students. If you are a student with a disability that qualifies under Americans with Disabilities Act (ADA) and Section 504 of the Rehabilitation Act, and you require accommodations, please contact Disability Support Services for information on accommodations, registration and procedures. Requests for reasonable accommodations involve an interactive process and consist of a collaborative effort among the student, DSS, faculty and staff. If you are registered with Disability Support Services, please contact DSS to discuss accommodations that may be necessary in this course. If you have a disability but have not contacted Disability Support Services, please call (205) 934-4205, visit their website, or their office located in Hill Student Center Suite 409.
- **COVID-19 Adjustments for Students:**

Attendance will not be a part of your grade in this course. Students concerned about their attendance as a result of COVID-19 should register with Disability Support Services. UAB Disability Support Services (DSS) has established a process for UAB students to request temporary adjustments based on the impact of COVID-19. The process is similar to the traditional DSS registration procedures for accommodations based on disability. However, these requests will be referred to as "COVID-19 Related Temporary Adjustments". On the DSS website, there is a section (next to the traditional DSS application process) titled "Request COVID-19 Temporary Adjustments" where students can read the process and click to complete an application. On the application, the student must complete an attestation and identify which of the following category(s) applies to their situation. Students will be allowed to submit documentation to support their requests.

- I am 65 or older
- My medical provider has determined that I am an individual who is considered high risk according to Centers for Disease Control and Prevention
- I care for or reside with an individual who has been determined to be high risk according to Centers for Disease Control and Prevention
- I have tested positive for COVID-19
- I am requesting adjustments for another reason

Any questions regarding this process should be referred directly to dss@uab.edu. For qualifying students, DSS staff will create a Notification of Temporary Adjustment Letter (PDF format) which will be provided to students. Students will share this letter, as needed, with instructors to request adjustments.

- **Title IX Statement:**

The University of Alabama at Birmingham is committed to providing an environment that is free from sexual misconduct, which includes gender-based assault, harassment, exploitation, dating and domestic violence, stalking, as well as discrimination based on sex, sexual orientation, gender identity, and gender expression. If you have experienced any of the aforementioned conduct we encourage you to report the incident. UAB provides several avenues for reporting. For more information about Title IX, policy, reporting, protections, resources and supports, please visit UAB Title IX webpage for UABs Title IX, UABs Equal Opportunity, Anti-Harassment, Duty to Report, and Non-Retaliation policies.

- **Mandatory Masks and Social Distancing Requirements:** In accordance with CDC guidelines and for the health and wellbeing of all faculty, staff and students. Students, faculty and staff are required to wear cloth face coverings or face masks at all times and maintain social distancing (6 feet between individuals in traditional classrooms, or, in instructional laboratories and similar settings) while on the UAB campus. Instructors have the right to ask those who are not complying with these requirements to leave class in the interest of everyone's health and safety. In the event that a student refuses to comply with these requirements, the instructor has the right to cancel class. Additionally, following other simple practices will promote good health in and out of the classroom, such as frequent and thorough hand washing, wiping down desks and seats with disinfectant wipes whenever possible, not sharing personal items such as pens and cell phones, and avoiding crowded areas and other enclosed spaces. The UAB Blazer community views the adoption of these mandatory guidelines as a mark of good citizenship and respectful care of fellow classmates, faculty, and staff. Please visit the UAB United website for further information. Food may not be consumed during class times in classrooms, but bottled water is permissible.

- **GuideSafe Event Passport Class Requirement:**

Faculty are required to verify all students who are present for in-person instruction have a current Event Passport.

The COVID-19 pandemic is an extraordinary situation requiring significant measures to create a safe educational community. UAB is using GuideSafe Event Passport to facilitate access to classrooms, meetings, events, or facilities having ten or more people. Attendees, including faculty, staff, and students, will complete UAB Healthcheck, a COVID-19 assessment tool, prior to entering their event. An Event Passport is issued based factors from your daily risk level as assigned by the UAB Healthcheck. After you have completed Healthcheck, press the Passport button to get your passport. This passport is good for 24 hours. Remember your passport number to access your passport later in the day. Each user is assigned a unique passport number indicating their status for the upcoming event that will show a

Clear (Green) screen or Not Clear (Red) screen. After the 24-hour passport has expired, you will need to complete Healthcheck again. Each passport will have a time and date to ensure validity. Learn more at [UAB GuideSafe Event Passport](#).

- **Course Netiquette:** There are course expectations concerning etiquette on how we should treat each other online. It is very important that we consider the following values during online discussions and email. **Respect:** Each student's opinion is valued as an opinion. When responding to a person during the online discussions, be sure to state an opposing opinion in a diplomatic way. Do not insult the person or their idea. Do not use negative or inappropriate language. **Confidentiality:** When discussing topics be sure to be discreet on how you discuss children, teachers, and colleagues. Do not use names of people or names of facilities. **Format:** When posting use proper grammar, spelling, and complete sentences. Avoid using ALL CAPITALS. This signifies that you are yelling. Avoid using shortcuts/text abbreviations such as 'cu l8r' for 'See you later.' **Relevance:** Think before you type. Keep posts relevant to the discussion board topic.